



# TELEPHONE APPARATUS AND EQUIPMENT

The material included herein does not purport to be all-inclusive of our line of standard telephone products. Inquiries are invited regarding products not included.

JANUARY 1970

*Western Electric Company*

DEFENSE ACTIVITIES DIVISION  
83 Maiden Lane, New York, N. Y. 10038

The Telephone Apparatus and Equipment Catalog pertains to the standard apparatus and certain standard equipment manufactured by the Western Electric Company.

To keep you up to date on the latest developments of the material contained herein, periodic supplements will be mailed to you when they are published.

Inquiries of a technical nature pertaining to any equipments listed herein should be directed to Mr. J. F. Reed, Jr. 212-571-5804. Telephone inquiries pertaining to price and delivery should be directed as follows:

Army 212-571-5715  
Air Force 212-571-5721  
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212-571-5711

#### Instructions and Drawings

Installation and maintenance instructions and installation drawings will not be furnished unless they are ordered.

When requesting quotations for or ordering items on which such information is needed, the Request and the Order should specify as a separate item (1) applicable instructions and (2) applicable equipment and wiring drawings.

The instructions will normally be furnished as Bell System Practices and the drawings will be the equipment, circuit descriptions, and wiring drawings.

The following trademarks and service marks appear on several pages of this publication. They are used to identify products and services of the Bell System.

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#### COMCODE

##### (Comcode Identification Code Numbers)

As part of our plan to use computer facilities in the handling of quotations and orders, The Telephone Apparatus and Equipment Catalog has been updated to include Comcode numbers.

Comcode numbers are used to identify our apparatus and supplies and to obtain access to information stored in our data banks. These numbers are assigned to most of the apparatus included in the catalog. A Comcode number is assigned to each item of apparatus and to any variation in the item of apparatus such as color, electrical characteristics, and alphabetical coding.

Requests for Quotations and Orders should include these numbers whenever they are listed.

IT SHOULD BE UNDERSTOOD THAT COMCODE NUMBERS ARE NOT THE SAME AND HAVE NO RELATION TO GOVERNMENT FEDERAL STOCK NUMBERS.



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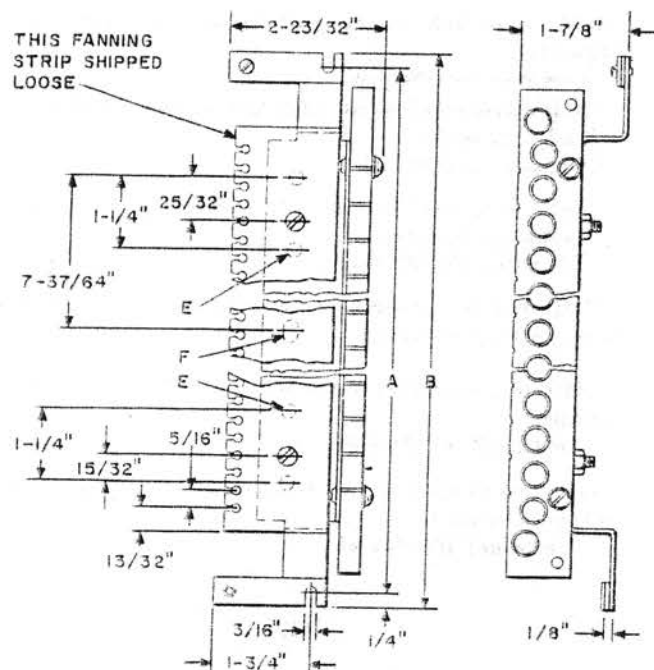
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## ADAPTERS

102 Type



"E" HOLES LOCATED ONLY IN NO. 102B.  
 "F" HOLE LOCATED ONLY IN NO. 102D.

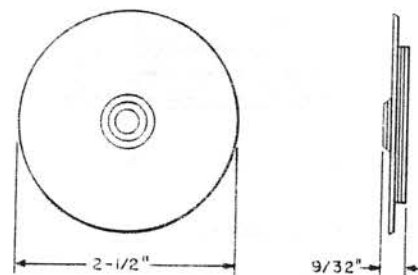
Consists of light olive gray enamel finished formed sheet metal mounting plates, each provided with one fiber fanning strip, one wooden fanning strip, mounting screws and nuts for attaching number 30 or 31 type connecting blocks, and a mounting screw for attaching a cable clamp.

## Overall Dimensions (Inches)

Code No.	Mts. in Cable Term. Box	Length B	Width	Thickness	Mounting Centers Width A	Height
102B	GA11	9-5/8	2-23/32	1-7/8	1-3/4	9-1/8
	GB11					
	GC32					
Comcode: 100 000 025						
102C	GA16	12-3/4	2-23/32	1-7/8	1-3/4	12-1/4
	GB16					
	GC32					
	GC52					
Comcode: 100 000 033						
102D	GA26	19	2-23/32	1-7/8	1-3/4	18-1/2
	GB26					
	GC52					
	GC102					
Comcode: 100 000 041						

For mounting 30B, 30C, 30D, 31B, 31C, or 31D Connecting Blocks in GA, GB, and GC type cable terminal boxes. The 102B Adapter will also mount two 31A Connecting Blocks.

104B

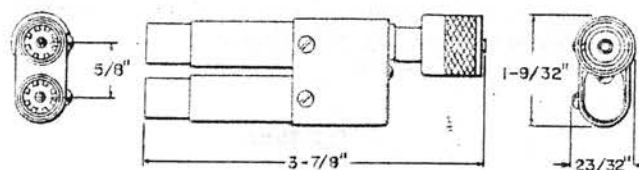


An adapter of black insulating material for use in replacing the receiver caps of operators' head sets to provide for a 101A Pad.

This adapter is to be used with the 10A Receiver Holder.

Comcode: 100 000 108

116A



Consists of a twin coaxial jack and a coaxial plug assembled together. The inner contact of each jack member is connected to the inner contact of the plug. The outer contacts of each jack member and the plug are connected together. The plug is provided with a threaded coupling for attaching to the associated apparatus. This adapter is tested at 2000 volts ac.

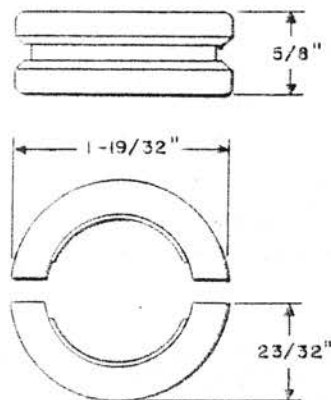
Intended for use with a high impedance probe to monitor video circuits of television systems.

Comcode: 100 000 215



## ADAPTERS

129A



Consists of two cast metal spacers, a metal clamping ring, and a length of lashing wire. The clamping ring and lashing wire are shipped loose.

Arranged to fit inside the cable clamping cavities of 20B and 21B type splice cases and number 61 type cable terminals. One adapter is required for the assembly of each cable less than 1 inch in diameter.

Comcode: 100 000 397

133 Type

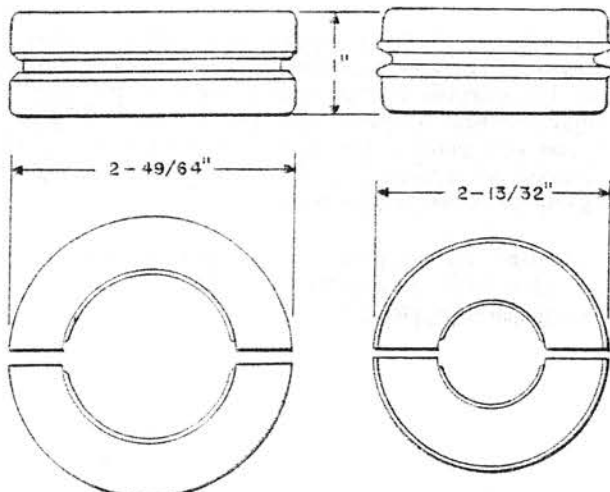


Fig. 1

Fig. 2

Each consists of two cast metal spacers, a clamping ring (shipped loose), and a length of lashing wire (shipped loose).

133A, B, and C: Intended for use with 10A, 12A, 20D type, and 21D type splice cases. See Fig. 1.

133A: Arranged for use with cables 1 inch and less in diameter.

Comcode: 100 000 405

133B: Arranged for use with cables over 1 inch to 1.6 inches in diameter.

Comcode: 100 000 413

133C: Arranged for use with cables over 1.6 inches to 2.2 inches in diameter.

Comcode: 100 000 421

133D and E: Intended for use with 20C and 21C type splice cases. See Fig. 2.

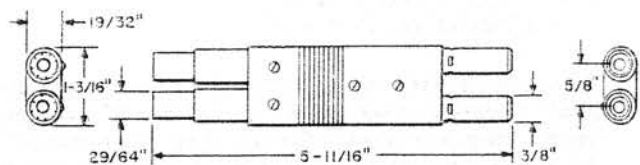
133D: Arranged for use with cables 1 inch and less in diameter.

Comcode: 100 000 439

133E: Arranged for use with cables over 1 inch to 1.6 inches in diameter.

Comcode: 100 000 447

137A



Consists of a twin plug and a twin coaxial jack in a metal case. The jack fingers are those nearest the notches on the case. The center contact of the jack finger nearest the notched edge of the case is electrically connected to the center contacts of both plug fingers. The center contact of the other jack finger is electrically common with the outer contacts of the two plug fingers and the two jack fingers. This adapter is tested at 2000 volts ac.

The plug fingers are arranged for two 477B or similar type jacks mounted on 5/8-inch centers. The jack fingers are each arranged for a number 358 or similar type plug.

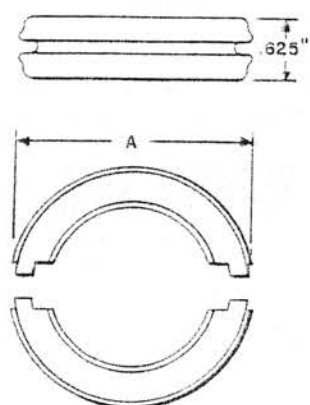
Intended for use with a video monitoring probe for in-service monitoring in either balanced or unbalanced circuits of the A2A Video System.

Comcode: 100 000 462



## ADAPTERS

138 Type

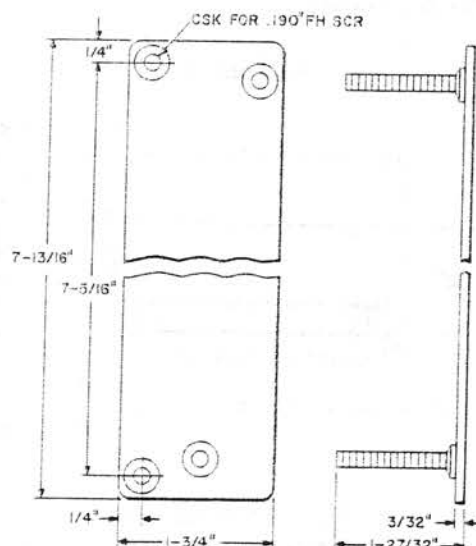


Each consists of two cast metal spacers, a metal clamping ring (shipped loose), and a length of lashing wire (shipped loose).

Code No.	Comcode	Diameter of Cable Arranged for (Inches)	Dimension A (Inches)
138A	100 000 470	1 to 1.6	3.528
138B	100 000 488	1 and less	2.528

138A and B: Arranged to fit between the clamping brackets of the 49B2 Cable Terminal.

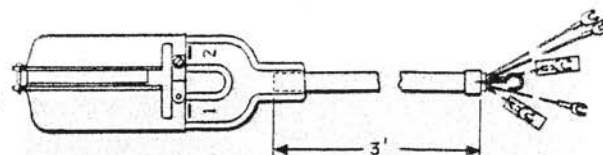
144A



A metal plate arranged to mount a 57A Connecting Block in a 83A Protector Mounting. Mounting screws, nuts, and washers are furnished.

Comcode: 100 000 520

148B-49



This adapter consists of a plug, a connector, and a length of light olive gray PVC jacketed cordage with thirty-nine number 27 AWG stranded conductors with PVC insulation.

The adapter end is equipped with a KS-16689L2 Plug and a KS-16690L3 Connector. Pins 1 to 20 and 26 to 45 of the plug are connected to the corresponding pins of the connector with strap conductors. Ten cordage conductors connect only to plug terminals, ten connect only to connector terminals, and the remaining nineteen connect to the strapped terminals.

The connecting block end is equipped with a stay cord hook and spade tipped free conductors 3-1/2, 5-1/2, 7-1/4, and 10 inches long. The spade tips on the ten 3-1/2 inch and nine 5-1/2 inch long conductors are dead dressed.

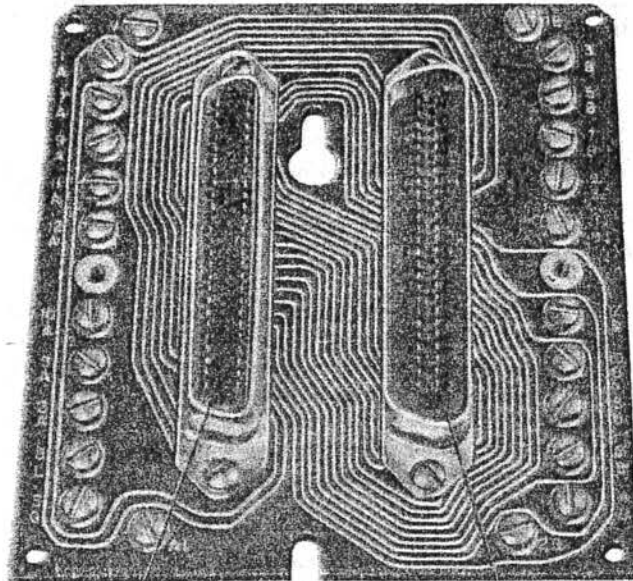
The length of the jacketed cordage is 3 feet.

Intended for use where auxiliary equipment is mounted at the station set location.

Comcode: 100 000 579

## ADAPTERS

149B

KS-16672, LIST 13  
CONNECTORKS-16671, LIST 10  
PLUG

Consists of a KS-16672L13 Connector and a KS-16671L10 Plug assembled on a printed wiring board which in turn is mounted on a board of insulating material. Has a gray removable polystyrene cover.

Overall dimensions are 4.32 inches long by 4.18 inches wide by 1.39 inches high. Has two holes for mounting centrally located on back, 3.062 inches center to center.

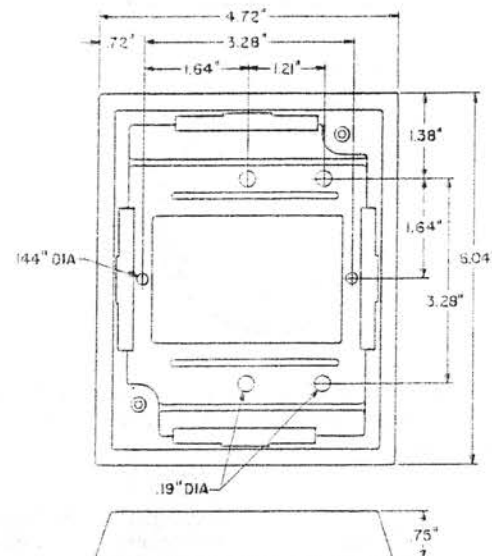
Wiring designations are the same as 149A Adapter.

Used with multibutton telephone sets equipped with plug-ended line cords where auxiliary apparatus is required.

Replaces the 149A Adapter.

Comcode: 101 220 069

152A

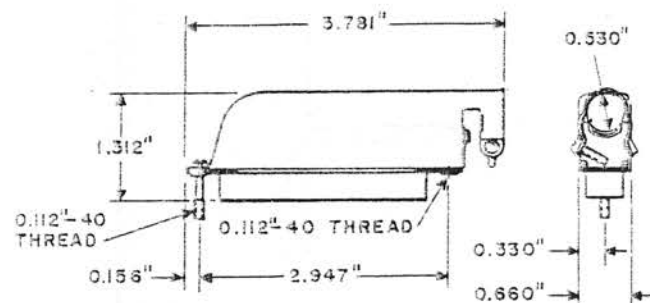


A molded gray plastic adapter, provided with mounting screws and two plates for reinforcing the mounting surface.

Used in mounting a 66E3-25 Connecting Block to over-floor ducts, under-floor ducts, and single-and double-outlet wall boxes.

Comcode: 100 000 611

153A and B



153A: Consists of a KS-16689L6 Plug and a terminal block having eight terminals arranged for screw connections. Comcode: 100 000 629

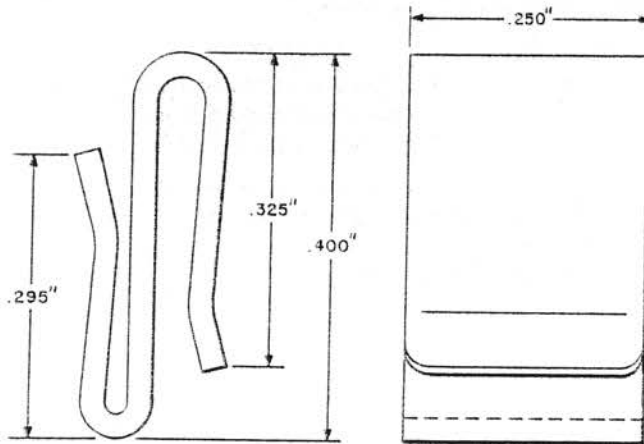
153B: Same as 153A except it contains a KS-16690L4 Connector. Comcode: 100 000 637

The plug is equipped with a nonreturnable dust cover.

Intended use is as a means of connecting non-key telephone sets to cabling systems involving A25B or B25A Connector Cables.

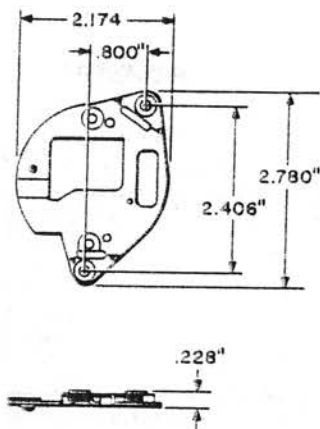
## ADAPTERS

161A



A copper tinned stainless steel spring type adapter.  
Used to terminate spade tip terminated cords to 66 type quick-clip type connectors.  
Comcode: 100 000 686

166A



Consists of stamped stainless steel plates used to shock-mount a P-type ringer. To be mounted adjacent to a resonator cavity or inside a telephone set housing which has been tuned as a resonator cavity.

Comcode: 100 000 744

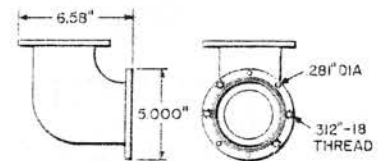
170B1 and C1

Each consists of a molded plastic nipple and aluminum die cast clamps arranged to fit either end of a 1B1 or 1C1 Closure to provide an opening for three cables.

170B1: Used with 1B1 Closures and will accommodate one cable with an outside diameter of from 1.0 inch to 2.2 inches and two cables with an outside diameter of up to 1.0 inch. Comcode: 100 000 777

170C1: Used with 1C1 Closures and will accommodate one cable with an outside diameter of from 2.2 inches to 3.0 inches and two cables with an outside diameter of up to 1.0 inch. Comcode: 100 000 785

172A



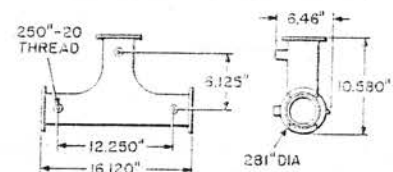
Consists of a gastight galvanized cast iron 90° elbow. Provided with a flange at each end.

Mounting screws and nuts are furnished.

Provides a through pipe for electrical connections between apparatus cases.

Comcode: 100 997 600

173A



Consists of a gastight galvanized cast iron T-shaped pipe having a pressure test valve. Arranged for mounting on an 85A Bracket.

Screws, nuts, and bolts are furnished for mounting flanges and bracket.

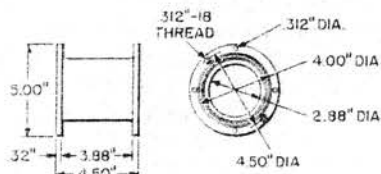
Arranged to be used as a substitute for a number 471 type apparatus case.

Comcode: 100 997 618



## ADAPTERS

## 174A

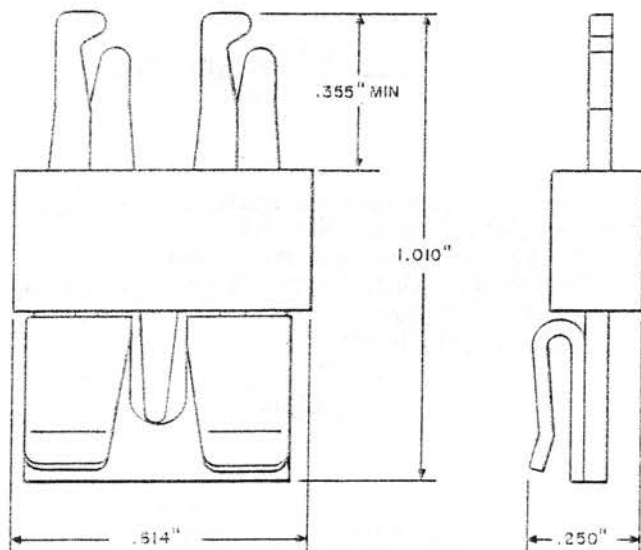


Consists of a gastight galvanized cast iron pipe. Provided with a flange at each end.

Provides a through pipe for electrical connections between apparatus cases.

Comcode: 100 997 626

## 183A2



Consists of a block and a two terminal connector assembly which provides a mounting clip.

Stacks on the terminal clips of most 66 Connecting Blocks and provides two additional terminals any place it is installed.

Comcode: 101 334 407

## 197A

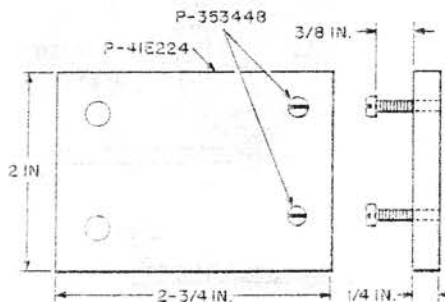
Consists of a single package of unassembled parts. Parts included are listed below.

Quantity	Description
2	AT-6789 No. 1 U Cable Guard Strap
2	P-46L387 C.R. Steel Screw
2	RM-705265 C.R. Steel Nuts

Used initially to adapt the suspension brackets of number 49 type cable terminals to mount on strand supporting two cables.

Comcode: 101 429 439

## P-368209



A metal adapter used to mount 19-inch mounting plates on 23-inch span gates and relay racks.

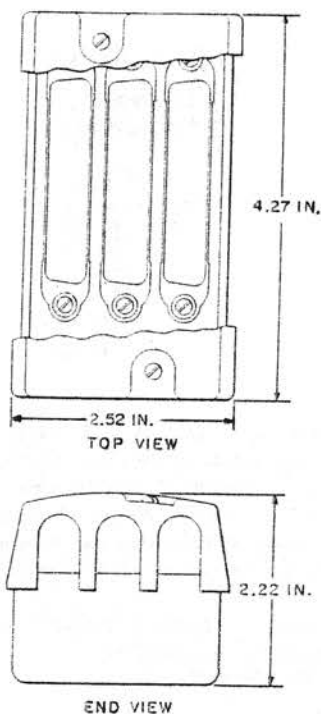
Comcode: 313 622 099



## ADAPTERS

## Bridging

## KS-19252L1, L2, and L3



Consists of a light olive gray plastic box with combinations of three interconnected 50 contact micro-ribbon plugs and connectors mounted inside.

KS-19252L1: Contains one KS-16671L1 Plug and two KS-16672L3 Connectors.

Comcode: 400 000 220

KS-19252L2: Contains two KS-16671L1 Plugs and one KS-16672L3 Connector.

Comcode: 100 000 238

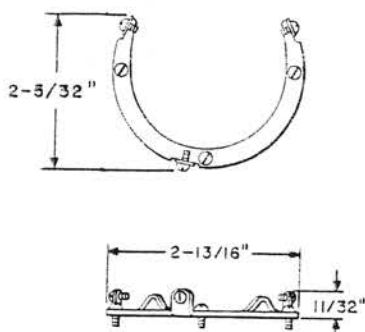
KS-19252L3: Contains three KS-16671L1 Plugs

Comcode: 996 131 363

Used as aids in multiple plug ended, six button telephone sets with A-type or B-type connector cables.

## Dial

## 52D



Used for mounting 2A, 2E, 4H, 5, and 6 type dials on 30A, 31A, 32A, 33A, 36A, 37A, 38A, 39A, 39B, and 40A Dial Mountings, on all 6000 type dial mountings except 6000G, H, and J, and on the 1011 type hand sets. When mounting a number 6 type dial, a 64A Dial Adapter is also required.

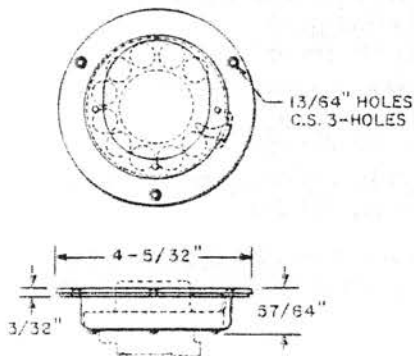
Comcode: 100 000 793

Consists of a metal plate provided with machine screws for attaching adapter to dial and dial mounting.

## ADAPTERS

## Dial

57A

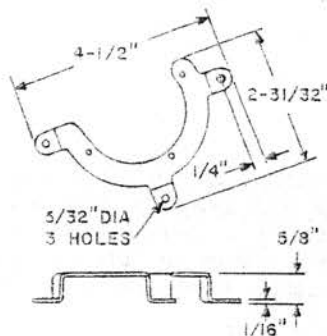


Consists of a black finished flanged metal cup, designed to mount number 2, 4, and 5 type dials, and a black finished metal plate which mounts over the flange of the cup. Screws are furnished for mounting the dial in the dial adapter and for mounting the dial adapter.

Intended for use in mounting dials flush on panels or mounting plates which may be of different thicknesses.

Comcode: 100 000 327

58A

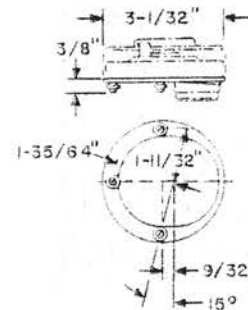


Semicircular flat metal plate with three mounting lugs. Screws, lock washers, and nuts are provided for mounting the dial adapter. Screws and lock washers are also provided for mounting the dial on the dial adapter.

Intended for use in mounting number 4 or 5 type dials in number 300 type telephone sets.

Comcode: 100 000 335

59 Type



Each consists of a soft rubber gasket provided with three eyelets and three screws for mounting, except 59D which is made of semihard rubber and is provided with only two eyelets (those on the vertical center line of the illustration for 59B and C) and two mounting screws. All are black with the exception of 59C which is gray.

59A: Arranged to mount a number 5 or 6 type dial in H-type telephone set mountings.

Comcode: 100 000 343

59B: Arranged to mount a number 5 or 6 type dial in a 44A Dial Mounting.

Comcode: 100 349 421

59C: Arranged to mount a 6E-41 Dial in a 45A Dial Mounting.

Comcode: 101 026 748

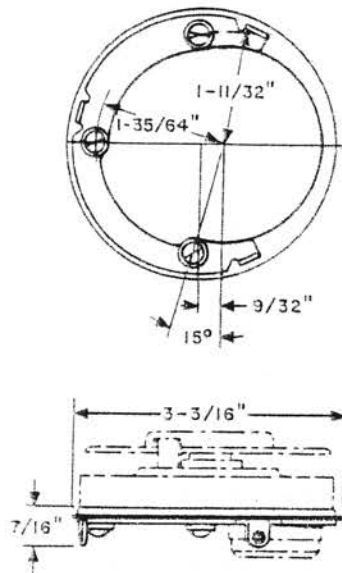
59D: Arranged to mount a 6J, 6K, or 6L type dial in a 44D-3 Dial Mounting.

Comcode: 101 026 755

## ADAPTERS

## Dial

62B

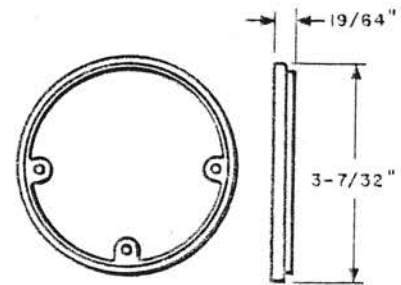


Consists of a metal plate with three mounting lugs, a shield, a 59B Dial Adapter, and the necessary mounting screws.

Used to mount number 4, 5, and 6 type dials on 34G, 34H, and 34J Dial Mountings.

Comcode: 100 000 850

64A



Consists of a spacer ring of black insulating material.

Used with a 59B Dial Adapter for mounting a number 6 type dial on a 44A Dial Mounting. Also used with a 52D Dial Adapter for mounting a number 6 type dial on 30A, 32A, 39A-3, 39B, and 40A Dial Mountings, on all number 6000 type dial mountings except 6000G, H, and J, and on the number 1011 type hand sets.

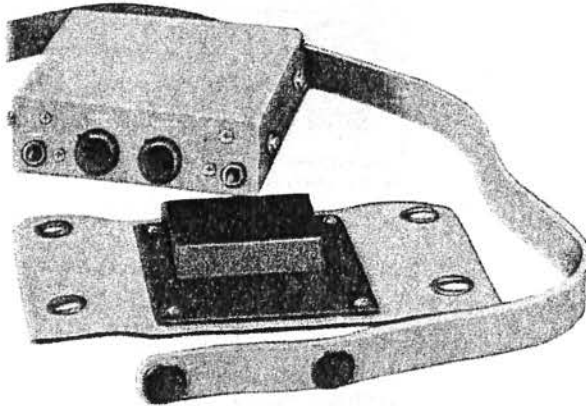
Comcode: 100 000 392





## AMPLIFIERS

1478



A portable amplifier, consisting of three stages of audio frequency amplification with tuned input and output transformers. Input and output jacks and a gain control are provided in addition to a switch for selecting high or low input impedance.

Apparatus is mounted on a metal chassis and a metal panel and is enclosed in a metal case. The terminal is provided with a belt clip and a strap assembly. Overall dimensions are 4-13/16 inches wide, 1-23/32 inches high, and 4-7/16 inches deep.

Has input impedances of approximately 80 ohms and 2.5 megohms and an output impedance of approximately 60 ohms. The voltage gain for high impedance input is approximately 53 db at 500 Hz between 300 ohm input and output impedances.

One CK533AX and two CK534AX Raytheon electron tubes are required for operation and are furnished. In the event of electron tube failures, individual electron tubes can be replaced.

Primarily intended for use, with accessory apparatus, in identifying wires in toll and exchange cables. Forms part of the 91A Test Set. Also used with a 75B Test Set for running down faults in cable, and with the 93A Test Set for tracing the path of buried pipes and cables.

Space is provided in the amplifiers for two ASA type AA and one ASA type 15F20 flat cell batteries which are required for operation but are not furnished as part of the amplifier.

Comcode: 100 000 918

151 Type

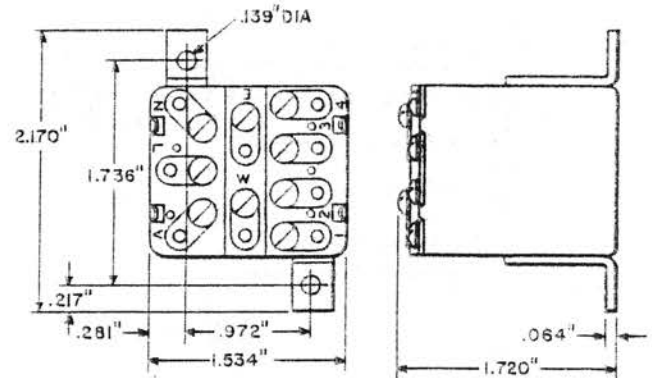


Fig. 1

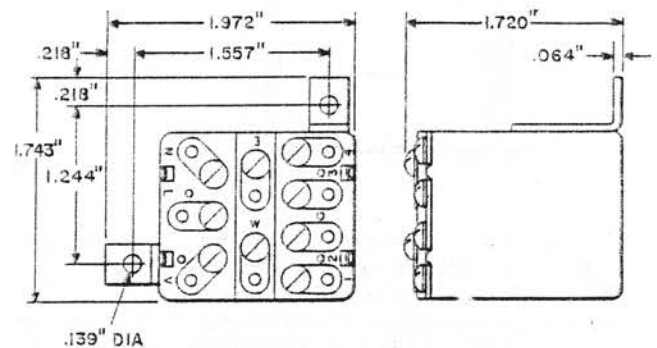


Fig. 2

Single-stage transistor type amplifiers consisting of apparatus such as an inductor, a transistor, capacitors, and resistors assembled in a metal case having a terminal plate of insulating material. 151D and E also contain a network of four diodes connected to terminals 1 to 4, inclusive, to insure proper polarity of the supply voltage for the transistor portion of the amplifier.

151D and E: Have an input impedance of approximately 500 ohms and an output impedance of approximately 150 ohms.

151D: Forms a part of the 636CW1, 638CW1, and 639DW1 Telephone Sets. See Fig. 1.

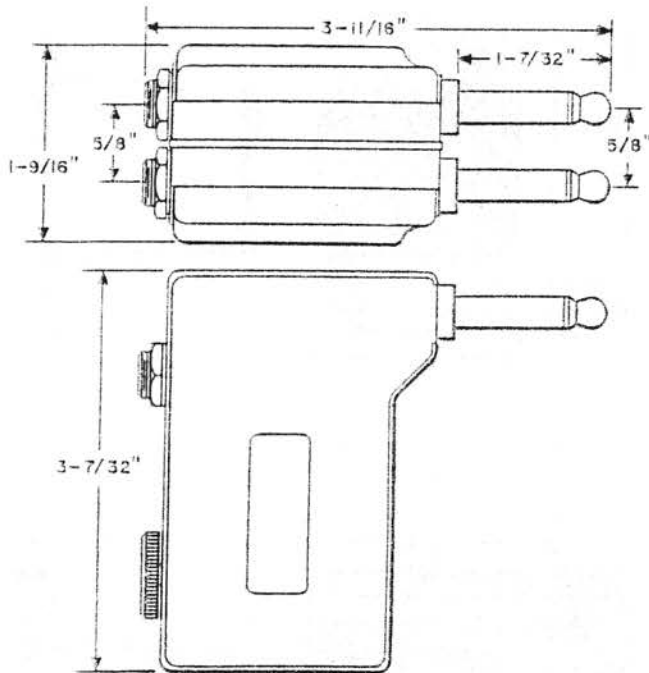
Comcode: 100 000 959

151E: Forms a part of the 3CW1 and 3CW2 type telephone consoles. See Fig. 2.

Comcode: 100 000 967

## AMPLIFIERS

153BW

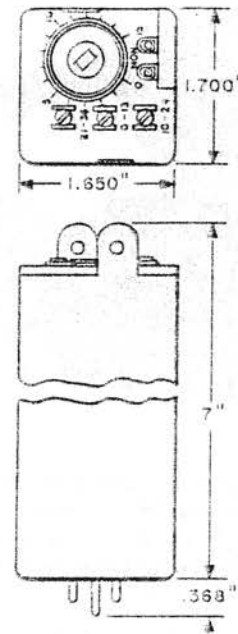


A single-stage transistor type polarized amplifier consisting of an inductor, a transistor, four diodes, a potentiometer, resistors, capacitors, transformers, a twin jack, and plug assembled in a black plastic housing. Arranged to receive a 2S9B or similar type plug and can be plugged into two number 364 or similar type jacks mounted on 5/8-inch centers.

Used with 52SW or similar type head telephone set to permit increasing the receiver gain approximately 20 db.

Comcode: 100 001 007

227 Type



Each is a two-stage transistor, adjustable gain amplifier, consisting of apparatus such as capacitors, resistors, diodes, and transistors mounted on a printed wiring board and assembled in a metal can.

Intended to operate between 600 and 1200 ohm lines over the frequency range of 200 to 5000 Hz. Has a maximum gain of 35 db and a maximum output level of +17 dbm. Requires a -24 volt dc power supply at 19 ma.

227D: Has a gray plastic terminal panel and has transmission characteristics suitable for voice frequency message and data circuits. Intended for use on aerial cable and is protected against lightning surges.

Replaces 227B and C Amplifiers.

Comcode: 101 307 189

227E: Has a gray plastic terminal panel and is used for voice frequency message circuits. Intended for use on buried cables.

Replaces 227A Amplifier.

Comcode: 101 324 973

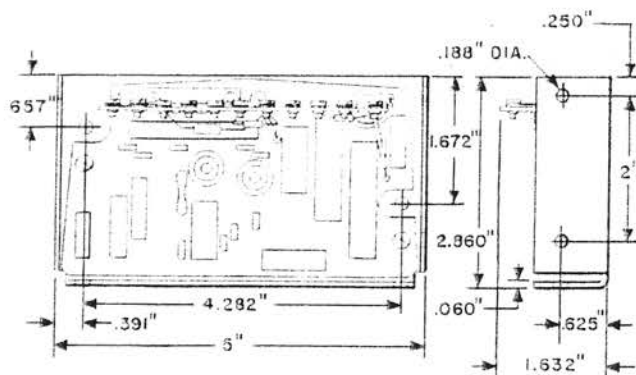
227F: Has a reduced sensitivity to impulse-type noise and a 180 degree change in the insertion phase shift. Used in voice frequency message circuits.

Replaces 227B Amplifier.

Comcode: 101 420 651

## AMPLIFIERS

236A

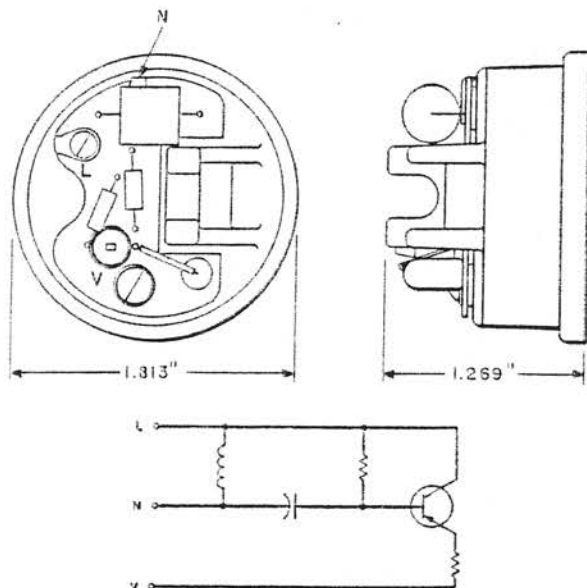


A three-stage transistorized amplifier consisting of resistors, transistors, and capacitors assembled on a printed wiring board within a metal frame. A terminal plate of insulating material containing 11 screw type terminals is assembled to the wiring board.

Intended for use in customized installation of 3B  
Speakerphone Telephone Station Apparatus.

Comcode: 100 004 274

238A

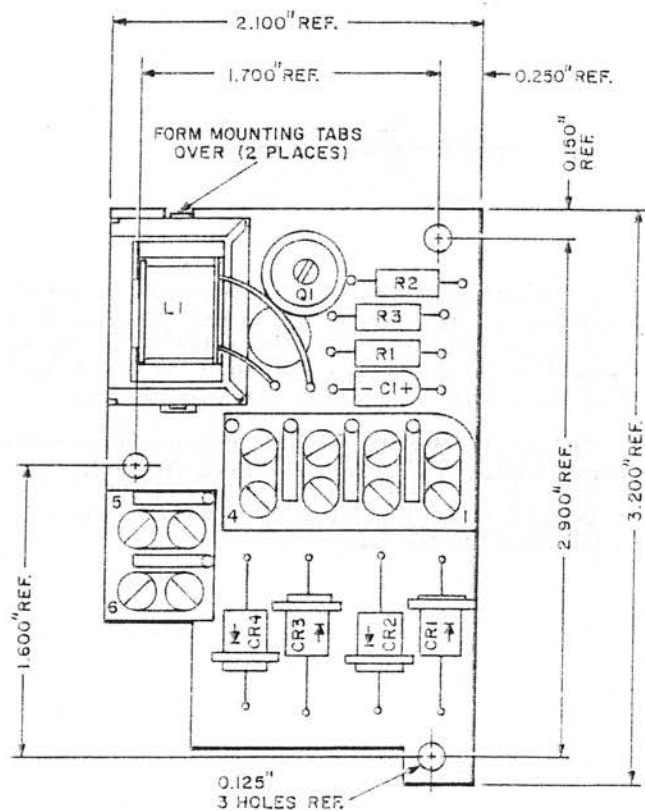


A three-stage transistorized amplifier, consisting of a transistor, a capacitor, an inductor, and resistors assembled on a printed wiring board and mounted on a plastic cup which is arranged for use in the transmitter end of a G-type hand set. Input and output impedances are approximately 500 and 1000 ohms respectively.

Used to amplify transmitter audio signals of hand sets which are converted for use on telephone sets on long loops where the polarity of the line voltage is maintained by central office equipment.

Comcode: 100 004 282

241A



A single-stage transistor audio amplifier incorporating a polarity guard and consisting of apparatus such as capacitors, resistors, diodes, and an inductor mounted on a 0.062 inch thick printed wiring board.

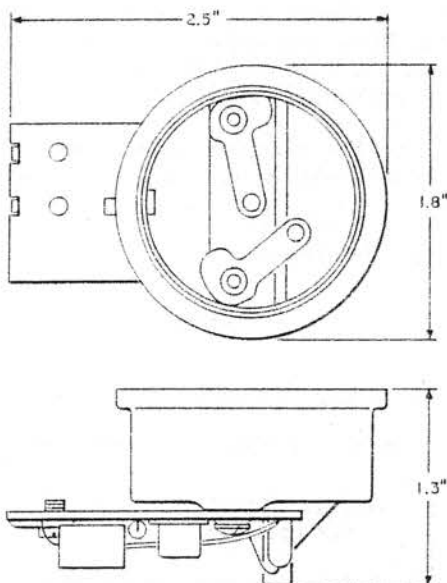
Intended for use with number 636, 637, 638, 639, 1636, 1637, 1638, and 1639 series telephone sets which are arranged for use with 52 or 53 type head telephone sets to amplify output of N-type transmitter unit.

Comcode: 100 004 340



## AMPLIFIERS

277A



A single-stage transistor amplifier used to amplify telephone set transmitter audio output. Designed to be used in the same manner as 238A amplifier except that it incorporates a polarity guard which permits it to be used where the line is subject to polarity reversals.

Consists of component apparatus mounted on a printed wiring board and attached to a special transmitter cap.

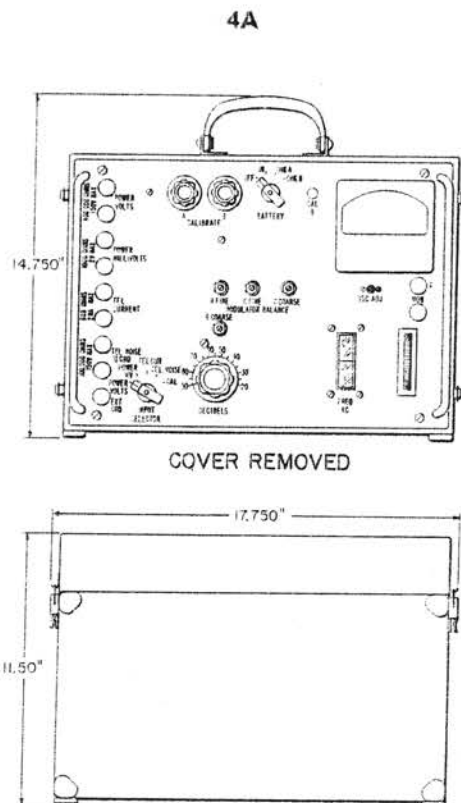
Designed to be installed in G3 type hand sets.

Comcode: 101 319 754



## ANALYZERS

## Frequency



Consists essentially of an amplifier, a meter circuit, and two oscillators mounted on a chassis assembly and metal panel. Enclosed in a metal case having a removable cover. Contains a compartment for batteries and one for storing a receiver and cord. The chassis is equipped with three sockets for storing spare electron tubes which are not furnished and if desired must be ordered separately.

Four Eveready batteries, two each of number 482 and 742, are required for the operation of the analyzer but are not furnished and must be ordered separately.

The following apparatus is required and is furnished.

### Five—1U4 Electron Tubes

One —1R5 Electron Tube

One —716C Receiver equipped with an R2DE Cord

A portable set intended for frequency analysis of complex current and voltage waves in the voice and program frequency range. Operates over the frequency range from 25 to 20,000 Hz.

Intended primarily for use in investigating induction problems from power system fundamental and harmonic frequencies.

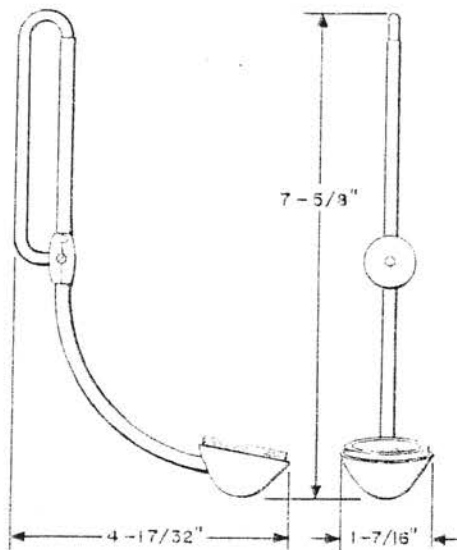
Comcode: 100 005 321



## ARMS

## Transmitter

## 55AW and BW



55AW: Consists of a formed tubular metal arm, a stop bar, a terminal block, and a transmitter case arranged for an N1 Transmitter Unit.

The adjustable arm is connected to the terminal block by wiring inside the tubular arm. The transmitter cap is furnished with the head telephone set of which this transmitter arm forms a part. The terminal blocks and transmitter cases are finished in black.

Forms part of 52SW, LW, MW, NW, EW, FR, and RRW Head Telephone Sets.

Comcode: 100 005 354

55BW: Same as the 55AW except transmitter case is arranged for an AD1 Transmitter Unit.

Forms part of 52KW and 52TW Head Telephone Sets.

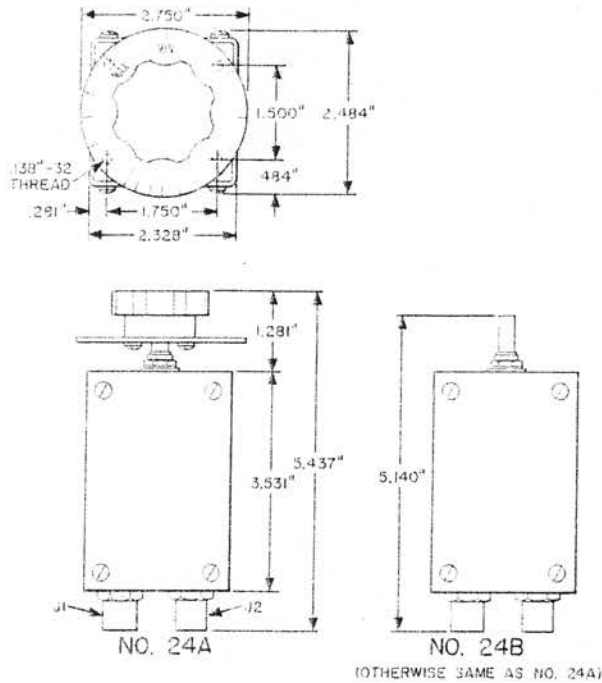
Comcode: 100 005 362





## ATTENUATORS

24A and B



24A: Consists of a potentiometer, capacitors, and resistors assembled in a metal can. Two 509A Jacks are provided for external connections. The outer conductors of the jacks are grounded to the can.

When inserted between 75 ohm unbalanced impedances, provides a continuously adjustable loss over the range of approximately 4.2 db to 16 db for 200 degrees of dial rotation.

Arranged to mount on the rear of a 0.091 inch panel with the dial in front of the panel.

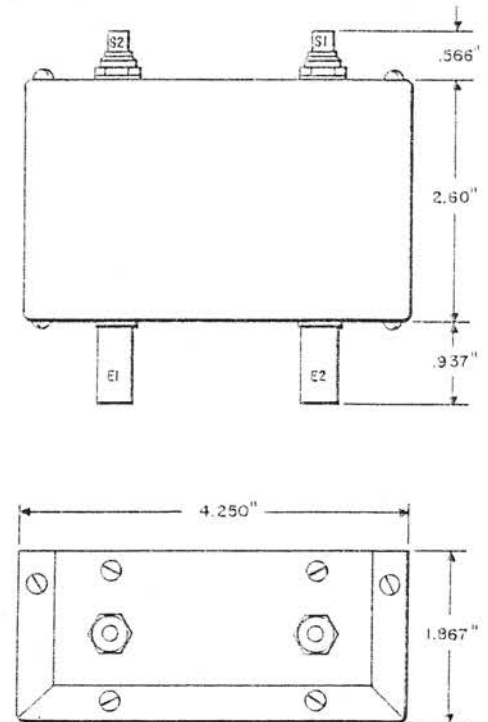
Used initially in the J68405A Transmitter Receiver Test Set in the TH Radio System.

Comcode: 100 005 342

24B: Same as 24A Attenuator except that knob and dial plate are not furnished.

Comcode: 101 130 953

37A



Consists of 237A Resistors mounted on two rotary switches enclosed in a metal can. Equipped with two 217A Connectors for input and output connections.

An RF attenuator having dual switches with respective attenuating selections of 0-1 db in 1 db steps and 1-2 db in 0.1 db steps. Input and output impedances are equal to 75 ohms.

Used initially on the gain and equalization panel—J68903-A.

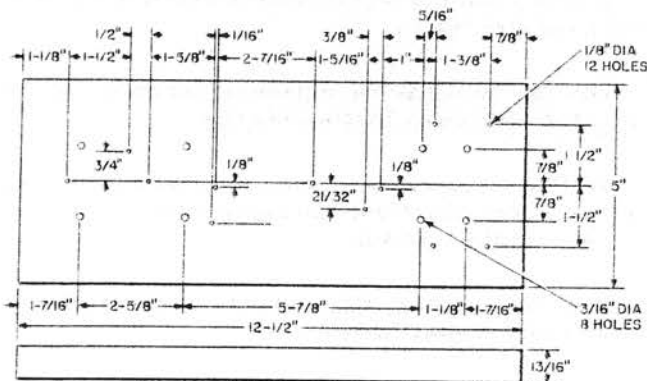
Comcode: 101 292 802





## BACKBOARDS

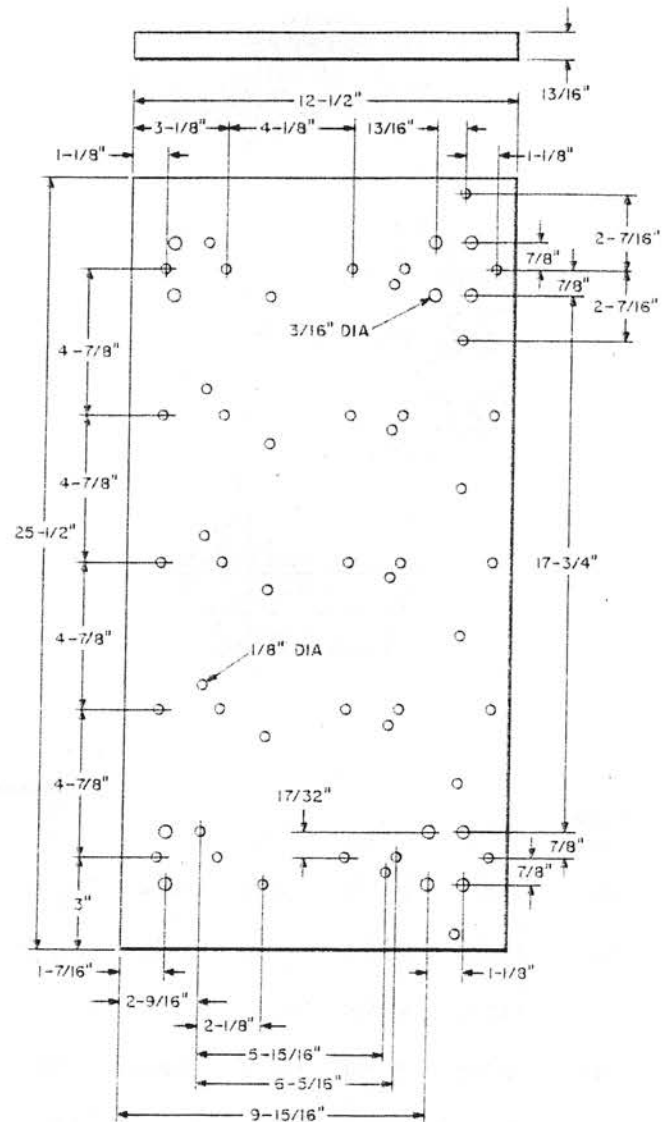
79 Type



Black finished wooden backboard.

For mounting one number 12, 59, or 98 type protector on masonry, corrugated metal, and plastered or insecure wood surfaces.

81 Type

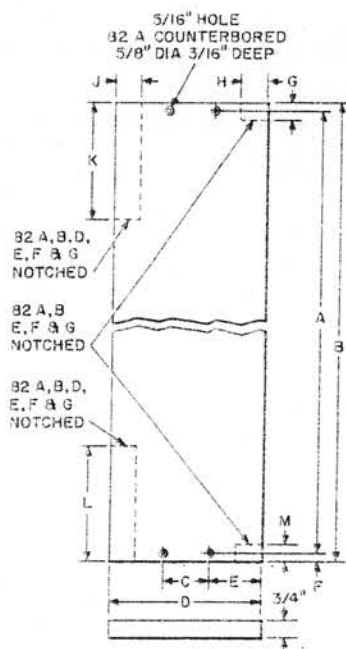


Black finished wooden backboard.

For mounting five number 12, 58, or 98 type protectors on masonry, corrugated metal, and plastered or insecure wood surfaces.

## BACKBOARDS

## 82 Type



Wooden backboards. Mounting hardware furnished.

82A: For mounting miscellaneous apparatus in the H202 Cable Terminal Section.

82B: For mounting miscellaneous apparatus in the H303 and K606 Cable Terminal Sections.

82C: For mounting miscellaneous apparatus and also for use in the K606 Cable Terminal Section to cover the exposed end of wiring rod.

82D: For mounting miscellaneous apparatus in the H102 Cable Terminal Section.

82E: For mounting miscellaneous apparatus in the H102 Cable Terminal Section when ready access terminals are used with plastic insulated conductor cable.

82F: For mounting miscellaneous apparatus in the H202 Cable Terminal Section when ready access terminals are used with plastic insulated conductor cable.

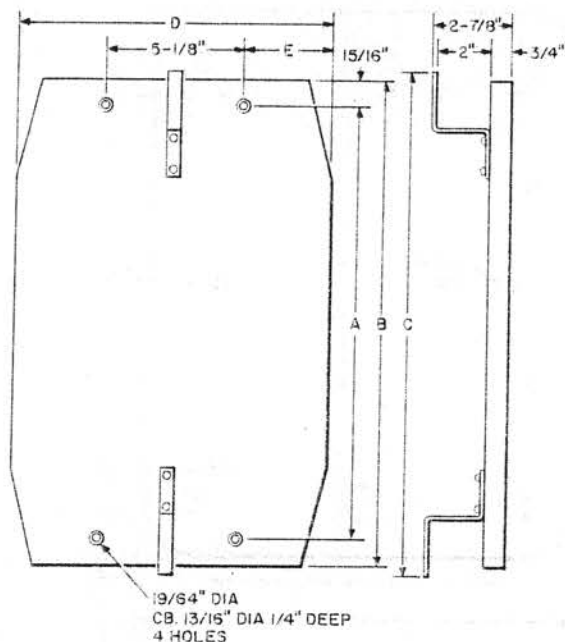
82G: For mounting miscellaneous apparatus in the H303 Cable Terminal Section when ready access terminals are used with plastic insulated conductor cable.

Dimensions (Inches)

Code No.	A	B	C	D	E	F	G	H	J	K	L	M
82A	36-1/4	38-1/2	2-1/2	6-3/4	2-5/16	1-1/8	3/4	1-3/16	1-1/8	5	5	3/4
82B	54-1/8	54-7/8	4	9-3/8	2-11/16	3/8	4-1/4	1	1	4-1/4	4-1/4	4-1/4
82C	54-1/8	55-5/8	10	12	1	3/4	—	—	—	—	—	—
82D	20-5/8	21-3/8	2-1/2	6-3/4	2-5/16	3/8	—	—	1-1/8	5	5	—
82E	20-5/8	24-3/4	9-3/4	14	2-1/8	3-5/8	3	1	1	3	6	6
82F	36-1/4	45	9-3/4	14	2-1/8	6-1/3	4	1	1	4	7-1/2	7-1/2
82G	54-1/8	63	4	9-3/8	2-11/16	5-7/8	4-1/4	15/16	15/16	4-1/4	7	7

## BACKBOARDS

83 and 84 Type



83A: Wooden backboard provided with distributing ring at each end. For mounting binding post chambers or connecting blocks in L-type cable terminal sections. Part of LA16 Cable Terminal Section.

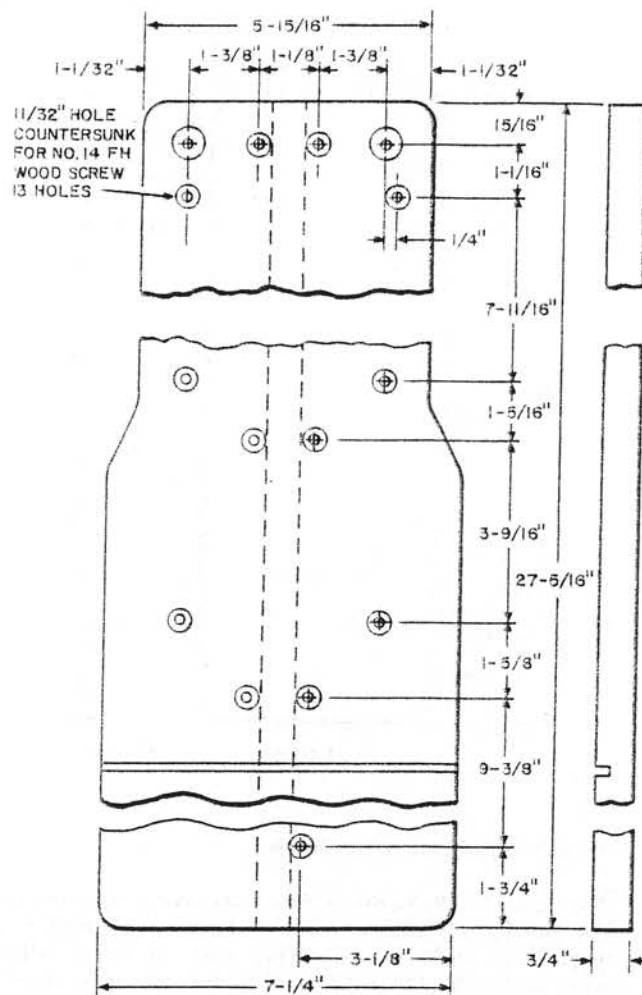
83B: Same as 83A except mounts in LA26 Cable Terminal Section.

83C: Same as 83A except mounts in LA51 Cable Terminal Section.

84A: Wooden backboard provided with distributing ring at each end. For mounting binding post chambers or connecting blocks in LA-type cable terminal sections. Part of LA26 Cable Terminal Section.

84B: Same as 84A except is part of LA51 Cable Terminal Section.

144D



Black finished wooden backboard.

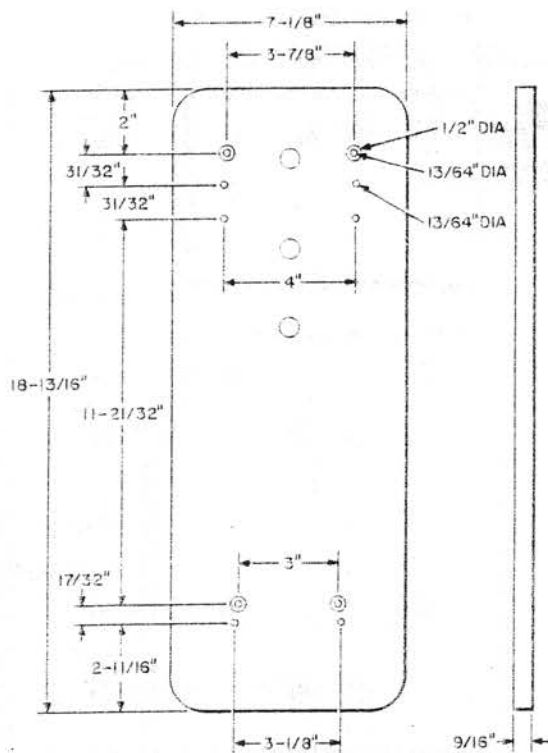
For mounting a number 684, 685, or 687 type subscriber set.

Code No.	Dimensions (Inches)				
	A	B	C	D	E
83A	16	17-7/8	18-3/8	11-1/4	3-1/16
83B	23-1/2	25-3/8	25-7/8	11-1/4	3-1/16
83C	43	44-7/8	45-3/8	11-1/4	3-1/16
84A	23-1/2	25-3/8	25-7/8	14-1/4	4-9/16
84B	43	44-7/8	45-3/8	14-1/4	4-9/16



## BACKBOARDS

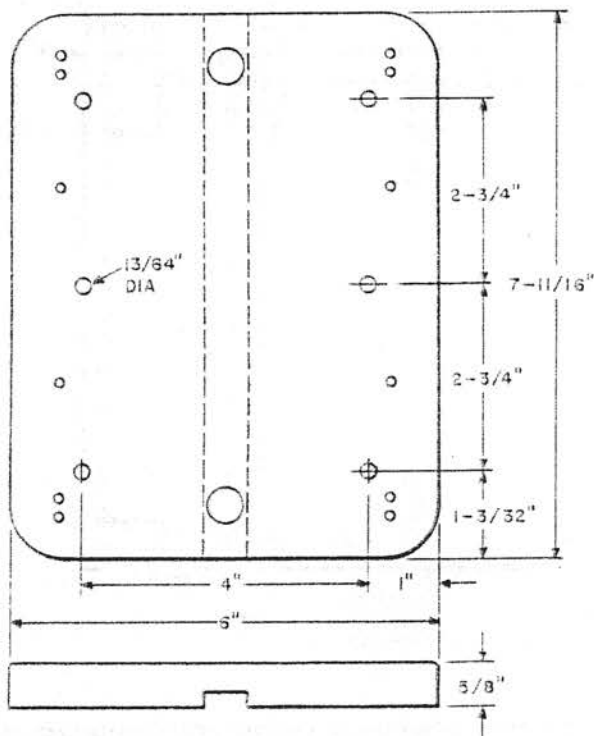
148A



Black finished wooden backboard.

For use with metal subscriber sets when mounted on metal lathed or sheathed walls or other conducting materials. Also used for mounting sets on brick walls. Drilled for number 634, 653, and 684 type subscriber sets.

154A

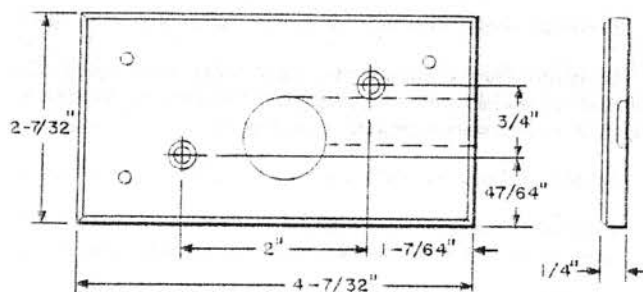


Wooden backboard, light olive gray finish.

Used in mounting number 684 type subscriber sets on brick walls and metal partitions.

## BACKBOARDS

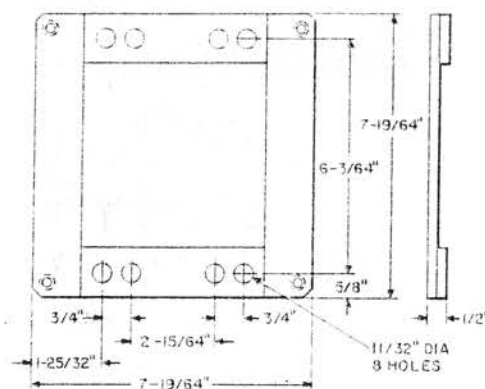
163A



Phenol fiber backboard, light olive gray finish. Screws for mounting backboard to wall and indicator to backboard are furnished.

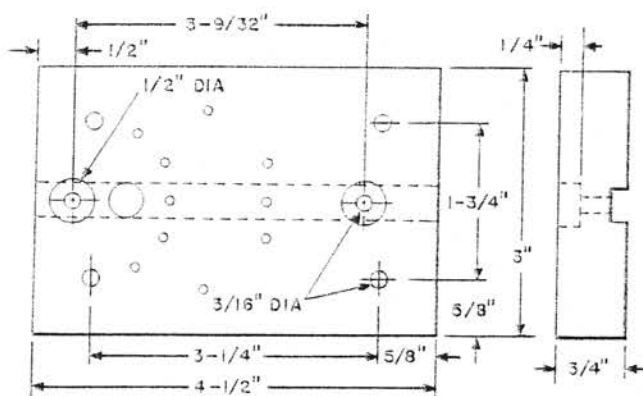
Used to mount 14A or 20A type indicators.

166A



A galvanized welded steel frame. Used for mounting a number 320 type telephone set. Bolts are furnished to mount the telephone set to the backboard.

164A



Black finished wooden backboard.

Intended to mount a G-type hand set mounting on a standard outlet box, wall, or other surface or to mount a directory hanger on a wall or other surface.

168 Type

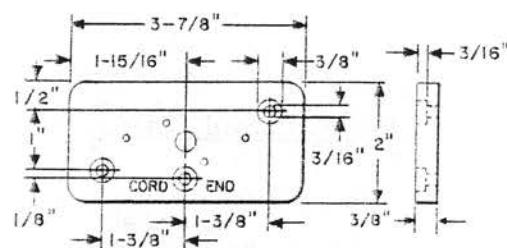


Fig. 1

## BACKBOARDS

## 168 Type (Continued)

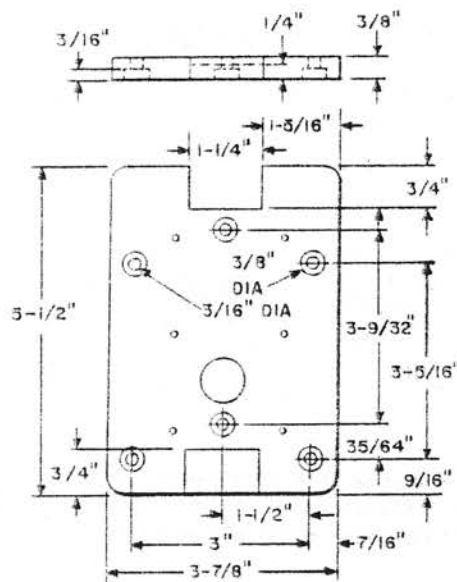


Fig. 2

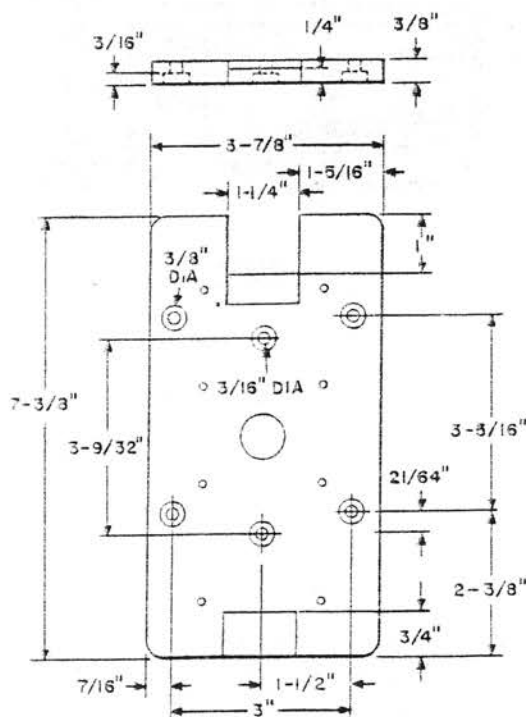


Fig. 3

168D-49: Plastic backboard, light olive gray color. Intended to mount a 42A or 44A Connecting Block on uneven or masonry surfaces. See Fig. 1.

168D-50: Same as 168D-49 except color, which is ivory.

168E-49: Plastic backboard, light olive gray color. Intended to mount two or three 44A Connecting Blocks on uneven or masonry surfaces. See Fig. 2.

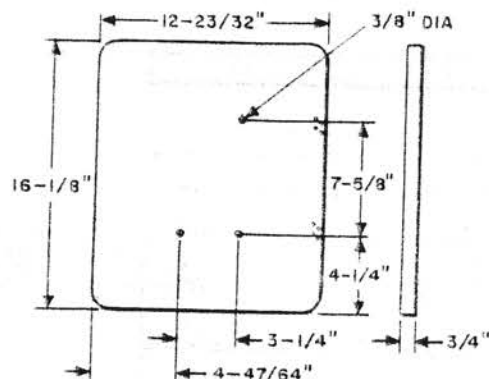
168E-50: Same as 168E-49 except color, which is ivory.

168F-49: Plastic backboard, light olive gray color. Intended to mount four 44A Connecting Blocks. See Fig. 3.

168F-50: Same as 168F-49 except color, which is ivory.

## BACKBOARDS

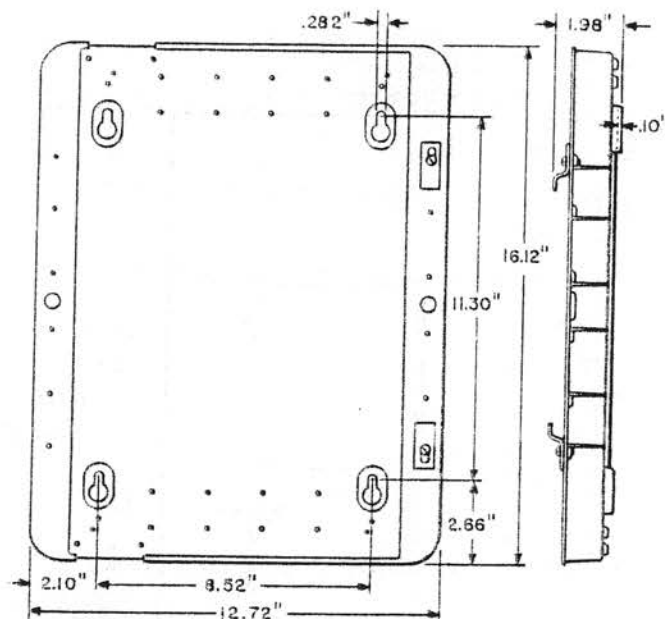
173A



Wooden composition backboard, light olive gray finish.

For mounting two 15A Apparatus Mountings used in 1A1 Key Telephone System. Two backboards butted together will fit under a 117A Cover.

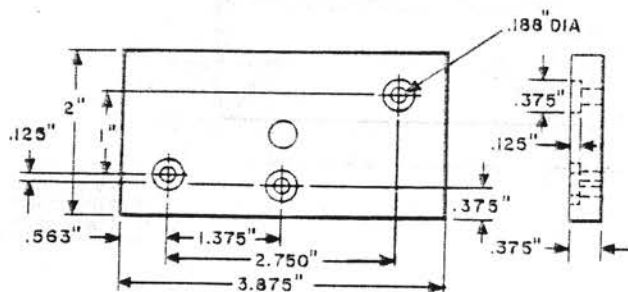
177A



Die cast metal backboard, provided with three cable rings, four blocks, and screws for mounting cable rings and blocks.

Arranged for mounting two 66B1-25 Connecting Blocks, and a 31B Apparatus Mounting in number 300, 301, or 302 type key service units by means of a P-15C309 Bracket and a P-15C308 Hinged Bracket which are not furnished and should be ordered separately.

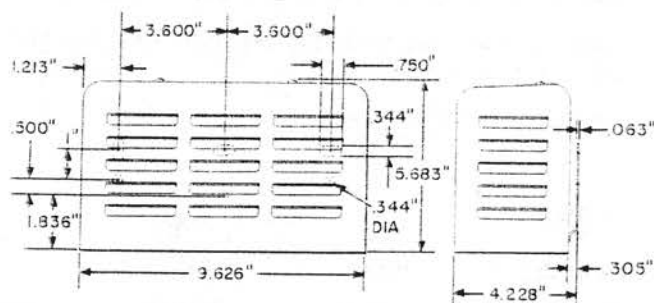
176A-49



Wooden backboard, light olive gray finish.

For mounting small miscellaneous apparatus such as jacks, buzzers, keys, and indicators on uneven or masonry surfaces.

181AW-49



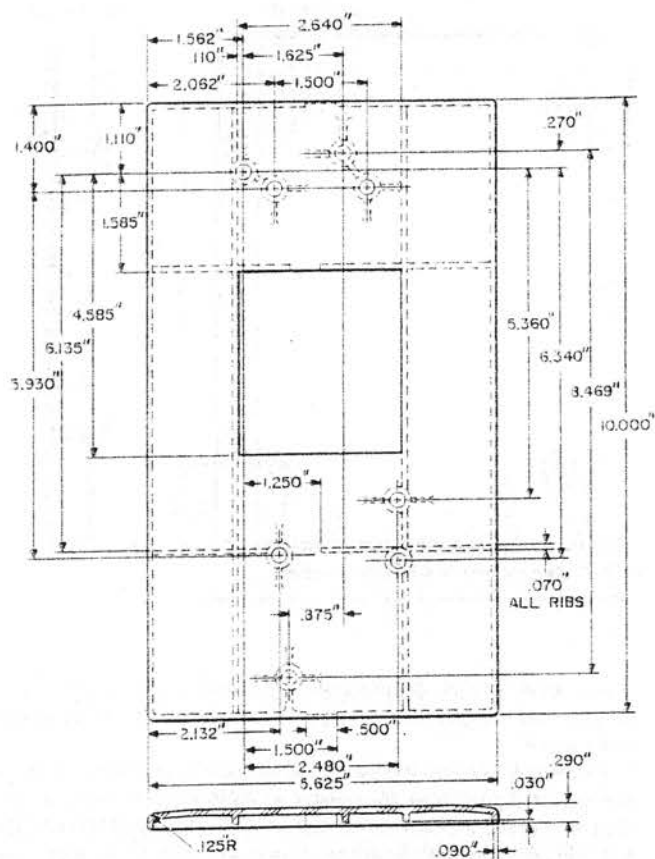
Consists of a metal bracket arranged to mount an L1AW-49 Ringer, and equipped with a removable louvered metal cover having a light olive gray finish. Provided with screws for mounting a ringer.

Intended for mounting an L1AW-49 Ringer on a pole or wall when protection against weather or dust is necessary.



## BACKBOARDS

182BW

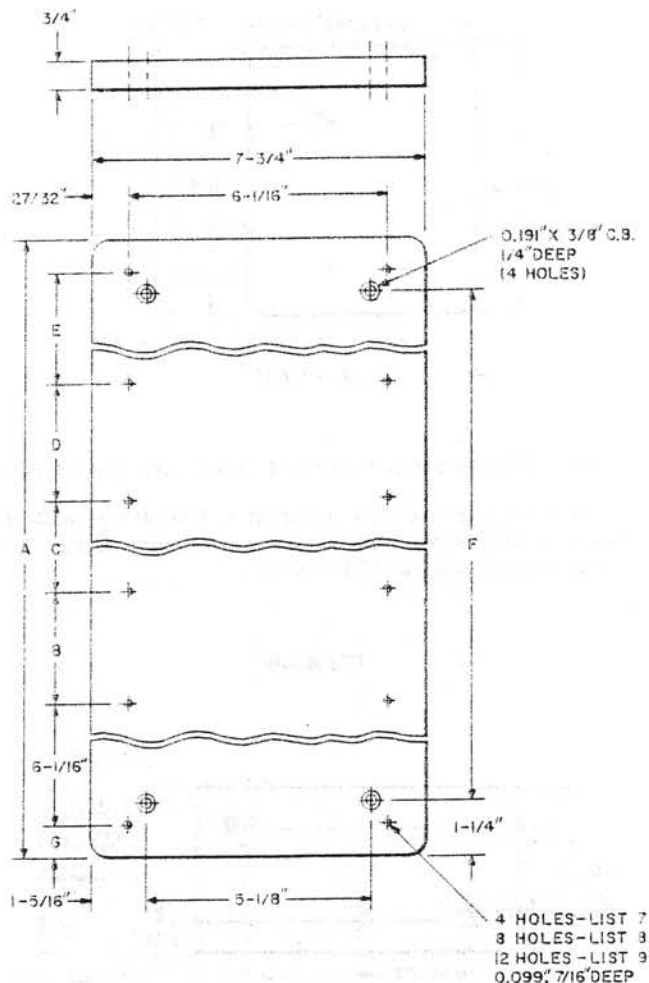


Plastic backboard, available in the following colors: -3 (black), -50 (ivory), -51 (green), -53 (red), -56 (yellow), -58 (white), -60 (light beige), and -61 (light gray).

May be used when mounting 500 type wall sets if a backboard is necessary.

Replaces 172CW Backboard.

KS-5796 Type



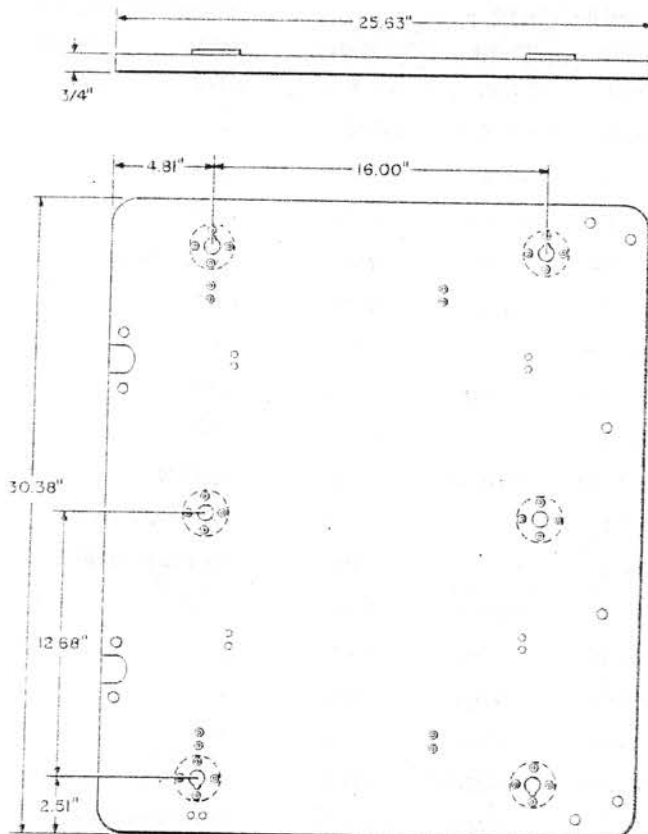
Particle board, light olive gray finish. List 7, 8, and 9 mounts 1, 2, and 3 number 105 type apparatus boxes, respectively.

Code No.	Dimension (Inches)						
	A	B	C	D	E	F	G
KS-5796L7	7-1/4	—	—	—	—	4-3/4	19/32
KS-5796L8	16-13/32	2-23/32	6-1/16	—	—	13-29/32	25/32
KS-5796L9	25-3/16	2-23/32	6-1/16	2-23/32	6-1/16	22-11/16	25/32

## BACKBOARDS

## ED69368-50-Group 3

Particle board, light olive gray finish.

Used for wall mounting a 26A Apparatus Mounting.  
Used in conjunction with the ED69368-50-Group 2 Cover.

BACKBOARD DIMENSION TABLE

Code No.	Comcode	Description	Dimensions (Inches)			Distance Between Mounting Centers	
			Length	Width	Thickness	Width	Height
79	100 006 006	Wood, black	12-1/2	5	13/16	1-1/2	9-3/8
81	100 006 014	Wood, black	25-1/2	12-1/2	13/16	Drilled by user to suit need	
82A	100 006 022	Wood	38-1/2	6-3/4	3/4		
82B	100 006 030	Wood	54-7/8	9-3/8	3/4	4	54-1/8
82C	100 006 048	Wood	55-5/8	12	3/4	10	54-1/8
82D	100 006 055	Wood	21-3/8	6-3/4	3/4	2-1/2	20-5/8
82E	100 006 063	Wood	24-3/4	14	3/4	9-3/4	20-5/8
82F	100 006 071	Wood	45	14	3/4	9-3/4	36-1/4
82G	100 006 089	Wood	63	9-3/8	3/4	4	54-1/8
83A	100 006 097	Wood	18-3/8	11-1/4	2-7/8	5-1/8	16

## BACKBOARDS

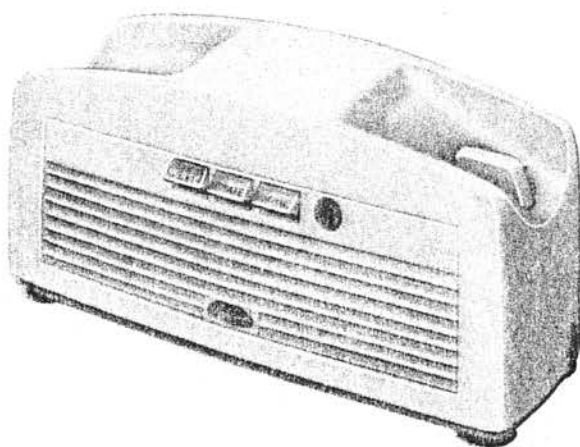
BACKBOARD DIMENSION TABLE (Continued)

Code No.	Comcode	Description	Dimensions (Inches)			Distance Between Mounting Centers	
			Length	Width	Thickness	Width	Height
83B	100 006 105	Wood	25-7/8	11-1/4	2-7/8	5-1/8	23-1/2
83C	100 006 113	Wood	45-3/8	11-1/4	2-7/8	5-1/8	43
84A	100 006 121	Wood	25-7/8	14-1/4	2-7/8	5-1/8	23-1/2
84B	100 006 139	Wood	45-3/8	14-1/4	2-7/8	5-1/8	43
144D	100 006 154	Wood, black	27-5/16	7-1/4	3/4	see illustration	
148A	100 006 170	Wood, black	18-13/16	7-1/8	9/16	3-7/8	11-21/32
154A	100 006 196	Wood, light olive gray	7-11/16	6	5/8	4	2-3/4
163A	100 006 212	Phenol Fiber	4-7/32	2-7/32	1/4	3/4	2
164A	100 006 220	Wood, black	4-1/2	3	3/4	1-3/4	3-1/4
166A	100 006 246	Steel	7-19/64	7-19/64	1/2	2-15/64	6-3/64
168D-49	100 006 261	Plastic, light olive gray	3-7/8	2	3/8	see illustration	
168D-50	100 006 279	Plastic, ivory	3-7/8	2	3/8	see illustration	
168E-49	100 006 287	Plastic, light olive gray	5-1/2	3-7/8	3/8	3	3-5/16
168E-50	100 343 424	Plastic, ivory	5-1/2	3-7/8	3/8	3	3-5/16
168F-49	100 006 303	Plastic, light olive gray	7-3/8	3-7/8	3/8	3	3-5/16
168F-50	100 006 311	Plastic, ivory	7-3/8	3-7/8	3/8	3	3-1/16
173A	100 006 469	Wood, light olive gray	16-1/8	12-23/32	3/4	3-1/4	7-5/8
176A-49	100 006 493	Wood, light olive gray	2	3-7/8	3/8	see illustration	
177A	100 006 501	Die cast metal	16.12	12.72	1.08	3-1/2	11-1/3
181A W-49	100 006 543	Metal	9.625	5.625	4.223	see illustration	
182BW-3	101 139 798	Plastic, black	10	5.625	.290	see illustration	
182BW-50	101 319 788	Plastic, ivory	10	5.625	.290	see illustration	
182BW-51	101 139 806	Plastic, green	10	5.625	.290	see illustration	
182BW-53	101 319 796	Plastic, red	10	5.625	.290	see illustration	
182BW-56	101 139 814	Plastic, yellow	10	5.625	.290	see illustration	
182BW-58	101 139 822	Plastic, white	10	5.625	.290	see illustration	
182BW-60	101 139 830	Plastic, light beige	10	5.625	.290	see illustration	
182BW-61	101 139 848	Plastic, light gray	10	5.625	.290	see illustration	
KS5796L7	995 940 616	Particle board	7-1/4	7-3/4	3/4	5-1/8	4-3/4
KS5796L3	995 940 624	Particle board	16-13/32	7-3/4	3/4	5-1/8	13-29/32
KS5796L9	995 940 632	Particle board	25-3/16	7-3/4	3/4	5-1/8	22-11/16
ED69368-50 Group 3	600 003 321	Particle board	30.28	25.53	3/4	see illustration	

## BASES

## Telephone

## AEW1 and AEW2



Code	Comcode	Color
AEW1-58	101 248 094	White
AEW1-60	101 248 102	Light beige
AEW1-61	101 248 110	Light gray
AEW2-58	101 248 128	White
AEW2-60	101 248 136	Light beige
AEW2-61	101 248 144	Light gray

Each consists of a microphone, preamplifier, and speaker for hands-free communication with the nurse console. The base also includes keys for nurse call (illuminated), privacy operation, normal operation, and call canceling.

One M2ER nurse call cord, in corresponding color, and one 53A lamp are furnished with each telephone base. A D26D cord is terminated in a KS-16689 L5 plug assembly. A D-180032 kit of parts is available to provide an optional data feature.

Approximate overall dimensions are 8.625 inches long by 3.700 inches wide by 3.900 inches high.

When connected to a 220AW Type Hand Telephone Set, it constitutes a TRIMLINE hospital type telephone set.

The AEW2 Telephone Base is the same as the AEW1 Telephone Base except a message-waiting lamp is provided.

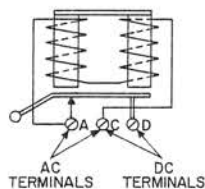
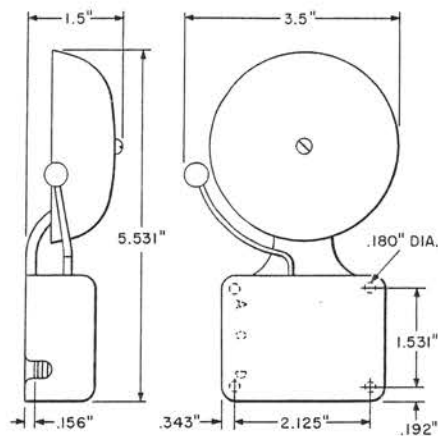
Intended for use in the 3A Communication System.





## BELLS

## 7 Type



Code No.	Comcode	Resistance Ohms	DC		60 Cycles AC	
			Min	Max	Min	Max
7AW	100 007 418	270.0	14	40	25	50
7CW	100 007 426	2.6	2	5	4	9
7DW	100 007 434	15.8	3	10	6	18
7EW	100 007 442	105.0	10	20	18	30
7FW	100 007 459	682.0	24	60	35	60

Equipped with heavy silver contacts and reed mounted armature with a flat retractile spring and a stop. Will normally operate without readjustment on the dc voltage ranges listed below. Readjustment for ac operation is limited to bending the retractile spring stop. The minimum effective resistance to dc or impedance to 60 Hz ac of these bells should be assumed to be approximately three times the nominal dc resistance.

Intended for either dc or 50-60 Hz ac operation. It is recommended that connection be made to terminals C and D for either ac or dc current.

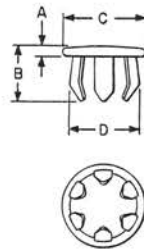
Light olive-gray finish.



## BLANKS

## Apparatus

## 39B



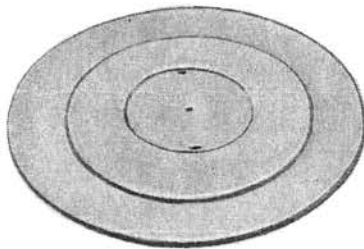
A metal apparatus blank having a black enameled finish on the head. Used in unequipped positions of number 215 or similar type jacks.

Comcode: 100 008 200

## DIMENSIONS (INCHES)

A	B	C	D
.078	.391	.531	.484

## 95C



A plastic plate having overall dimensions of 4.500 inches in diameter with a depth of 0.509 inch.

Used to cover the dial openings in the housings of number 500, 554 and similar type telephone sets when used for manual service.

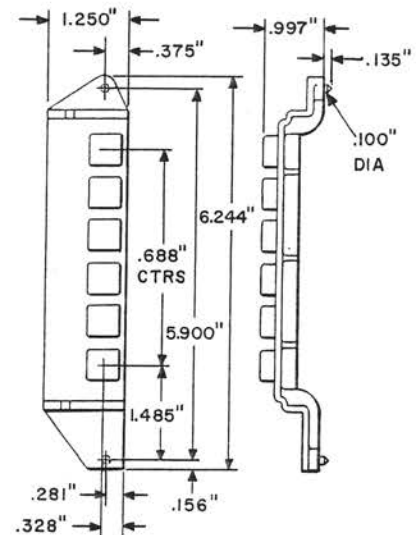
The dial brackets of the telephone set protrude into embossed slots on the back of the blank, and the telephone housing retains it in its proper position.

A card holder is furnished (shipped loose) for all colors. The blank is available in the following colors.

Code No.	Comcode	Color
95C-3	101 052 033	Black
95C-50	101 052 041	Ivory
95C-51	101 052 058	Green
95C-53	101 052 066	Red
95C-56	101 052 082	Yellow
95C-58	101 052 090	White
95C-60	101 052 116	Light beige
95C-61	101 052 124	Light gray

Replaces the 95B Apparatus Blanks.

## 105B



A molded opaque white plastic apparatus blank. Mounted by means of two extruded dowels.

Used to fill space reserved for a 598 or 599 type keys on 630 and 631 type telephone sets.

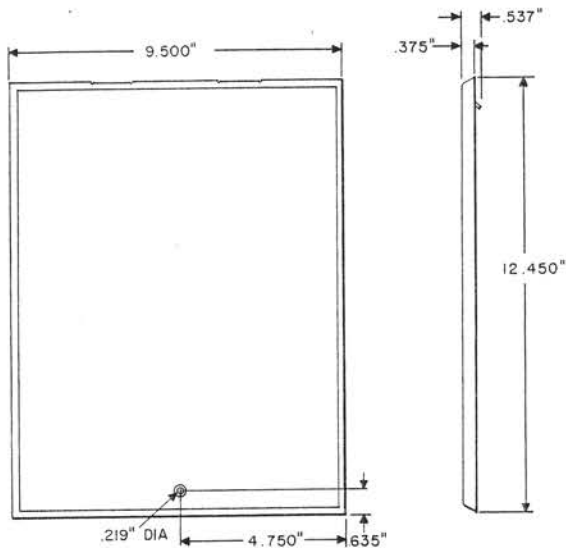
Comcode: 100 008 911



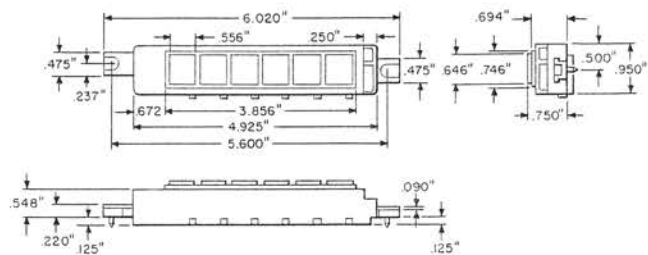
## BLANKS

## Apparatus

107BW



111A



A white molded compound with a plastic appearance which is intended for use in the 3640AW and 3641AW Type Telephone Sets to fill the space reserved for additional keys. The width of the apparatus blank is the same as one of the keys.

Comcode: 100 009 026

A metal apparatus blank intended to cover the space reserved for a number 750 or 1750 type telephone set in a wall-mounted number 113 type or a 114AW Apparatus Box.

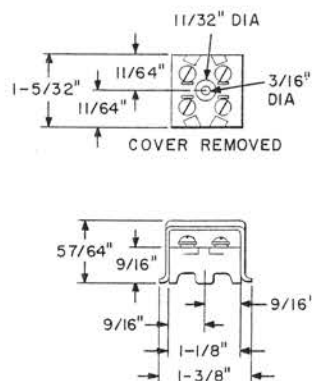
Provided with mounting brackets and screws.

Comcode: 100 008 960

## BLOCKS

## Connecting

## 11 Type



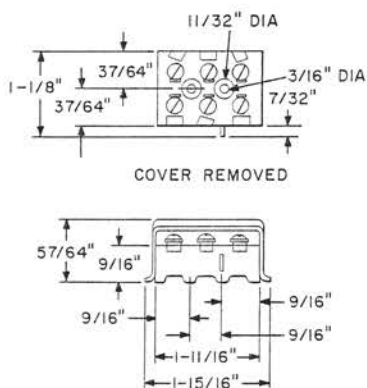
Equipped with screw terminals molded in a black composition base. Opposite terminals are electrically connected.

11B & C Type: Furnished with a metal cover. Cover is not furnished with 11A.

11C Type: Have an insulating strip on the underside of the cover to protect the terminals from short circuits.

Code No.	Comcode	Color of Cover
11A	100 009 067	—
11B-49	100 009 075	Light olive gray
11B-50	100 009 083	Ivory
11C-49	100 009 091	Light olive gray
11C-50	100 009 109	Ivory

## 12 Type



Equipped with screw terminals molded in a black composition base. Opposite terminals are electrically connected. Provided with a metal insert having a hole which serves as a means of fastening cords equipped with metal stays.

12F Type are furnished with a metal cover. Cover is not furnished with 12E.

Code No.	Comcode	Color of Cover
12E	100 009 117	—
12F-49	100 009 125	Light olive gray
12F-50	100 009 133	Ivory

## 18 Type

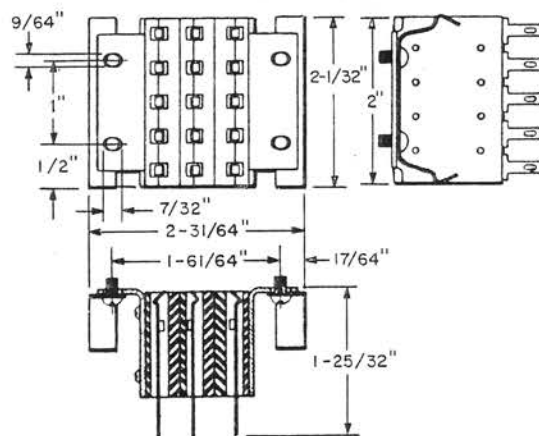


Fig. 1

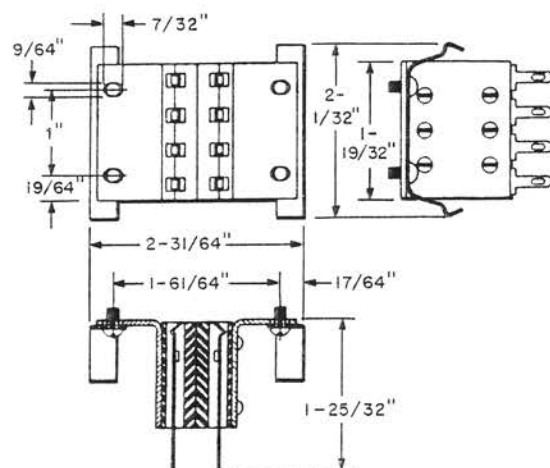


Fig. 2

# BLOCKS

## Connecting

18 Type (Continued)

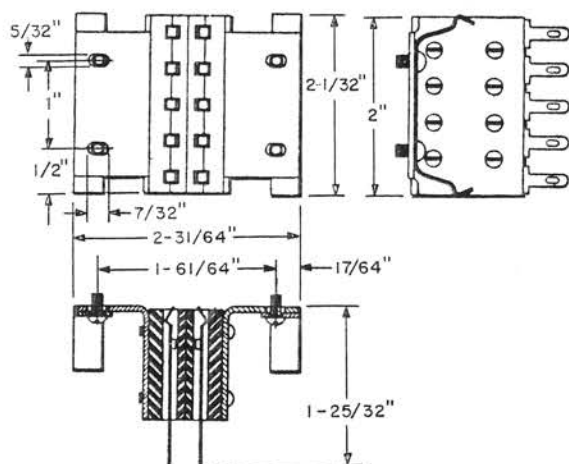


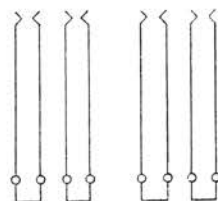
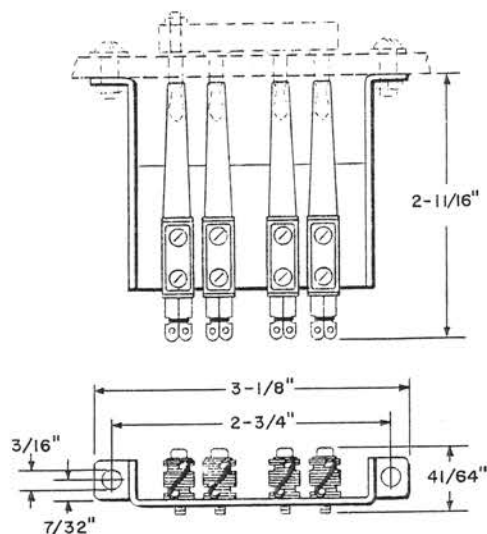
Fig. 3

Connecting blocks for use with relays in table. Arranged to engage with guide posts of the associated relay. Mounting screws furnished.

Code No.	Comcode	Fig. No.	Number of Terminals	For Use with Relay No.
18A	100 009 158	1	15	209A, 209FA
18B	100 009 166	2	8	215A, 209FB
18F	100 009 174	3	10	228A, 228B

Used to mount on mounting plates of the number 823 or similar type.

26B



A connecting block adapted to mount on mounting plate 7/32-inch thick.

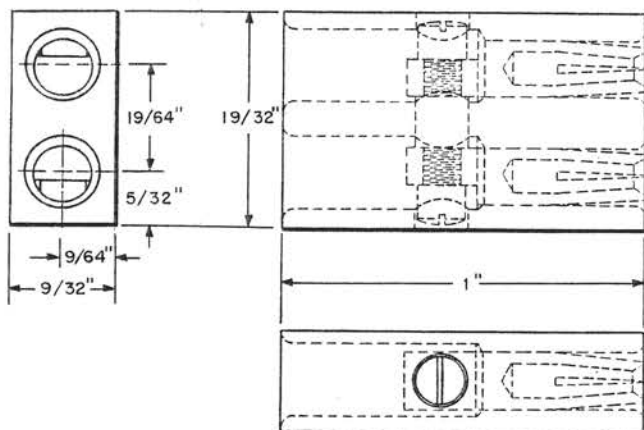
For use with a number 218 type relay. Arranged to engage with terminals of the associated relay and hold it in position by spring tension.

Comcode: 100 009 224

## BLOCKS

## Connecting

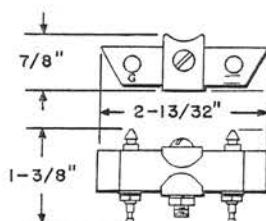
29A



A block of black insulating material provided with two metal sleeves arranged at one end to be attached to an L4T Cord and at the other end to connect to a number 29 Cord Tip by means of plug connections.

Used on L4T Cord to permit chief operator to plug in with supervisor by using a receiver and R2DM Cord.  
Comcode: 100 009 265

33A and B



A block of insulating material provided with terminals for making solder connections at one end and temporary test connections at the other end. Adaptable for bases of either 5/8-inch or 3/4-inch thickness.

33A is engraved 24 volts.

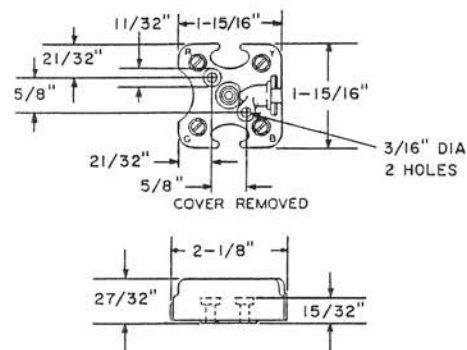
Comcode: 100 997 345

33B is engraved 48 volts.

Comcode: 100 009 281

For use in testing distributing frames in the rear of switchboards.

42AW Type

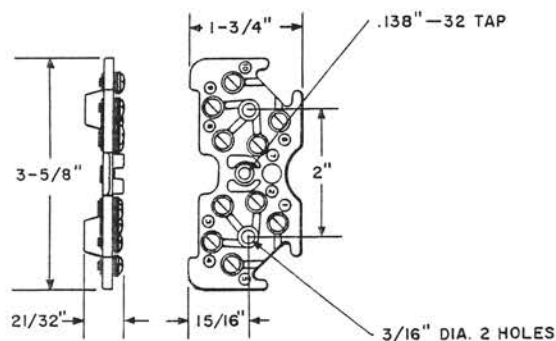


A block of insulating material equipped with four screw terminals, associated screws and washers, and a removable plastic cover.

Code No.	Comcode	Color of Cover
42AW-49	101 846 657	Light Olive Gray
42AW-50	101 846 640	Ivory

Used as a bridging terminal.

44A



A block of insulating material equipped with ten screw terminals and arranged for number 101 type covers.

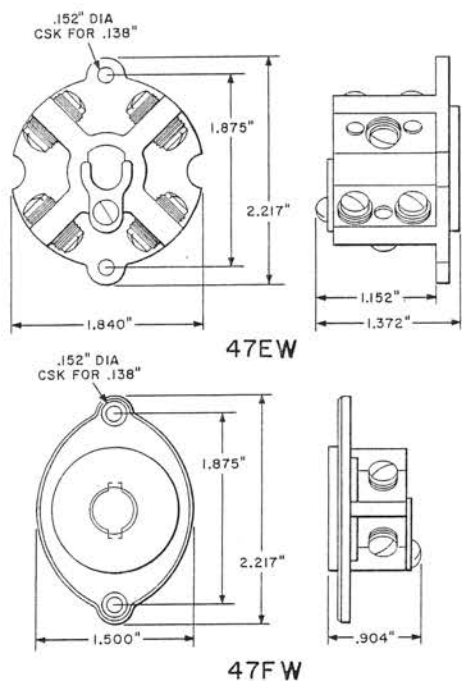
For use with telephone sets in installations needing more than four terminals.

Comcode: 100 009 349



# BLOCKS Connecting

47EW and 47FW



57A Type

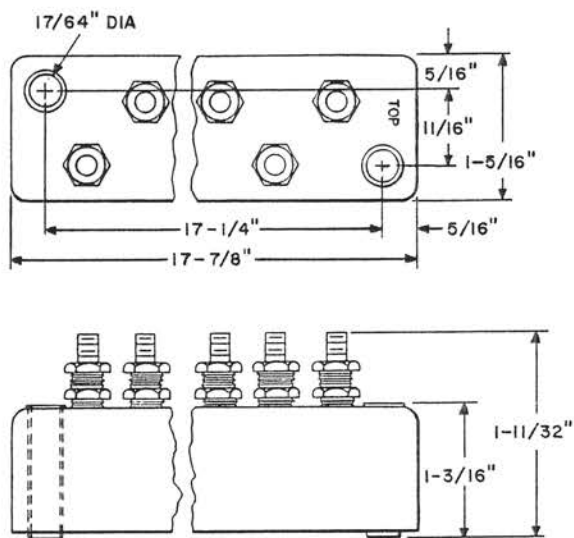


Fig. 1

Each consists of a block of insulating material equipped with screw terminals. Arranged for a mounting cord having either a winged type stay band or an S-hook. Mounting screws are furnished.

Can be used with a 43B Bracket in standard conduit outlet boxes.

Code	Comcode	No. of Terminals	Color
47EW-49	101 336 105	12	Light olive gray
47EW-50	101 336 113	12	Ivory
47EW-54	101 336 121	12	Brown
47FW-49	101 336 139	4	Light olive gray
47FW-50	101 336 147	4	Ivory
47FW-54	101 336 154	4	Brown

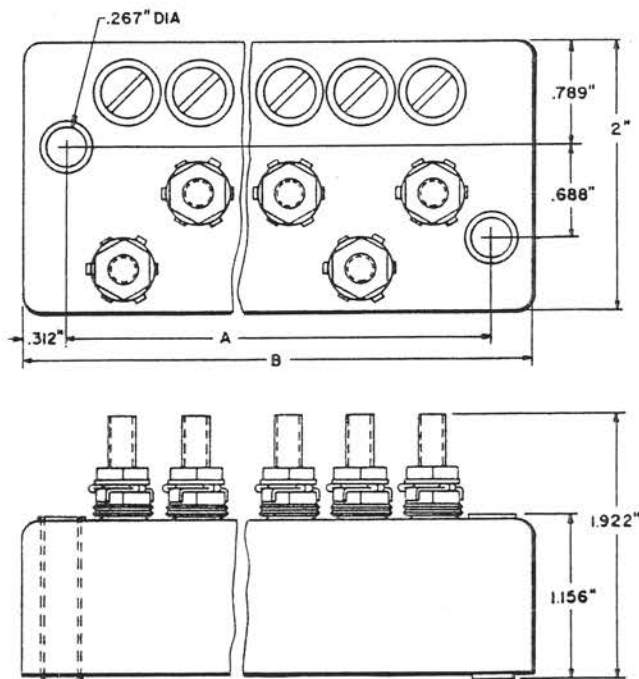


Fig. 2

## BLOCKS

## Connecting

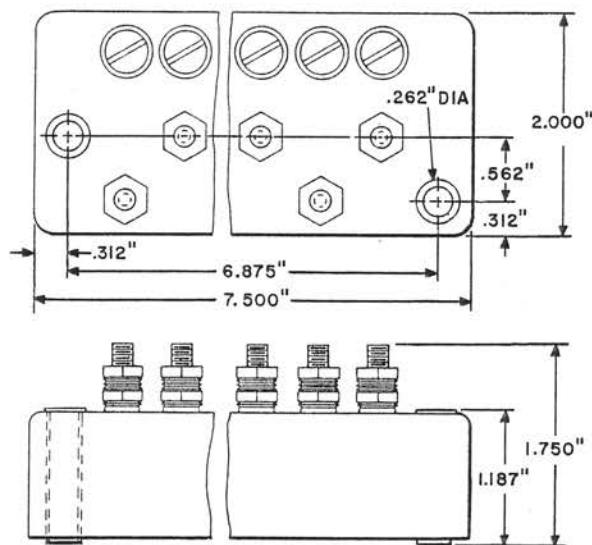


Fig. 3

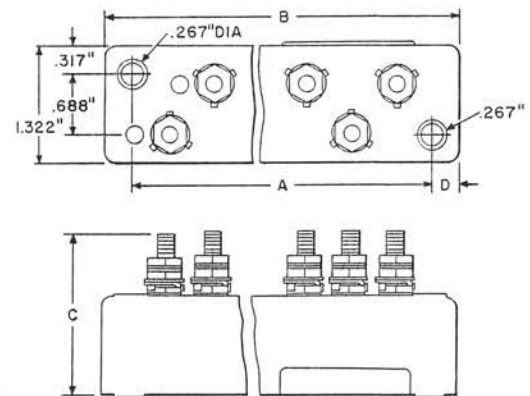


Fig. 4

Consists of a cast resin connecting block containing binding post and protector units as indicated in the table.

Code No.	Comcode	Fig. No.	Dimensions (Inches)				No. of Pairs of Wires Arranged For	Contains Binding Post	Contains Protector Units	
			A	B	C	D			Qty	Type
57A	100 009 547	1	—	—	—	—	16	32	—	—
57A2-10	100 009 554	4	10.922	11.580	1.92	.30	10	20	—	—
57A2-16	100 009 562	4	17.250	18.00	1.46	.38	16	32	—	—
57A2A-6	100 009 570	2	—	—	—	—	6	12	12	2A1A
57A2A-10	100 998 889	3	10.922	11.580	1.92	.30	10	20	20	2A1A
57A2A-16	100 998 897	3	17.250	18.00	1.46	.38	16	32	32	2A1A
57A2B-6	100 009 588	2	—	—	—	—	6	12	12	2A1B
57A2B-10	100 009 596	3	10.875	11.500	—	—	10	20	20	2A1B
57A2B-16	100 009 604	3	17.250	17.875	—	—	16	32	32	2A1B

57A: Arranged for mounting in a KS-16191 Cable Terminal Box for pole mounting. Intended for use with buried polyethylene insulated conductor cable.

57A2-10: Intended for use in the 5A1 Closure for quick connections to PIC cable.

57A2-16: Intended for use in the 5B1 Closure for quick connections to PIC cable.

57A2A-6 and 57A2B-6: Intended for use in the 116C and D Protectors, respectively.

57A2A-6: Intended to provide 500 volt protection for exposed distribution wires.

57A2A-10 and 57A2A-16: Intended to provide 500 volt protection for wires in 5A1 and 5B1 Closures, respectively.

57A2B-6: Intended to provide 800 volt protection for exposed distribution wires.

57A2B-10 and 57A2B-16: Intended to provide 800 volt protection for wires in the 5A1 and 5B1 Closures, respectively.

BLOCKS  
Connecting  
57B1A Type

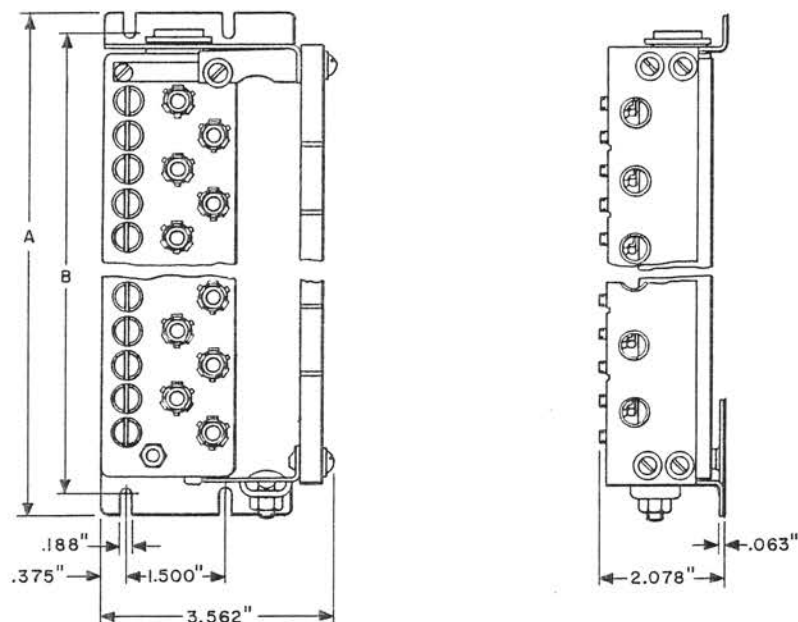


Fig. 1

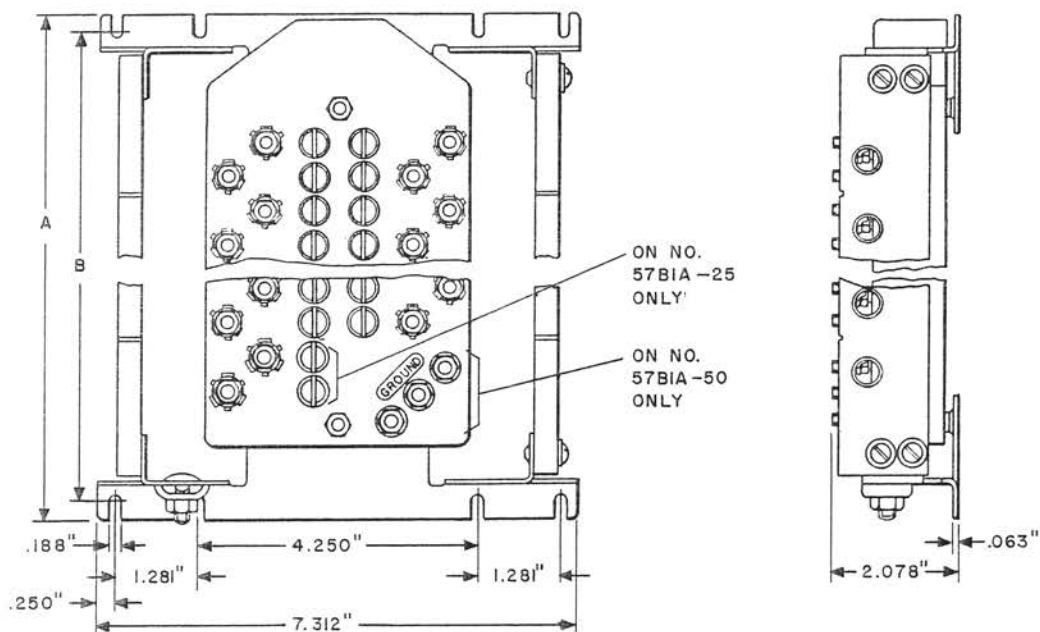


Fig. 2

## BLOCKS

## Connecting

Each consists of a cast resin block containing binding posts, protector units, nuts, flat washers, and insulation crushing washers, assembled to metal mounting brackets. The protector units are grounded to the mounting brackets. Blocks are provided with fanning strips and a clamp for

terminating a number 6 ground wire. Additional nuts, flat washers, and insulating crushing washers are furnished for making a second connection on each binding post when required.

Code No.	Comcode	Fig. No.	No. of Pairs of Conductors Arranged for	Contains 2A1A Protector Units	Dimensions (Inches)	
					A	B
57B1A-10	100 009 612	1	10	20	12.750	12.312
57B1A-16	100 009 620	1	16	32	19.125	18.562
57B1A-25	100 009 638	2	25	50	17.250	16.812
57B1A-50	100 009 646	2	50	100	31.062	30.625

57B1A-10, -16, and -25: Intended to be installed in G-type cable terminal boxes and 1A1 Cable Terminal Sections.

57B1A-50: Intended to be installed in the H202 Cable Terminal Sections.

Intended for use as fuseless protected connecting blocks in building terminals where the ready access principle is used to terminate plastic insulated conductor cable without removal of insulation.





## BLOCKS

## Connecting

## 59A and B Type

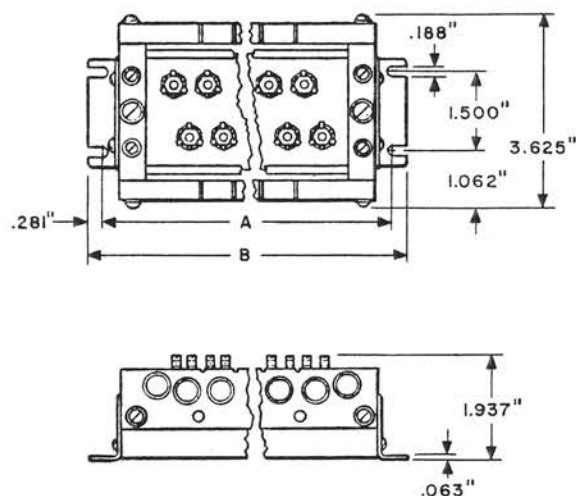


Fig. 1

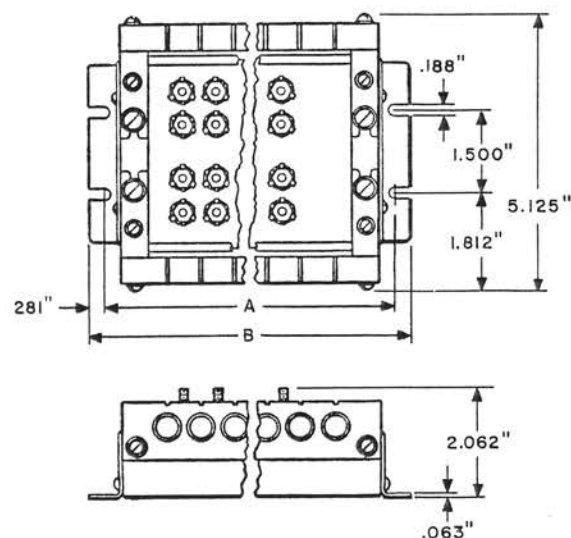


Fig. 2

Consists of a light olive gray, enamel finished metal chamber having an insulating panel containing binding posts equipped with insulation crushing washers. Equipped with fanning strips on both sides of chamber.

Mounting centers permit installation in G-type cable terminal boxes and 1A1 Cable Terminal Sections, or on backboards in H-type cable terminal sections. 59A2 and 59B2 same as 59A1 except that the stub and compression nipple are omitted.

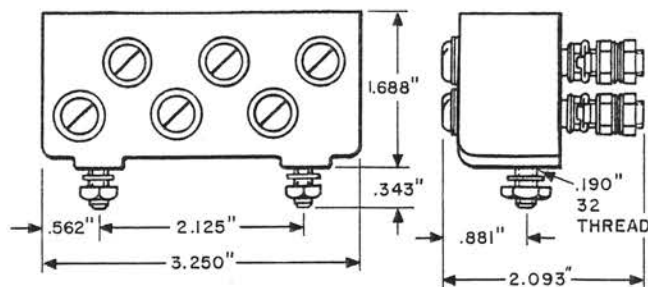
For use in building terminals where the ready access principle is used to terminate polyethylene insulated cable.

Code No.	Comcode	Fig. No.	No. of Pairs of Conductors Arranged for	Dimensions (Inches)	
				A	B
59A1-11	100 009 661	1	11	9.125	9.688
59A1-16	100 009 679	1	16	12.250	12.812
59A1-25	100 009 687	1	25	18.500	19.062
59A1-50	100 009 695	2	50	18.500	19.062
59A2-11	100 009 703	1	11	9.125	9.688
59A2-16	100 009 711	1	16	12.250	12.812
59A2-25	100 009 729	1	25	18.500	19.062
59A2-50	100 009 737	2	50	18.500	19.062
59B2-75	100 009 745	2	75	28.000	28.812
59B2-100	100 009 752	2	100	36.125	36.937
59B2-300	100 009 760	2	300	53.938	54.750

## BLOCKS

## Connecting

60A1A-3 and 60A1B-3



Each consists of a cast resin block containing three pairs of binding posts. Each binding post is equipped with insulation crushing washers to permit making cable terminations without removal of insulation.

**60A1A-3:** Contains six 2A1A Protector Units and provides 500 volt protection for use in central offices.

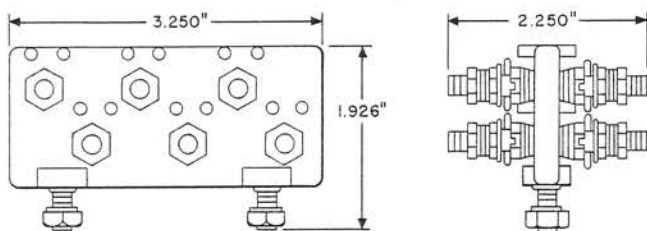
Comcode: 100 009 786

**60A1B-3:** Contains six 2A1B Protector Units and provides 800 volt protection for use with buried cable terminals.

Used to provide facilities for connecting up to three cable pairs and for terminating drop or service wires.

Comcode: 100 009 794

60A2-6



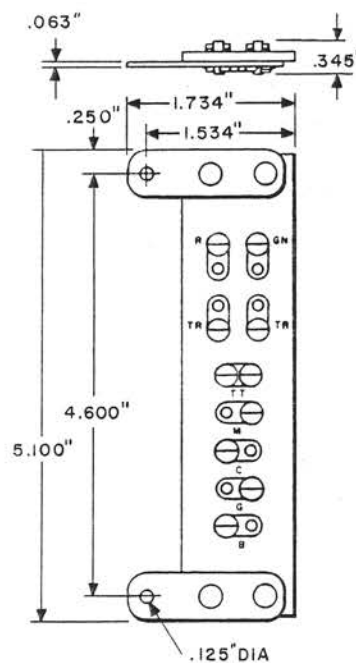
Consists of an injection molded block equipped with six pairs of binding posts mounted back to back with three pairs on each surface of the block. Each binding post is provided with nuts, flat washers, and insulation crushing washers to permit making cable terminations without removing insulation.

Used initially in B buried cable terminals to terminate buried PIC cable.

Replaces the 60A1-6 Connecting Block.

Comcode: 100 999 309

63A



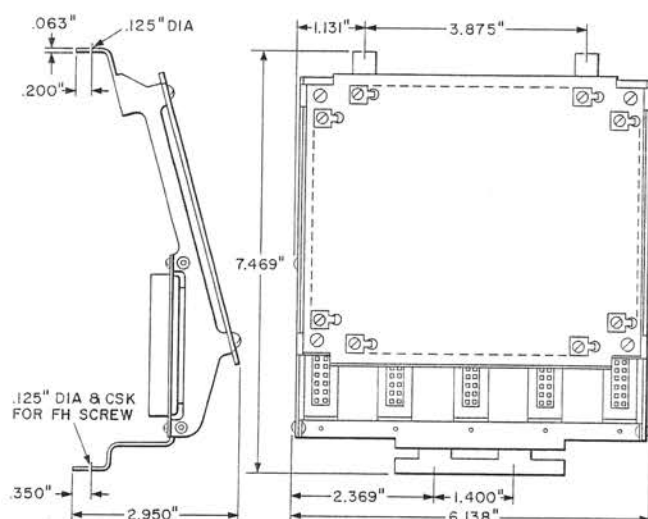
Consists of a strip of insulating material equipped with nine terminals and two mounting brackets.

Used with 1A1 and 6A Key Telephone Systems.

Comcode: 100 009 810

## BLOCKS

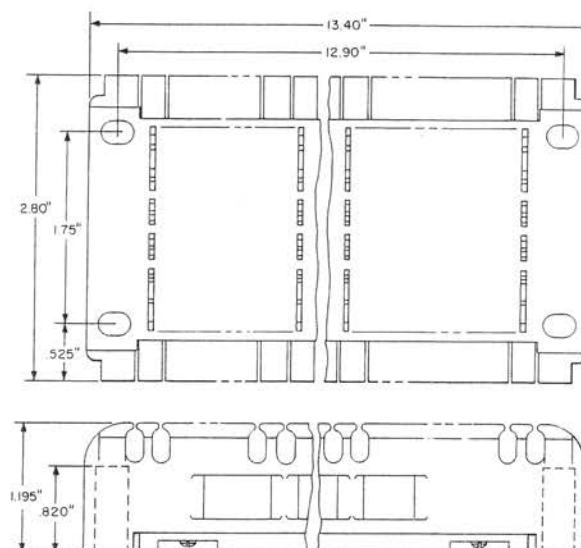
### Connecting

**64A**

Consists of a block of insulating material equipped with 104 numbered terminals for both screw and solder connections, and five KS-16671L1 Plugs assembled on a metal mounting. Mounting screws are furnished.

For use with 423AW2, 424AW2, 425AW2, and 426AW2 Key Mountings to provide means for connecting the associated keys to 236A Key Telephone Units.

Comcode: 100 009 828

**66B Type**

Each consists of a molded plastic block containing quick-connect terminals. Intended for terminating number 20 through 24 AWG polyethylene or polyvinyl chloride insulated conductors on selected wire in multiple without removal of conductor insulation by means of a 714B tool.

Can mount on 115A1 and 115B1 Apparatus Boxes.

**66B3-50:** Contains 50 rows of two 3-clip terminals, each terminal of which permits the connection of from 1 to 3 conductors. Equipped with a fanning strip on one side of the block, and an additional fanning strip (shipped loose) to mount on the other side of the block. Arranged for 50 pairs of conductors.

Intended for use with 311A, 501A1 and 502A Key Service Units.

Comcode: 100 009 893

**66B4-25:** Contains 50 rows of 6-clip terminals, each terminal of which permits the connection of from 1 to 6 conductors, and equipped with a fanning strip on each side of the block. Arranged for 25 pairs of conductors.

Intended for use with 115A1 and 115B1 Apparatus Boxes.

Comcode: 100 009 901

**66B5-37:** Contains 50 rows of terminals. Twenty-six rows contain 6-clip terminals, each terminal of which permits the connection of from 1 to 6 conductors. Twenty-four rows contain two 3-clip terminals, each terminal of which permits the connection of from 1 to 3 conductors. Equipped with a fanning strip on one side of the block, and an additional fanning strip (shipped loose) to mount on the other side of the block. Arranged for 37 pairs of conductors.

Comcode: 100 009 919



## BLOCKS

## Connecting

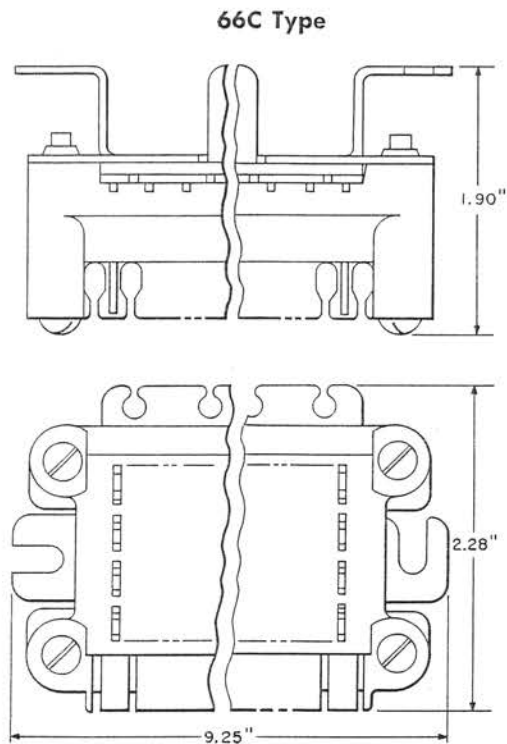


Fig. 1

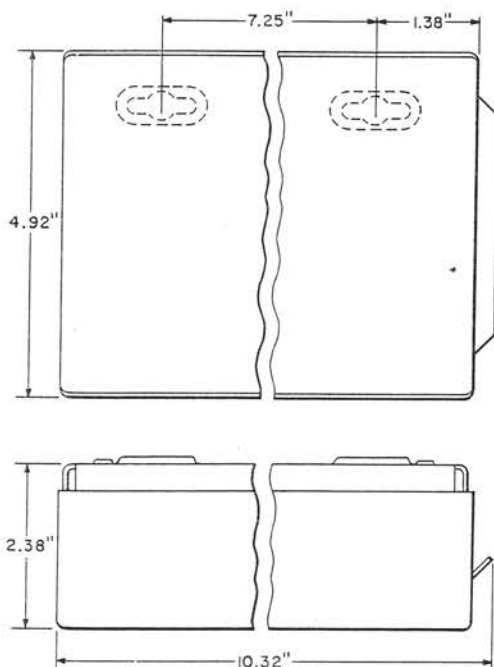


Fig. 2

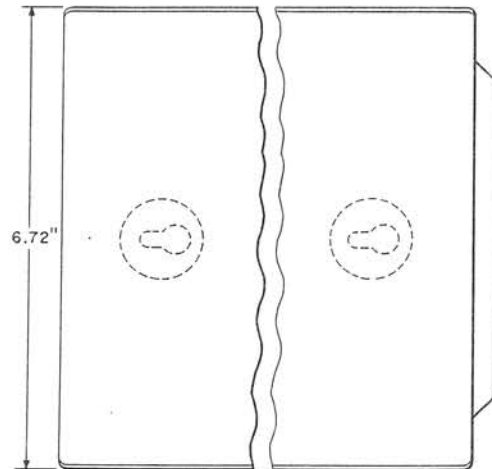


Fig. 3

**66C1-16:** Consists of 32 clip-type terminals on a molded plastic strip which is mounted on a steel bracket. Each clip terminal permits the connection of from one to four number 20 through 24 AWG conductors without removal of polyvinyl chloride insulation. Two fanning strips are furnished. See Fig. 1.

Forms part of 66C2-16 and 66C2-32 Connecting Block.

Comcode: 100 009 927

**66C2-16:** Consists of a gray metal housing with a light gray cover and contains one 66C1-16 Connecting Block. The cover is reversible to permit opening from the top or bottom of the housing. See Fig. 2.

Comcode: 100 009 935

**66C2-32:** Same as 66C2-16 except contains two 66C1-16 Connecting Blocks. See Fig. 3.

Comcode: 100 009 943

Intended for use as bridging facilities in 1A1 and 6A Key Telephone Systems.

## BLOCKS

### Connecting

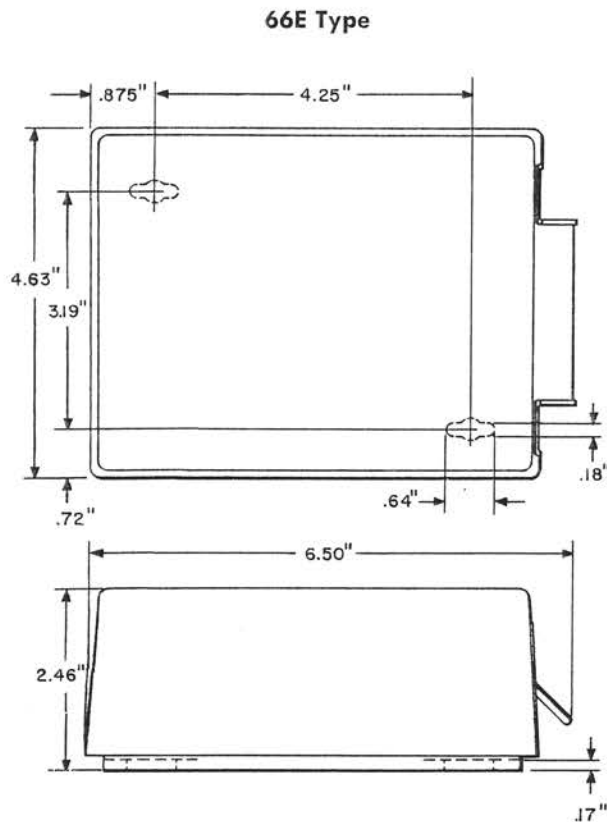


Fig. 1

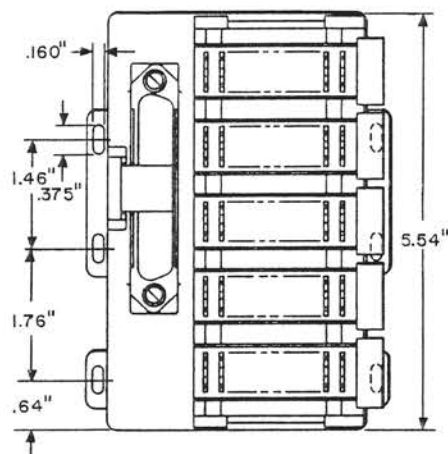
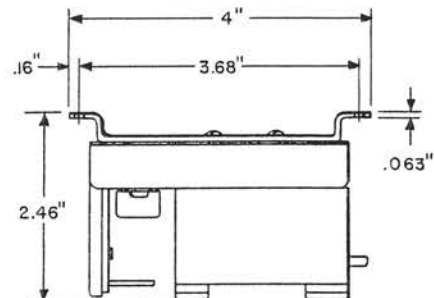


Fig. 2

Consists of a molded plastic block containing 50 clip-type terminals arranged in 5 rows of 10 terminals, and a KS-16672L3 Connector mounted on a light olive gray plastic base. The clip terminals are wired to the connector terminals.

**66E3-25:** Equipped with a snap-on cover and arranged for wall mounting. A cable trough and fanning strip are provided. See Fig. 1.

Comcode: 100 009 968

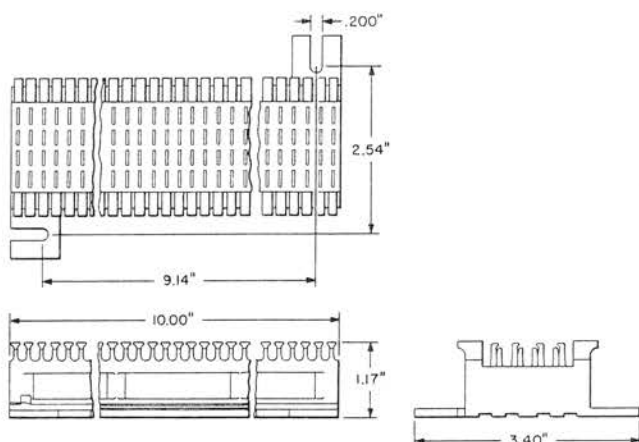
**66E4-25:** Arranged for mounting in duct adapters under the floor or over the floor. A fanning strip is provided. See Fig. 2.

Comcode: 100 009 976

Used as a connecting block for raw-ended cable in station installations.

## BLOCKS

### Connecting

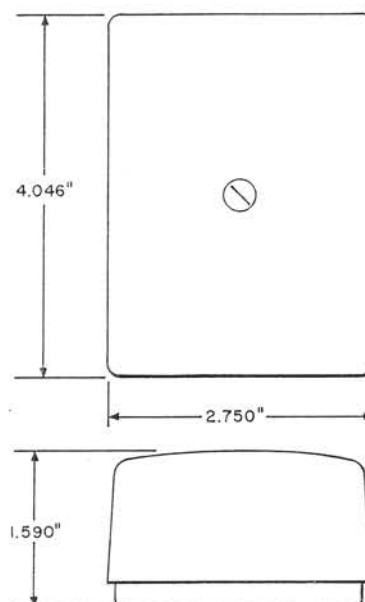
**66M1-50**

Consists of a molded plastic block containing quick-connect terminals. Intended for terminating number 20 through 24 gauge polyethylene or polyvinyl chloride insulated conductors without removal of conductor insulation.

Contains fifty rows of two "2-clip" terminals, each terminal of which permits the connection of up to two conductors. Equipped with a wire fanning strip on each side of the block.

Used in wire terminating arrangements of cables and key telephone systems.

Comcode: 101 238 178

**74A and 74B**

Each has painted sheet metal bases and removable plastic covers, which are held together by a screw located in the center of the cover. The 74A contains a 425A Cold Cathode Electron Tube and the 74B contains a 426A Cold Cathode Electron Tube. Each has a fiber board terminal strip containing three triple and two double eyelet terminals. The base is arranged to receive both inside wiring and all lengths of line cords.

Code No.	Comcode	Color
74A-49	100 010 099	Light olive gray
74A-50	100 010 107	Ivory
74B-49	100 010 115	Light olive gray
74B-50	100 010 123	Ivory

Used to mount 425A and 426A Electron Tubes when tubes cannot be mounted inside the telephone set.

## APPARATUS

## BLOCKS

## Connecting

## 1044A-49 and -50

Arranged for a mounting cord having a hook-type stay band.

1044A-49: Light olive gray color, consists of a 44A Connecting Block and a 101A-49 Cover.

Comcode: 100 010 149

1044A-50: Ivory color, consists of a 44A Connecting Block and a 101A-50 Cover.

Comcode: 100 010 156

For use with telephone sets requiring 10 screw terminals and special wiring plans.





## BLOCKS

## Fuse

22A &amp; B and 23A &amp; B

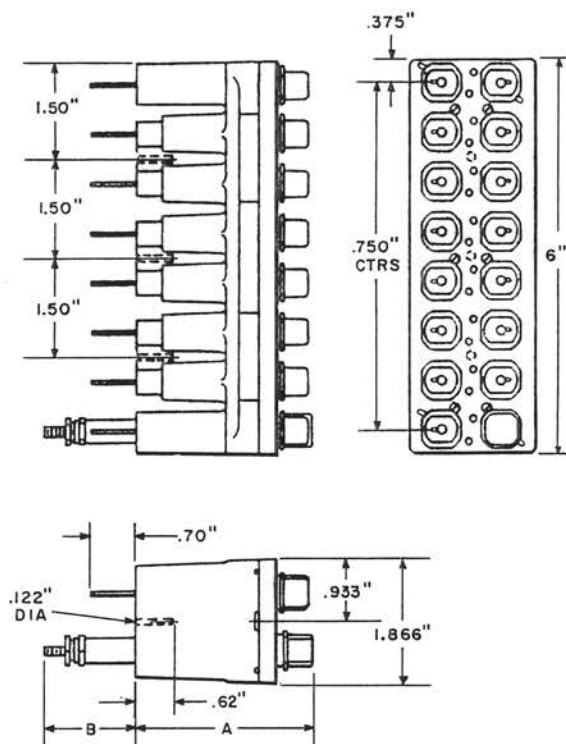


Fig. 1

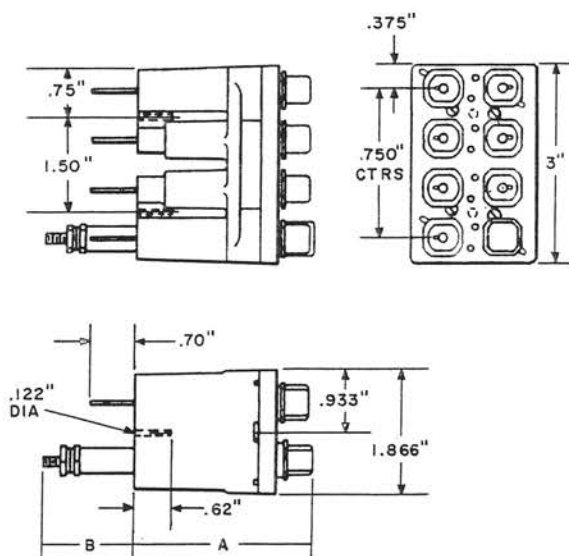


Fig. 2

Each consists of a block of insulating material having a detachable cover and arranged to mount fuses, alarm bus bars, and a battery bus bar. Openings are provided for installation of number 70 type fuses. **The fuses and bus bars are not furnished and must be ordered separately.** Fuse caps and fuse terminals are furnished. Fuse caps have an opening for the protrusion of a fuse bead when blown. Terminals are arranged for mechanically wrapped connections.

Cover contains holes to accommodate KS-14174 or KS-16078 Designation Pins (not furnished) to indicate capacity of the fuses, and holes for testing alarm bars when installed. Block contains slots on ends for common alarm and battery bus bars between adjacently mounted fuse blocks.

Screws are provided for mounting.

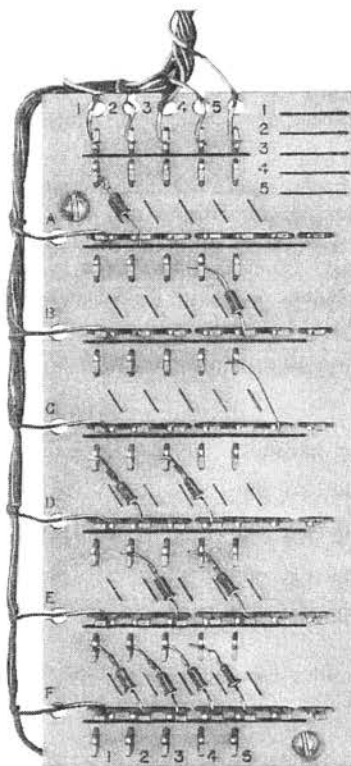
Code No.	Comcode	Fig. No.	No. Fuses Accommodated	Dimensions (Inches)	
				A	B
22A	100 010 461	1	16	2.68	—
22B	100 010 479	1	15(a)	2.73	1.37
23A	100 010 487	2	8	2.63	—
23B	100 010 495	2	7(a)	2.68	1.37

(a) And one fuse not larger than 30 amp rating and having an end cap diameter of 9/32 inch and an overall length of 1-1/4 inches.

## BLOCKS

## Matrix

1A1



Consists of a molded plastic block equipped with horizontally and vertically aligned rows of terminal connectors, commonly referred to as clip terminals, arranged to receive pigtailed 446F Diodes. Diodes are not furnished and must be ordered separately. A 714B Tool is required for diode installation and must be ordered separately.

Overall dimensions are approximately 6.375 inches long by 2.813 inches wide by 1.250 inches thick including the projection of the clip terminals.

Vertical rows of terminals are numbered 1 through 5 at the top of the block. Space is provided in the upper right hand corner of each block for designating each of these five rows as desired. Horizontal rows of terminals are labelled alphabetically A through F with ample area available to the left of each row for circuit identification.

Intended for use in key telephone systems to provide for diode control of station audible signals.

Depending on the diode placement, polarity direction, one matrix block can be used to control six ringers, less capacitors, from five separate key system line circuit units or vice versa. This then can be called a "6 by 5" or "5 by 6" matrix unit, capacity wise.

Comcode: 100 847 052

## BLOCKS

## Protector

26, 27, 28, 29, 29B, 30, and 31A

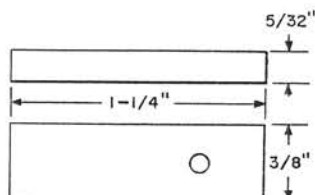


Fig. 1

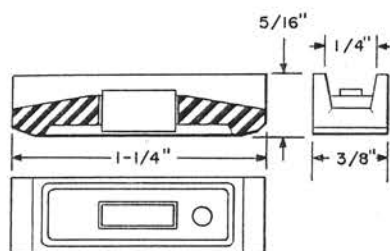


Fig. 2

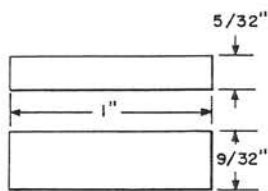


Fig. 3

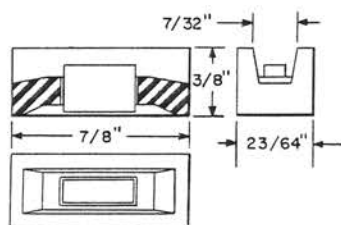


Fig. 4

26 and 28: Plain hard carbon blocks.

27, 29, 29B, 30, and 31A: Consist of a grooved porcelain frame and a carbon insert which is held in place by means of a fusible cement. The carbon insert is depressed below the surface of the porcelain so that when these protector blocks are used with plain carbon blocks as indicated below they form open space cutouts without the use of separators. The frames of number 27 and 29 are white, and the frames of number 29B and 30 are white with both ends colored blue. The ends of the frame of 31A are yellow.

Code No.	Comcode	Fig. No.	Nominal (Inch) Air Gap	Arranged for use only with Protector Block No.
26	100 010 594	1	—	27, 30, 31A
	*101 220 838	1	—	27, 30, 31A
27	100 010 602	2	.0028	26
	*101 220 820	2	.0028	26
28	100 010 610	3	—	29
29	100 010 628	4	.0028	28
29B	100 010 636	4	.006	28
30	100 010 644	2	.006	26
31A	100 010 651	2	.010	26

\*Two per package.

The number 27 is intended for use in central office protectors on 1/2-inch centers and substation protectors. Number 29 and 29B are intended for use in central office protectors on 3/8-inch centers. The number 30 is intended for use only in cable protectors. The 31A is intended for use in protecting pole mounted phantom repeating coils.





## BLOCKS

## Protector

## 32A &amp; B, 33 Type, and 34A1

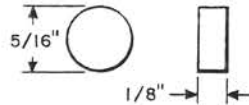


Fig. 1

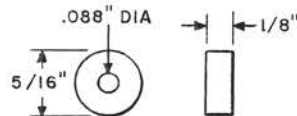


Fig. 2

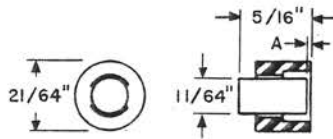


Fig. 3

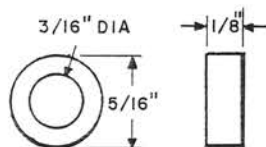


Fig. 4

Code No.	Comcode	Fig. No.	Color of Frame	Air Gap Dimension A (Inch)
32A	100 010 685	1	—	—
32B	100 010 693	2	—	—
33A	100 010 701	3	blue	.006
33B	100 010 719	3	white	.003
33C	100 010 727	3	yellow	.010
34A1	100 010 735	4	—	—

32A: Carbon block. Used with the 33A, B, and C Protector Blocks in the number 107 type protectors.

32B: Carbon block. Forms a part of the 1A1C Protector Unit.

33 type: Carbon blocks each mounted in a porcelain frame. See table for color. Used with the 32A Protector Block.

33A: Forms a part of the 107B Protector.

33B: Forms a part of the 107A and C Protectors.

33C: Forms a part of the 107E Protector.

34A1: White porcelain block. Forms a part of the 1A1D Protector Unit.

Intended for protecting cable conductors against lightning and power potentials.

## BLOCKS

## Terminal

## 1A1 Type

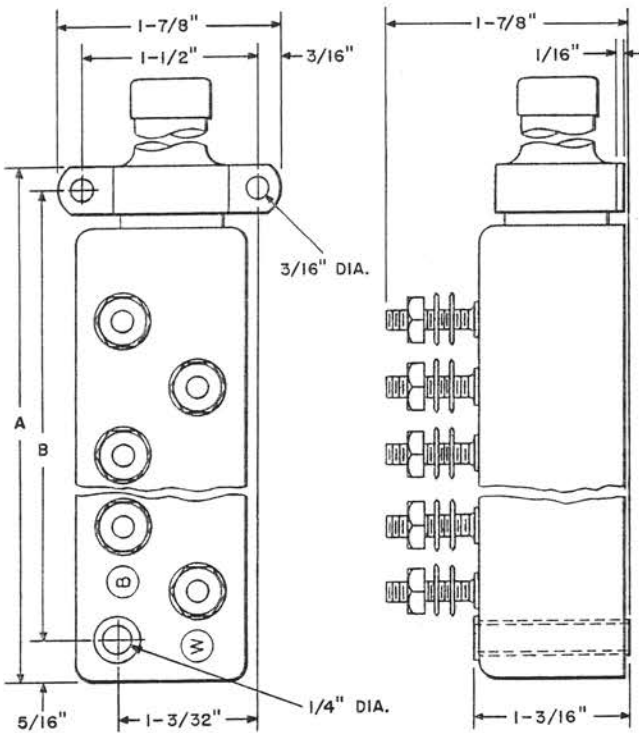


Fig. 1

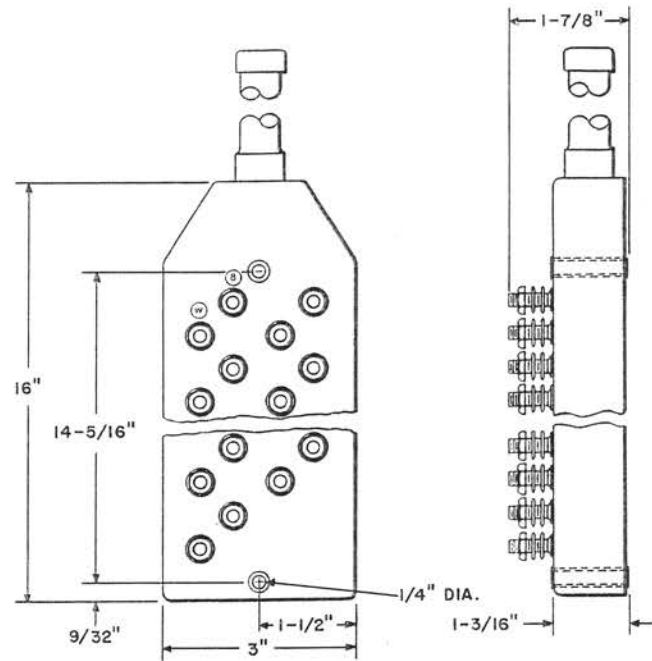


Fig. 2

Gas tight terminal blocks, each consisting of a cast resin block containing binding posts. Equipped with a 12-foot lead covered polyvinyl chloride insulated non-quadded stub cable having number 24 AWG conductors.

Wood screws and washers are provided for mounting.

Used for terminating the control pairs of coaxial cable systems at auxiliary repeater stations.

Code No.	Comcode	Fig. No.	Dimensions (Inches)	
			A	B
1A1-10	100 010 743	1	11-31/32	11-15/32
1A1-16	100 010 750	1	18-11/32	17-27/32
1A1-25	100 010 768	2	—	—

Arranged for 10, 16, and 25 pairs of conductors, respectively.

## BLOCKS

## Terminal

## 1A1A-16, 1A1A-25, and 1A1B-25

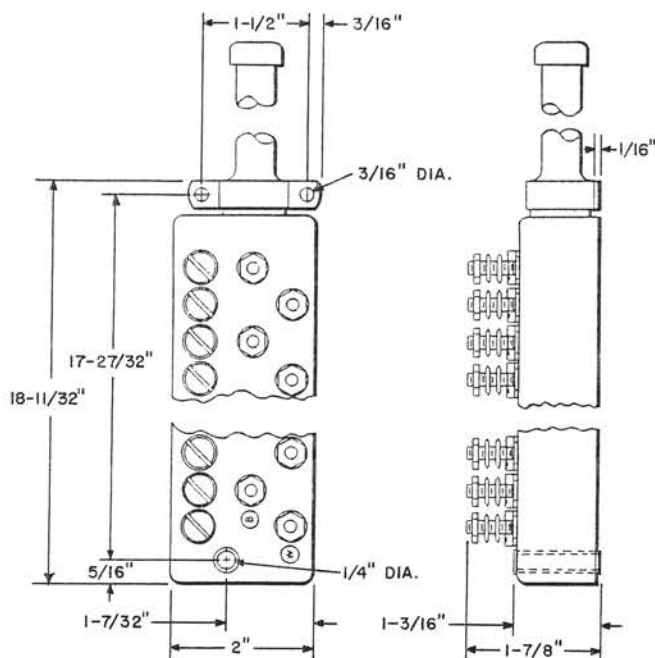


Fig. 1

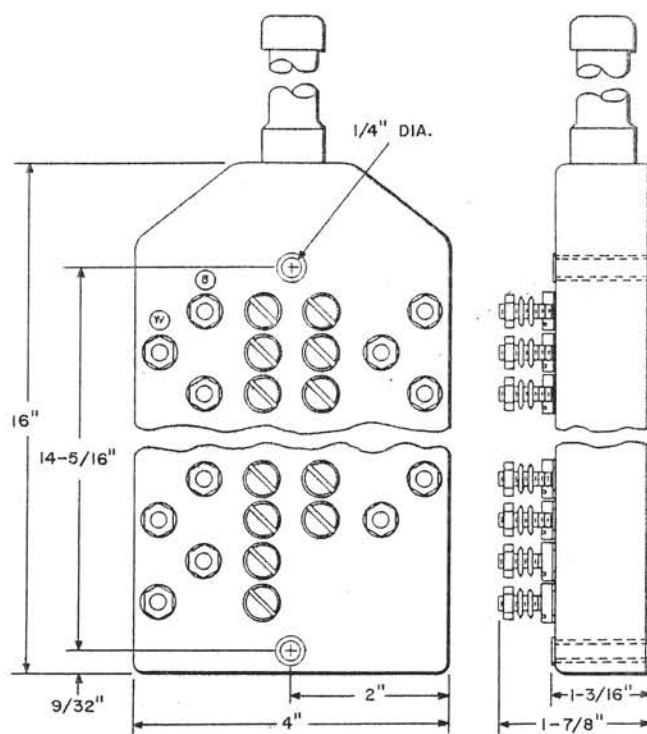


Fig. 2

Gas tight terminal blocks each consisting of a cast resin terminal block containing protector units and binding posts.

Code No.	Comcode	Fig. No.	Contains Protector Units
1A1A-16	100 010 776	1	32 No. 2A1A
1A1A-25	100 010 784	2	50 No. 2A1A
1A1B-25	100 010 818	2	50 No. 2A1B

Arranged for 16, 25, and 25 pairs of conductors, respectively.

1A1A-16 and 1A1A-25: Equipped with a 12-foot lead covered polyvinyl chloride insulated nonquadded stub cable having number 24 AWG conductors. The protectors are grounded to the sheath of the stub cable. Wood screws and a washer are provided for mounting. Intended for terminating the control pairs of coaxial cable systems at auxiliary repeater stations.

1A1B-25: Equipped with a 5-1/2 foot lead covered polyvinyl chloride insulated nonquadded stub cable having number 24 AWG conductors. Can also be obtained in lengths other than 5-1/2 foot when specified.

Two 8-32 x 1-7/16 inch long round head machine screws are furnished for mounting.

Intended for use with buried polyethylene insulated cables and is arranged to mount in a KS-16191 Cable Terminal Box which is pole mounted. One or two terminal blocks can be mounted in the box to provide cable protection at the junction of polyethylene and pulp insulated cable.



## BLOCKS

## Terminal

## 1A4A Type

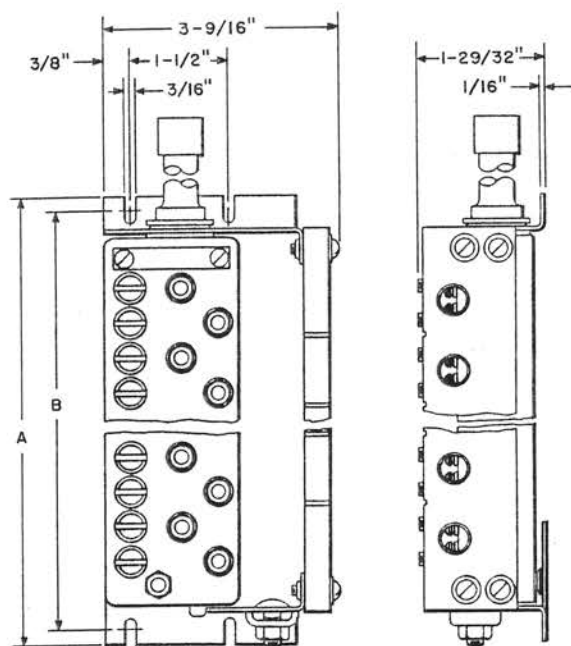


Fig. 1

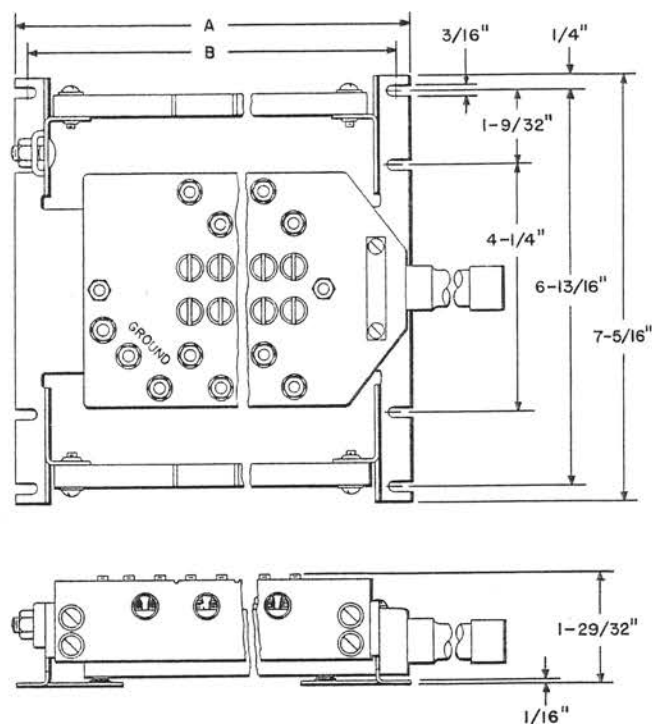


Fig. 2

Gas tight terminal blocks each consisting of a cast resin terminal block containing terminals and protector units assembled to metal mounting brackets. The protector units are grounded to the mounting brackets and to the sheath of the stub cable. Blocks are provided with fanning strips, a clamp for terminating a number 6 AWG ground wire to provide station protector ground, and a removable ground linkage to isolate the cable sheath from station ground where electrolysis conditions exist. Blocks are equipped with a 12-foot lead covered polyvinyl chloride insulated nonquadded stub cable having number 24 AWG conductors. Stub cable is color coded.

1A4A-10, -16, and -25: Intended to be installed in G-type cable terminal boxes or 1A1 Cable Terminal Section. Arranged for 10, 16, and 25 pairs of conductors, respectively.

1A4A-50: Intended to be installed in the H202 Cable Terminal Section. Arranged for 50 pairs of conductors.

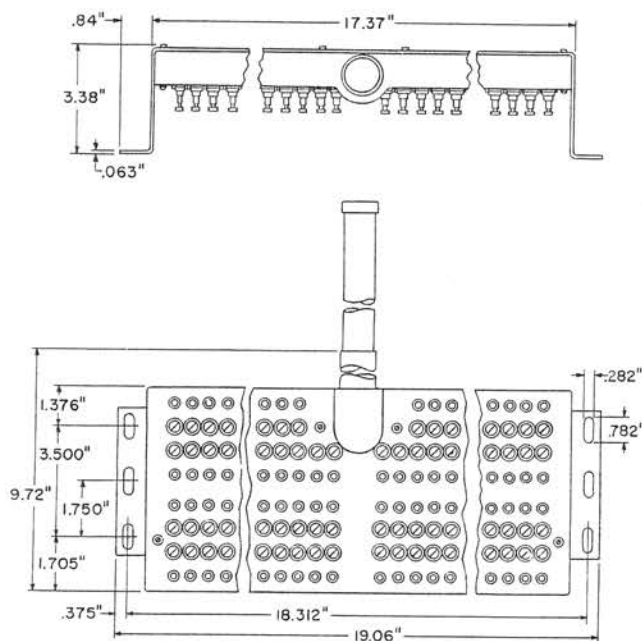
Intended for indoor use as fuseless protected building terminal blocks in lieu of fused L-type cable terminals.

Code No.	Comcode	Fig. No.	Dimensions (Inches)		Contains 2A1A Protector Units
			A	B	
1A4A-10	100 010 859	1	12-3/4	12-5/16	20
1A4A-16	100 010 867	1	19-1/8	18-9/16	32
1A4A-25	100 010 875	1	17-1/4	16-13/16	50
1A4A-50	100 010 883	2	31-1/16	30-5/8	100

## BLOCKS

## Terminal

## 1B3A-54, 1B4A-54 and 1B6A-54



Each consists of a molded terminal block containing 108 P18E150 Protector Units which provide 500 volt protection and 108 binding posts which are arranged for soldered connections, assembled to a metal mounting bracket. The protector units are grounded to the sheath of the stub cable. Provided with a stub cable 25 feet long having 54 pairs of number 22 AWG conductors. Can also be obtained with a 50 foot stub cable when specified in the order.

Arranged to mount in a KS-14296L5 Cabinet or in a 19 inch bay framework.

Used for terminating N1 Carrier Cable at repeater points.

1B3A-54: A stub cable having a polyvinyl chloride jacket over aluminum. It is intended for indoor use only and is not gastight.

Comcode: 100 010 933 E/W 25 Ft Stub  
100 010 958 E/W 50 Ft Stub

1B4A-54: A gastight terminal block with a stub cable having a polyethylene jacket over aluminum. It is intended to terminate aerial or underground cable conductors.

Comcode: 100 010 966 E/W 25 Ft Stub  
100 010 982 E/W 50 Ft Stub

1B6A-54: A gastight terminal block with a stub cable having a steel armor over alpeith with an outer polyethylene jacket. It is intended to terminate buried cable conductors.

Comcode: 101 055 648 E/W 25 Ft Stub  
100 982 321 E/W 50 Ft Stub

## BLOCKS

## Terminal

## 2A1 and 2A2 Type

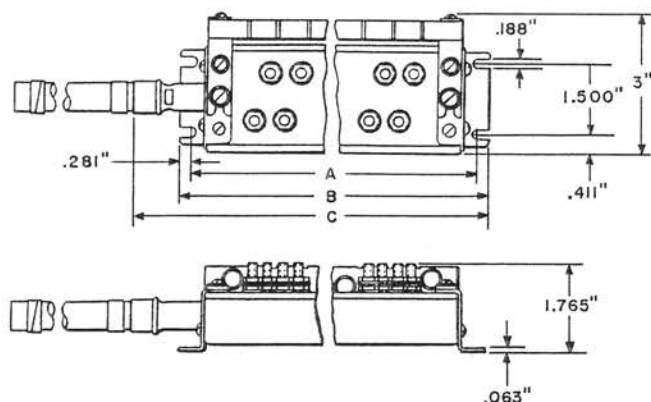


Fig. 1

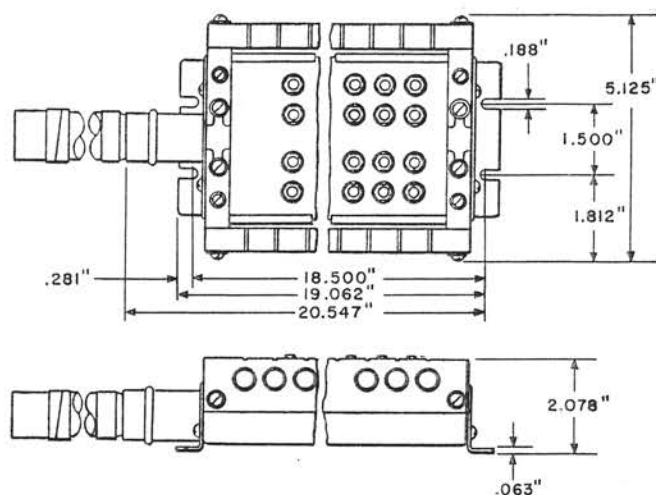


Fig. 2

Each consists of a sheet metal chamber having an insulating panel equipped with binding posts, nuts, and washers. Furnished with a 6-foot, number 24 AWG alpeth sheathed polyvinyl chloride insulated stub cable fully color coded and grounded to the mounting bracket. May also be obtained with a 12-foot or 25-foot stub cable when speci-

fied in the order. Sheet metal parts have a light olive gray enamel finish except the mounting bracket at the cable stub end.

Code No.	Comcode	Fig. No.	Dimensions (Inches)			No. of Pairs of Binding Posts
			A	B	C	
2A1-11	(a) 100 011 030	1	9.125	9.688	11.109	11
	(b) 100 011 048					
	(c) 100 011 055					
2A1-16	(a) 100 011 063	1	12.250	12.812	14.234	16
	(b) 100 011 071					
	(c) 100 011 089					
2A1-25	(a) 100 011 097	1	18.500	19.062	20.484	25
	(b) 100 011 105					
	(c) 100 011 113					
2A1-50	(a) 100 011 121	1	—	—	—	50
	(b) 100 011 139					
	(c) 100 011 147					
2A2-11	(a) 100 011 154	2	9.125	9.688	11.109	11
	(b) 100 011 162					
	(c) 100 011 170					
2A2-16	(a) 100 011 188	2	12.250	12.812	14.234	16
	(b) 100 011 196					
	(c) 100 011 204					
2A2-25	(a) 100 011 212	2	18.500	19.062	20.484	25
	(b) 100 011 220					
	(c) 100 011 238					
2A2-50	(a) 100 011 246	2	—	—	—	50
	(b) 100 011 253					
	(c) 100 011 261					

- (a) E/W 6 Ft Stub  
 (b) E/W 12 Ft Stub  
 (c) E/W 25 Ft Stub



## BLOCKS

## Terminal

## 2A1 and 2A2 Type (Continued)

2A1-11, -16, and -25: Each has a top mounted stub cable and is equipped with a fanning strip on one side of the block.

2A1-50: Has a top mounted stub cable and is equipped with fanning strips on both sides of the block.

2A2-11, -16, -25, and -50: Same as 2A1-11, -16, -25 and -50, respectively, except stub cable is bottom mounted.

Intended to mount in G-type cable terminal boxes and 1A1 Cable Terminal Sections. For terminating either

paper insulated or plastic insulated conductor cables in buildings where the ready access principle is used.

2A1-11, 2A1-16, 2A1-25, and 2A1-50 replace G11 and G11A, G16 and G16A, G26, and G51 Binding Posts Chambers, respectively, for top stub cable installation.

2A2-11, 2A2-16, 2A2-25, and 2A2-50 replace G11 and G11A, G16 and G16A, G26, and G51 Binding Posts Chambers, respectively, for bottom stub cable installation.

## 2B1 and 2B2 Type

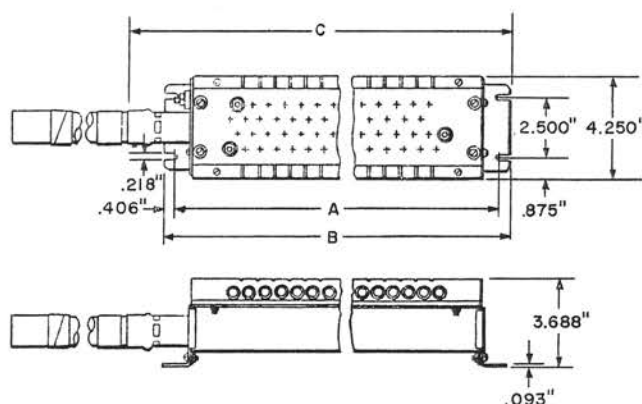


Fig. 1

Each consists of a sheet metal chamber having an insulating panel equipped with bindings posts, nuts, and washers. Furnished with a 12-foot, number 24 AWG alpth sheathed polyvinyl chloride insulated stub cable fully color coded and grounded to the mounting brackets which are

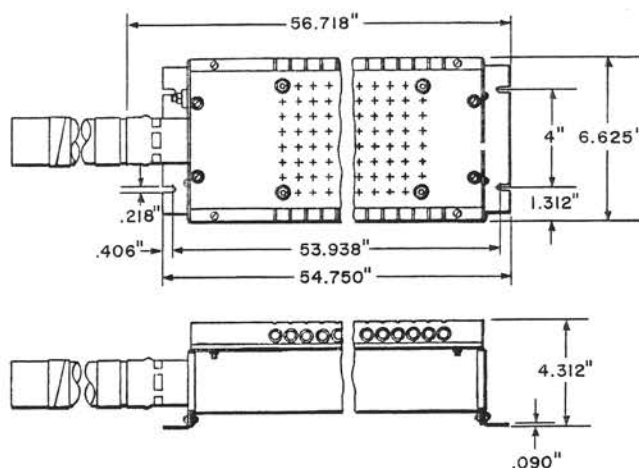


Fig. 2

equipped with a ground clamp. May also be obtained with a 25-foot stub cable when specified in the order. Equipped with fanning strips on both sides. Sheet metal parts have a light olive gray enamel finish except the mounting bracket at the cable stub end.

Code No.	Comcode	Fig. No.	Dimensions (Inches)			No. of Pairs of Binding Posts
			A	B	C	
2B1-75	(a) 100 011 303	1	28.000	28.812	30.484	75
	(b) 100 011 311					
2B1-100	(a) 100 011 329	1	36.125	36.937	38.609	100
	(b) 100 011 337					
2B1-300	(a) 100 011 345	2	53.938	54.750	56.718	300
	(b) 100 011 352					
2B2-75	(a) 100 011 360	1	28.000	28.812	30.484	75
	(b) 100 011 378					
2B2-100	(a) 100 011 386	1	36.125	36.937	38.609	100
	(b) 100 011 394					
2B2-300	(a) 100 011 402	2	53.938	54.750	56.718	300
	(b) 100 011 410					

(a) E/W 12 Ft Stub

(b) E/W 25 Ft Stub



## BLOCKS

## Terminal

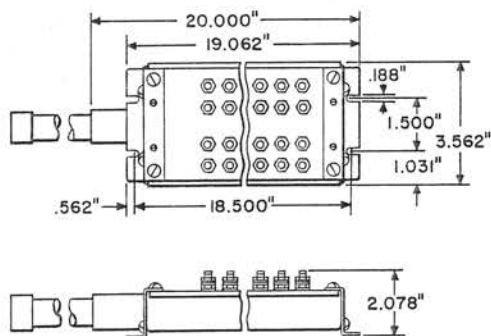
## 2B1 and 2B2 Type (Continued)

2B1-75, -100, and -300: Each has a top mounted stub cable.

2B2-75, -100, and -300: Same as 2B1-75, -100, and -300, respectively, except stub cable is bottom mounted.

Arranged to mount in H- or K-type cable terminal sections. For terminating either paper insulated or plastic insulated conductor cables in buildings where the ready access principle is used.

## 2C1-50



Consists of a sheet metal chamber having an insulating panel equipped with 100 binding posts.

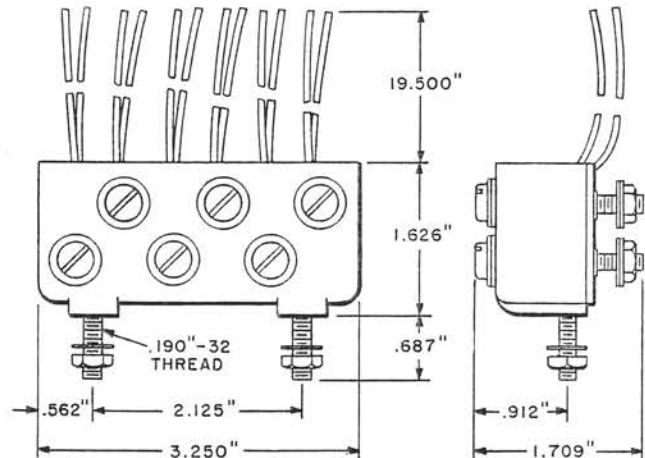
Furnished with a gastight six-foot, number 24 AWG lead sheathed, polyvinyl chloride insulated stub cable fully color coded. May also be obtained with a 12-foot or 25-foot stub when specified in the order.

Arranged to mount in the 53A3-50 Cable Terminal.

Used as a pole and wall distribution panel. May also be used in place of the G51B Binding Post Chamber.

Comcode: 100 011 428 E/W 6 Ft Stub  
 100 011 436 E/W 12 Ft Stub  
 100 011 444 E/W 25 Ft Stub

## 3A1A-3



Consists of a cast resin terminal block equipped with six leads, three pairs of binding posts, and six 2A1A Protector Units. Provides facilities for protecting three stations and terminating service wire.

For use in buried distribution cable closures.  
 Comcode: 100 011 469

## 3A2B-3

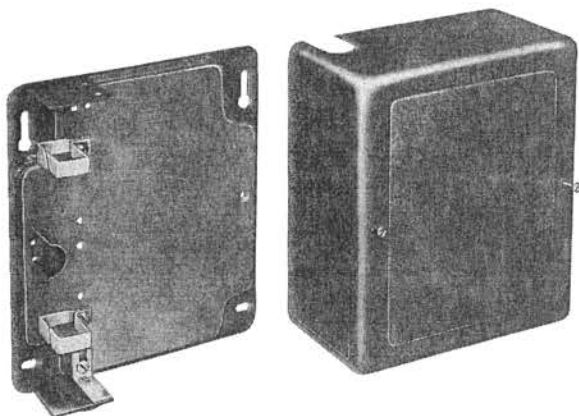
The configuration and dimensions of these terminal blocks are the same as 3A1A-3. It consists of a cast resin terminal block containing 3 pairs of binding posts and six 2A1B Protector Units. It is provided with number 24 AWG polyvinyl chloride insulated wire leads which are connected internally to the binding posts. Two leads are connected to each binding post. The protector units are grounded to the mounting studs.

Provides facilities for protecting up to 3 cable pairs and for terminating drop or service wires. Used in ready access terminals at location close enough to the junction of polyethylene insulated cable and paper insulated cable where protection for the paper insulated cable is required.  
 Comcode: 100 011 477

## BOXES

## Apparatus

105BW and CW



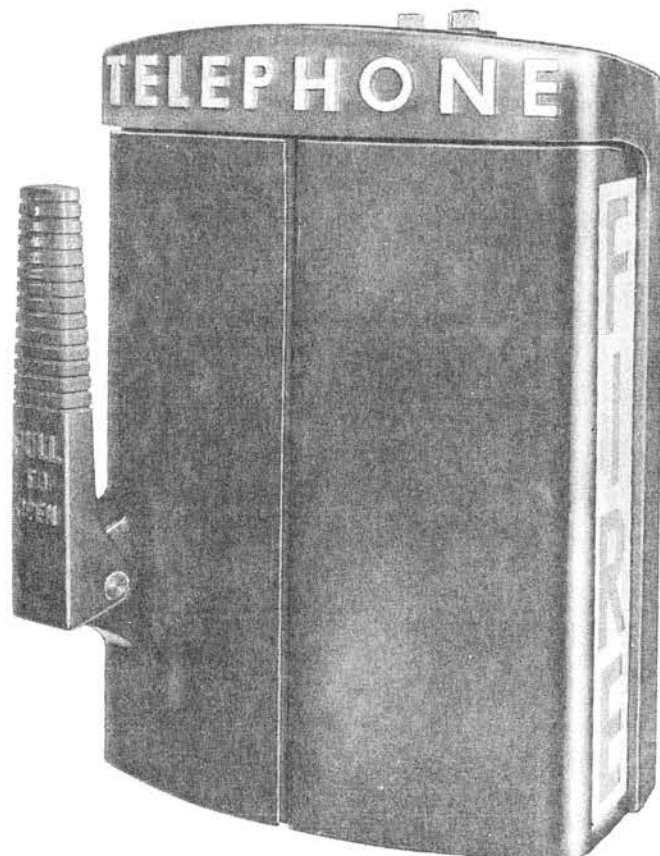
**105BW:** Metal box having an olive gray finish. Overall dimensions are 7.38 inches high by 6.88 inches wide by 3.38 inches deep. Two cable rings and two escutcheons are furnished. Intended to have key telephone units in the 1A1 Key Telephone System.

Comcode: 100 012 368

**105CW:** Same as 105BW except cover is plastic and overall dimensions are 7.47 inches high by 6.91 inches wide by 3.48 inches deep.

Comcode: 101 249 852

111 Type



**111B:** Consists of a red enameled metal housing equipped with a self-closing door with unexposed hinges and cover. The door and cover are red enameled and form the front and side of the housing. The word "Fire" in large letters appears on the door and cover. The box is provided with two 0.500 inch pipe tap holes on the top and two on the bottom for conduit connections and is arranged to mount a number 8 type apparatus unit which is not furnished and must be ordered separately. The overall dimensions are 16.875 inches high by 12 inches wide by 7 inches deep. Arranged to mount on buildings, fences, poles, etc., by means of a 29C Bracket which is not furnished and must be ordered separately.

Comcode: 100 012 392

**111C:** Same as the 111B Apparatus Box except handle is provided with a cam to assist in opening the door if it is held closed due to freezing. Forms a part of the number 570 type telephone sets.

Comcode: 100 012 400

## BOXES

## Apparatus

## 111 Type (Continued)

111D: Same as 111C Apparatus Box except color is yellow and the word "Fire" is omitted and it mounts by a 29E Bracket. Forms a part of the 570 type telephone set for highway emergency reporting service.

Comcode: 101 278 190

111E: Same as 111C except has a yellow housing and the word "Fire" is omitted from door and cover. Mounts by means of a 29E Bracket, which must be ordered separately. Forms a part of 570J4 Telephone Set.

Comcode: 101 390 771

## 115A1 and 115B1

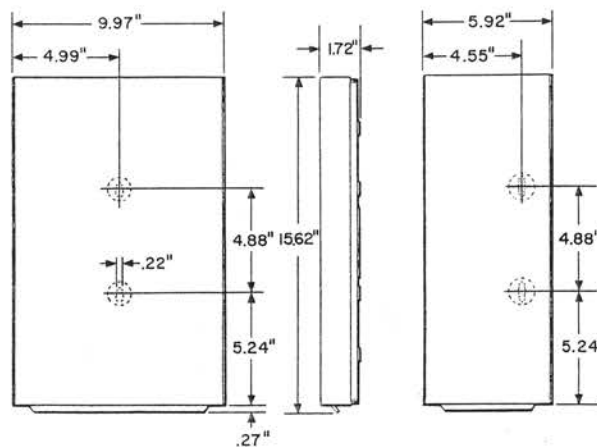


Fig. 1

Fig. 2

Each consists of a gray metal housing equipped with a distributing ring and having a light olive gray snap-on cover. The cover is reversible so as to permit opening from either the top or bottom of the housing.

115A1: Arranged to contain one 66B type connecting block. Screws for mounting connecting block furnished. See Fig. 2.

Comcode: 100 012 442

115B1: Arranged to contain two 66B type connecting blocks. See Fig. 1.

Comcode: 100 012 459

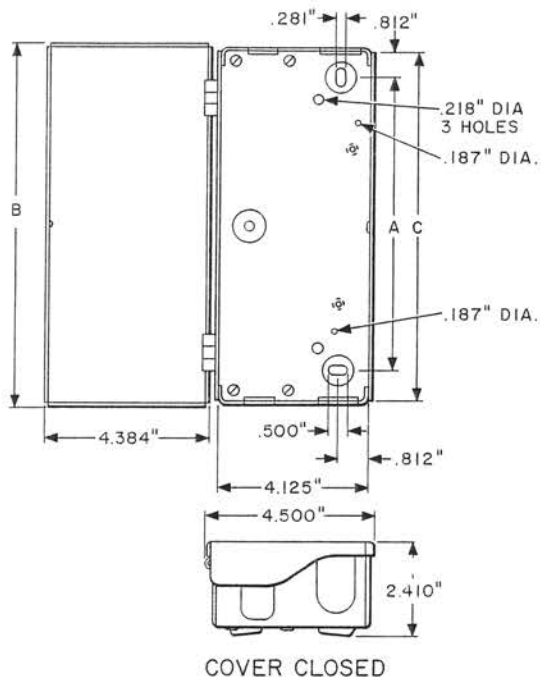
For use as bridging facilities in station switching systems such as 1A1, 1A2, and 6A Key Telephone Systems.



## BOXES

## Cable Terminal

GA Type



COVER CLOSED

A sheet metal box with a hinged cover, having a light olive gray enamel finish. Provided with knockouts in each end for cable and wire entrance. Also provided with one 8A Distributing Ring and screws for mounting terminal block or adapter and the distributing ring.

A P-17E201 Closure for closing a wire hole can be obtained when specified on the order.

Used for indoor installation.

GA11: Arranged for housing a 2A1-11 or a 2A2-11 Terminal Block or a 102B Adapter.

Comcode: 100 012 574

GA16: Arranged for housing a 2A1-16 or a 2A2-16 Terminal Block or 102C Adapter.

Comcode: 100 012 590

GA16A: Arranged for housing a 2A1-16 or a 2A2-16 Terminal Block.

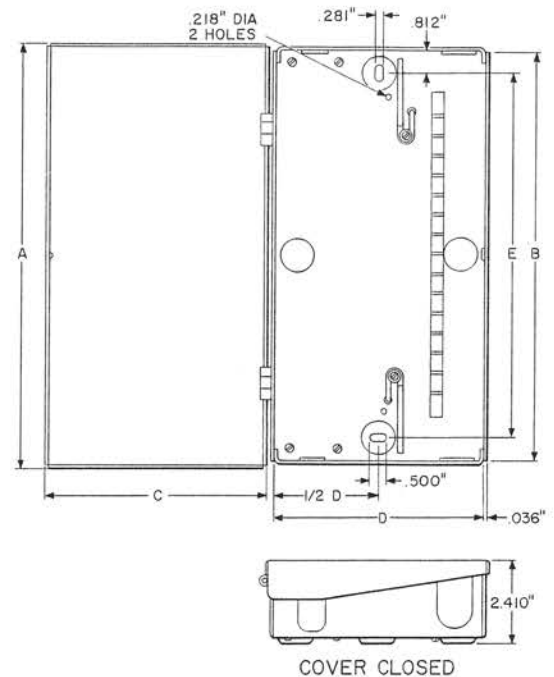
Comcode: 100 012 608

GA26: Arranged for housing a 2A1-25 or a 2A2-25 Terminal Block or a 102D Adapter.

Comcode: 100 012 616

Code No.	Dimensions (Inches)		
	A	B	C
GA11	8.251	10.134	9.875
GA16	11.376	13.259	13.000
GA16A	11.376	13.259	13.000
GA26	17.626	19.509	19.250

GB Type



COVER CLOSED

A sheet metal box with a hinged cover, having a light olive gray enamel finish. Provided with knockouts in both ends for cable and wire entrance. Also provided with a fanning strip and two 8A Distributing Rings. Screws are provided for mounting a terminal block or an adapter.

A P-17E201 Closure for closing a wire hole can be obtained when specified on the order.

These boxes provide more flexible wiring arrangement than the GA type boxes.

GB11: Arranged for housing a 2A1-11 or a 2A2-11 Terminal Block or a 102B Adapter.

Comcode: 100 012 624

GB16: Arranged for housing a 2A1-16 or a 2A2-16 Terminal Block or a 102C Adapter.

Comcode: 100 012 632

GB26: Arranged for housing a 2A1-25 or a 2A2-25 Terminal Block or a 102D Adapter.

Comcode: 100 012 640

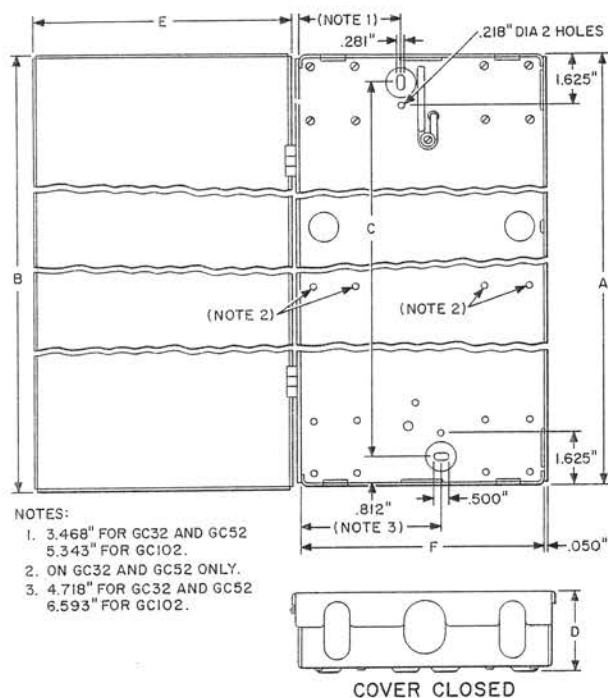
Code No.	Dimensions (Inches)				
	A	B	C	D	E
GB11	10.134	9.875	6.759	6.500	8.251
GB16	13.259	13.000	6.759	6.500	11.375
GB26	19.509	19.250	7.259	7.000	17.626



## BOXES

## Cable Terminal

## GC Type



A sheet metal box with a hinged cover, having a light olive gray enamel finish. Provided with knockouts in each end for cable entrance and in each end and one side for wire entrance. Also provided with one 8A Distributing Ring. Screws are provided for mounting terminal block or adapters.

A P-17E101 Closure for closing a wire hole can be obtained when specified on the order.

GC32: Arranged for housing two 2A1-11, 2A2-11, 2A1-16, or 2A2-16 Terminal Blocks or two 102B or C Adapters.

Comcode: 100 012 657

GC52: Arranged for housing two 2A1-16, 2A2-16, 2A1-25, or 2A2-25 Terminal Blocks or two 102C or D Adapters.

Comcode: 100 012 665

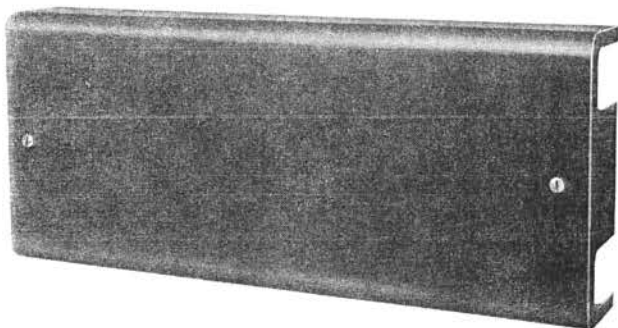
GC102: Arranged for housing two 2A1-25, 2A2-25, 2A1-50, or 2A2-50 Terminal Blocks or two 102D Adapters.

Comcode: 100 012 673

Code No.	Dimensions (Inches)					
	A	B	C	D	E	F
GC32	14.750	15.037	13.125	2.437	8.475	8.187
GC52	21.000	21.287	19.376	2.474	8.475	8.187
GC102	21.000	21.287	19.376	2.450	12.250	11.937

## Terminal Wall

## ED69391-50, Group 1 and NP



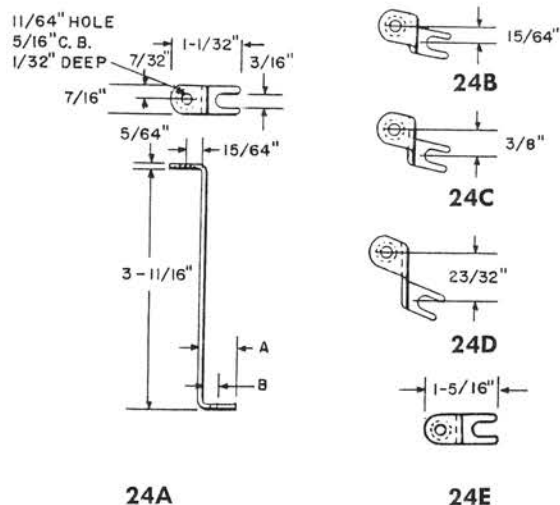
A terminal wall box of fiberglass reinforced polyester resin with a light olive gray wrinkle enamel finish. The overall dimensions are 29.844 inches long by 12.062 inches wide by 4.266 inches high.

Arranged to mount one terminal strip of a 26A Apparatus Mounting.

Comcode: 600 016 299

## BRACKETS

24 Type

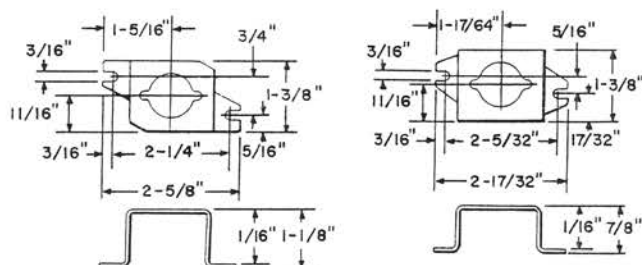


Code No.	Comcode	Dimensions (Inches)	
		A	B
24A	100 013 366	37/64	1/4
24B	100 013 374	37/64	1/4
24C	100 013 382	37/64	1/4
24D	100 013 390	37/64	1/4
24E	100 013 408	55/64	17/32

24A, B, C, and D: Metal brackets intended to mount stud mounted capacitors (3-1/2 inches or less in height) having mounting centers located off center. Two brackets are required to mount one capacitor.

24E: Metal bracket intended to mount number 182 type inductors. Two brackets are required to mount one inductor.

25 Type



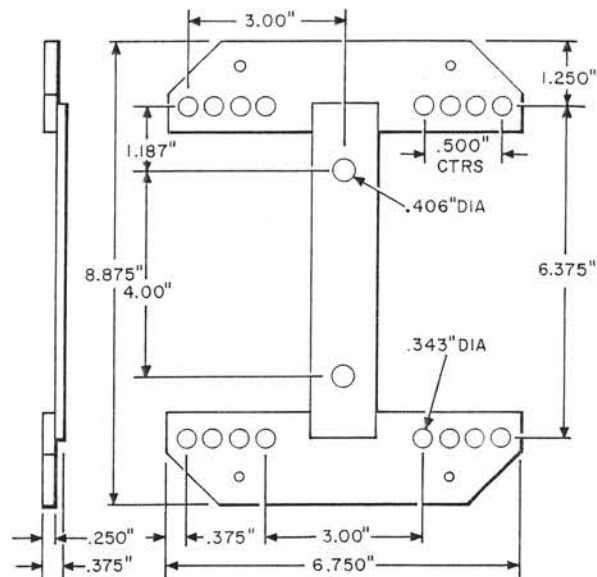
25A

25B

Metal brackets intended to mount stud mounted capacitors in place of lug mounted capacitors where mounting plates are drilled for capacitors having the mounting lugs located off center, 3/8-inch for 25A and 5/32-inch for 25B.

Comcode: 100 013 416 and 100 013 424, respectively.

29C and E



29C: A metal mounting intended for use in mounting telephone sets on buildings, fences, poles, etc.

Screws and lock washers for mounting telephone set to bracket are furnished.

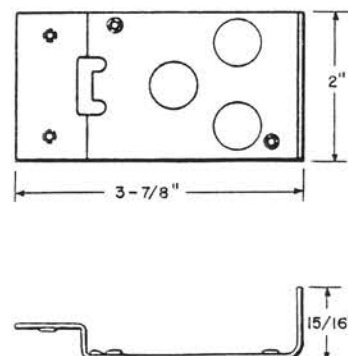
Intended for use in mounting number 570 type telephone sets.

Comcode: 100 013 515

29E: Same as 29C Bracket except has a yellow finish.

Comcode: 101 278 208

36A

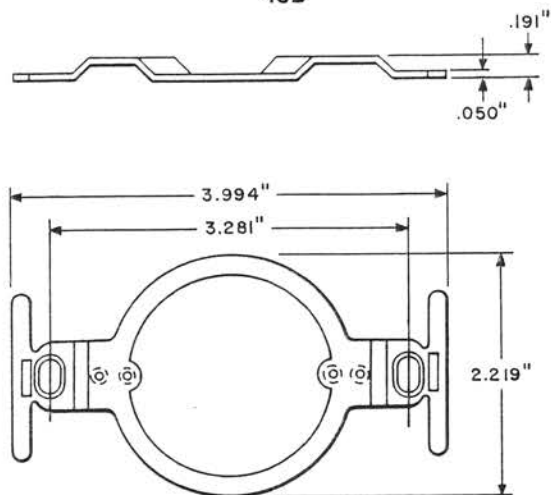


Metal bracket for mounting number 7 type buzzer and a 152A Capacitor. Mounting screws and two leads for connecting buzzers are furnished.

Comcode: 100 013 580

## BRACKETS

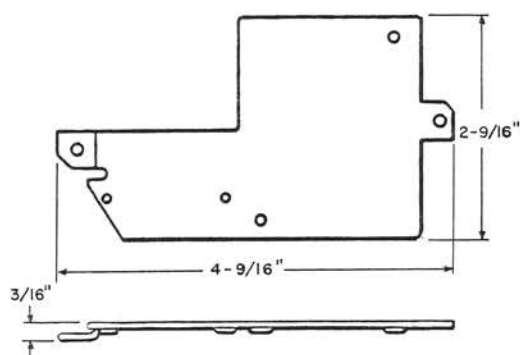
43B



Metal bracket arranged to mount a 47C or D type connecting block or a 108A type apparatus blank in an electrical outlet box. Provided with mounting screws and screws for mounting a connecting block or jack.

Comcode: 100 013 630

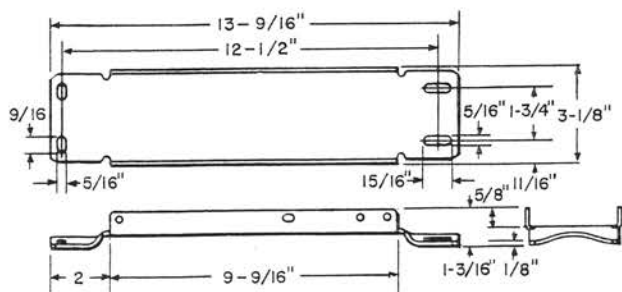
44B



Metal bracket for mounting a number 7 type buzzer and a 152A Capacitor. Mounting screws and two leads for connecting buzzer are furnished.

Comcode: 100 013 648

45A

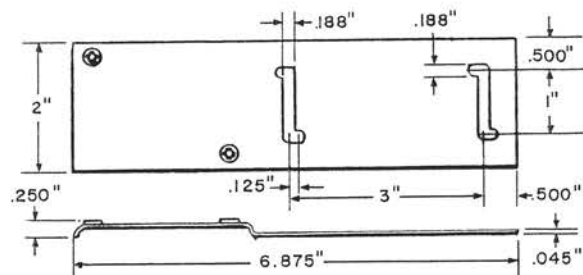


Metal bracket for mounting NC10 and NC16 and NF10

and NF16 Cable Terminals on poles or walls. Arranged for horizontal or vertical mounting on walls.

Comcode: 100 013 655

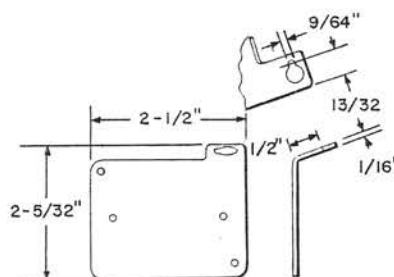
60A



Metal bracket for mounting a number 7 type buzzer on a number 168 type backboard. Mounting screws are furnished.

Comcode: 100 013 804

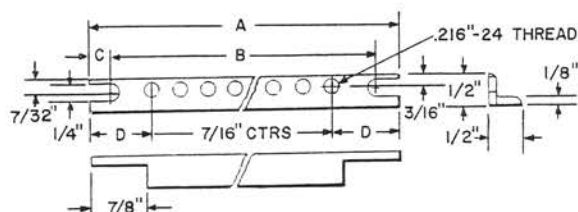
65A



Metal bracket for mounting a number 7 type buzzer or a KS-8109 type buzzer in a 630DW type and similar multi-button type telephone sets. Mounting screws are furnished and also insulated washers are furnished for mounting a KS-8109 type buzzer.

Comcode: 100 013 846

67A and B



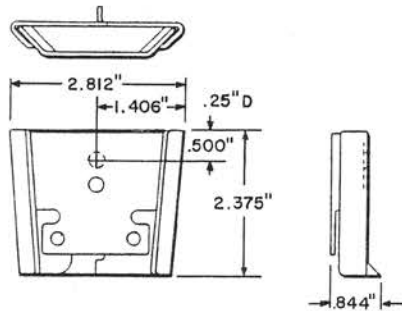
Code No.	Comcode	Dimensions (Inches)			
		A	B	C	D
67A	100 013 853	19	18-5/16	11/32	31/32
67B	100 013 861	23	22-1/4	3/8	1

Metal brackets for mounting 201C and similar type key telephone units on relay racks in the 1A1 Key Telephone System. Mounting screws are furnished.



## BRACKETS

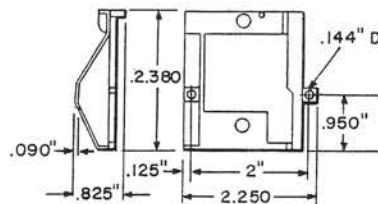
68A



Two-piece metal bracket for mounting 101B Wire Terminal. Intended for pole or crossarm mounting of terminals so that removal and replacement will not interrupt service. Mounting hardware is furnished.

Comcode: 100 013 879

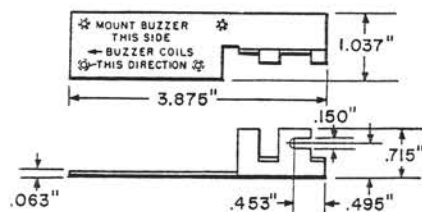
70A



Plastic bracket for mounting KS-8108 type buzzer on a C4A Ringer in 564HLW type telephone sets. Mounting screws are furnished.

Comcode: 100 013 895

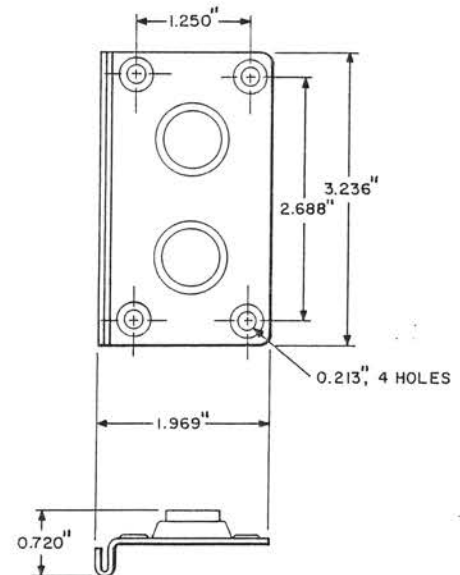
71A



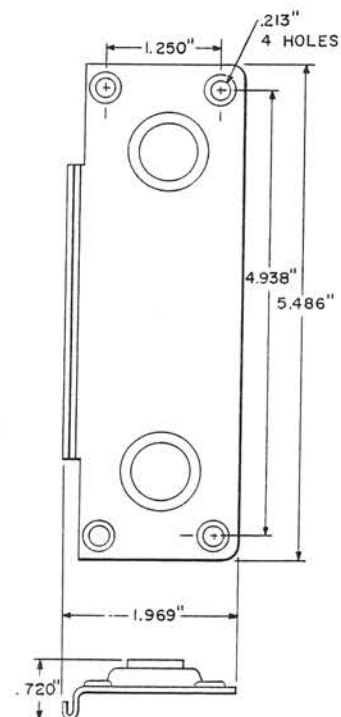
Metal bracket for mounting a number 7AW type buzzer (less housing) or a KS-8109 type buzzer. For use in the number 636, 637, 638, and 639 type telephone sets. Mounting hardware is furnished.

Comcode: 100 013 903

75A, 76A, and 77A



75A

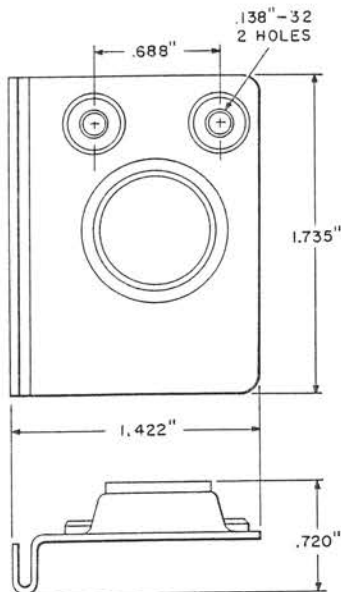


76A



## BRACKETS

## 75A, 76A, and 77A (Continued)



77A

Consist of metal bracket and two friction pads. For mounting number 549 and 551 type keys to the side of number 500 and 1500 type telephone sets. Brackets are attached over the lip of the base of the telephone set and locked in place by the telephone set housing.

75A: For 549A or 549B type keys.

Comcode: 100 013 952

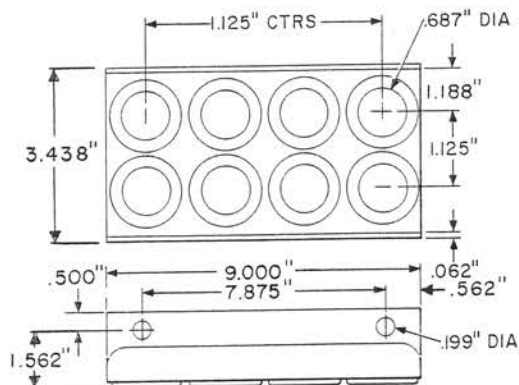
76A: For 549C or 549D type keys.

Comcode: 100 013 960

77A: For 551A type keys.

Comcode: 100 013 978

82A



Aluminum brackets equipped with rubber grommets, each of which will accommodate a 25-pair binder group.

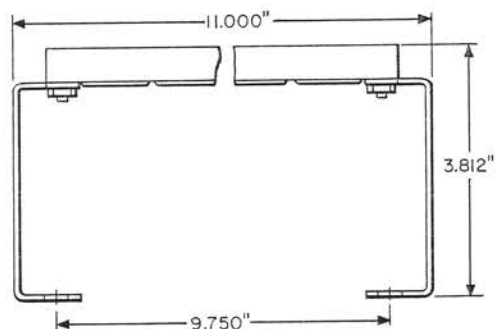
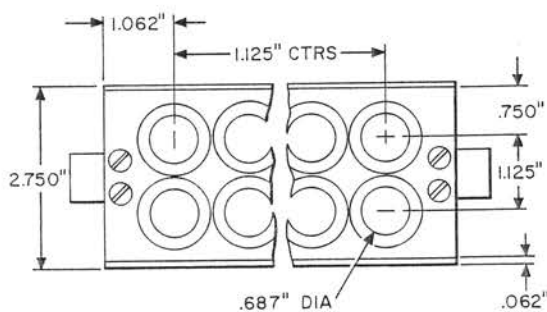
Has 16 grommets and will accommodate 200 "Out" cable pairs.

Intended for use in housings to facilitate wiring of PIC cables in dedicated outside plant control and access points.

Used initially in 29C3, 29D3, and 29E3 type cabinets.

Comcode: 100 014 000

83A



An aluminum bracket equipped with 16 rubber grommets, each of which will accommodate a 25-pair binder group. Also equipped with two aluminum mounting supports. Mounting screws and a single pair wire terminal are furnished.

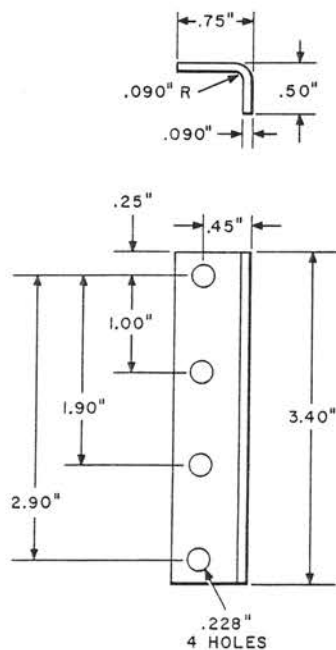
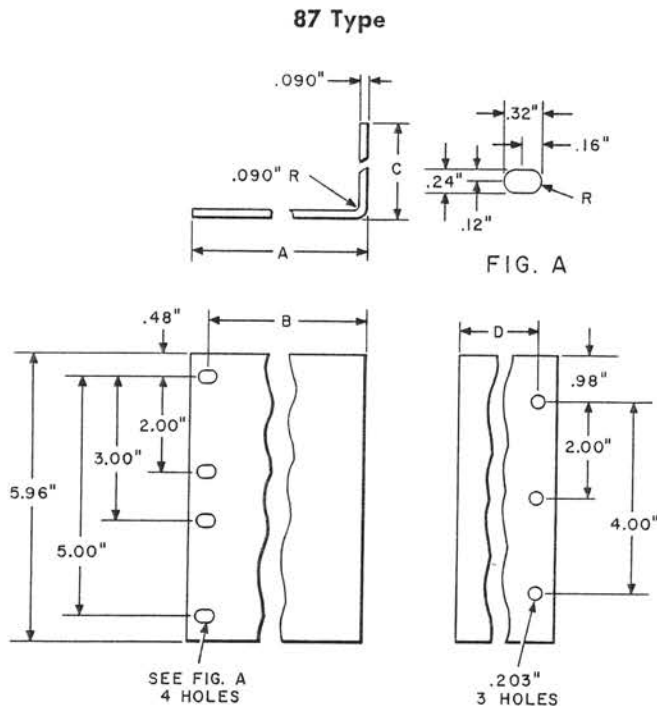
Will accommodate 200 "Out" cable pairs. Bracket hole designations are stamped on marker tape.

Intended for use in housings to facilitate wiring of PIC cables in dedicated outside plant control and access points.

Used initially with an aerial mounted 1B1 Closure.

Comcode: 100 014 018

## BRACKETS



Consists of two or more steel brackets zinc plated.

Fig. No.	Dim. A	Dim. B	Dim. C	Dim. D
1	1.00	.630	1.80	1.44
2	5.00	4.62	1.80	1.44
3	12.10	11.72	1.80	1.44
4	2.14	1.76	1.80	1.44
5	1.00	.630	2.45	2.09
6	5.00	4.62	2.45	2.09
7	2.14	1.76	2.45	2.09
8	6.96	6.58	2.45	2.09
9	8.10	7.72	2.45	2.09
10	12.10	11.76	2.80	1.44
11	7.00	6.63	1.80	1.44
12	4.14	3.77	1.80	1.44
13	2.55	2.18	1.80	1.44
14	14.10	13.73	1.80	1.44

87A: Consists of one figure 1 and one figure 2 bracket, intended for mounting Data Set 303 or Data Auxiliary Set 809 on 23 inch No. 5 cross-bar type frames or KS-20018 cabinet.

Comcode: 101 203 479

87B: Consists of one figure 1 and one figure 3 bracket, intended for mounting a Data Auxiliary Set 806B type on 23 inch No. 5 cross-bar type frames or KS-20018 cabinet.

Comcode: 101 203 487

87C: Consists of two figure 1 and two figure 15 brackets, intended for mounting a Data Auxiliary Set 806B and a Data Set 404B type adjacent to each other in the same horizontal mounting space on 23 inch No. 5 cross-bar type frames or KS-20018 cabinet.

Comcode: 101 203 495

87D: Consists of one figure 1, one figure 4, and two figure 15 brackets, intended for mounting two Data Auxiliary Sets 806B type adjacent to each other in the same horizontal mounting space on 23 inch No. 5 cross-bar type frames or KS-20018 cabinet.

Comcode: 101 203 503

87E: Consists of one figure 5 and one figure 6 bracket, intended for mounting Data Set 303 or Data Auxiliary Set 809 on 23 inch bulb angle type frames.

Comcode: 101 203 511

87F: Consists of one figure 5 and one figure 10 bracket, for mounting a Data Auxiliary Set 806B type on 23 inch bulb angle type frames.

Comcode: 101 203 529

87G: Consists of two figure 5 and two figure 15 brackets, intended for mounting a Data Auxiliary Set 806B type and Data Set 404B type, adjacent to each other in the same horizontal mounting space, on 23 inch bulb angle type frames.

Comcode: 101 203 537

87H: Consists of one figure 5, one figure 7, and two figure 15 brackets, intended for mounting two Data Auxiliary Sets 806B type, adjacent to each other in the same horizontal mounting space on 23 inch bulb angle type frames.

Comcode: 101 203 545

## BRACKETS

## 87 Type (Continued)

87J: Consists of two figure 5 brackets, intended for mounting Data Set 303 or Data Auxiliary Set 809 on 19 inch bulb angle type frames.

Comcode: 101 203 552

87K: Consists of one figure 5 and one figure 9 bracket, intended for mounting a Data Auxiliary Set 806B type on 19 inch bulb angle type frames.

Comcode: 101 203 560

87L: Consists of one figure 5 and one figure 8 bracket, intended for mounting a Data Set 404B type on 19 inch bulb angle type frames.

Comcode: 101 203 578

87M: Consists of one figure 1 and one figure 11 bracket, intended for mounting Data Set 303 or Data Auxiliary Set 809 on 25 inch mounting plate space in a KS-20093 cabinet.

Comcode: 101 203 586

87N: Consists of one figure 1 and one figure 14 bracket, intended for mounting Data Set 303 or Data Auxiliary Set 809 on 25 inch mounting plate space in a KS-20093 cabinet.

Comcode: 101 203 594

87P: Consists of one figure 1, one figure 13, and two figure 15 brackets, intended for mounting a Data Auxiliary Set 806B type and a Data Set 404B type, adjacent to each other in the same horizontal mounting space, on 25 inch mounting plate space in KS-20093 cabinets.

Comcode: 101 203 602

87R: Consists of one figure 1, one figure 12, and two figure 15 brackets, intended for mounting two Data Auxiliary Sets 806B type, adjacent to each other in the same horizontal mounting space, on 25 inch mounting plate space in KS-20093 cabinets.

Comcode: 101 203 610

87S: Consists of two figure 1 brackets, intended for mounting Data Auxiliary Set 806B type in KS-20018L6 cabinets or Data Set 303 type in KS-20018L5 cabinets.

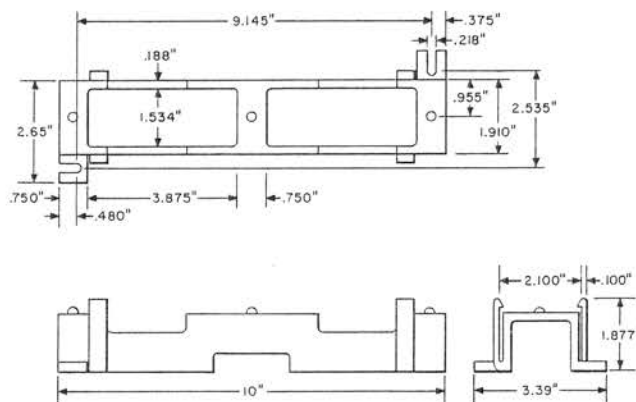
Comcode: 101 429 728

Brackets 87A, B, E, F, J, K, L, M, and N are provided with six P-147379 screws for mounting the brackets to the sets and the sets to the frames or cabinets.

Brackets 87C, D, G, H, P, and R are provided with 14 P-181933 and six P-147379 screws for mounting the brackets to the sets and the sets to the frames or cabinet and mounting the two sets together.

Bracket 87S is provided with six P-181933 and six P-174379 screws for mounting the bracket to the set and the sets to the cabinets.

## 89B

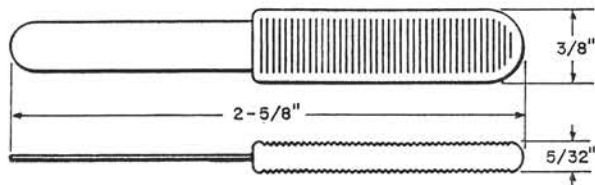


Consists of a molded plastic "stand-off" bracket for mounting 66M type connecting blocks away from flat surfaces so that cables can be stored behind the connecting block. This cable space accommodates three layers of four 25 pair inside wiring cable. The bracket is attached to a wall by means of mounting lugs having slotted holes to accommodate screws or bolts. The connecting block is attached to the bracket by means of a molded in "snap-on" arm.

Comcode: 101 334 167

## BURNISHER

1A



Spring steel blade in an insulating handle. The blade is coarsely ground, giving the effect of a fine file. For use in cleaning contact points.

Comcode: 100 014 240

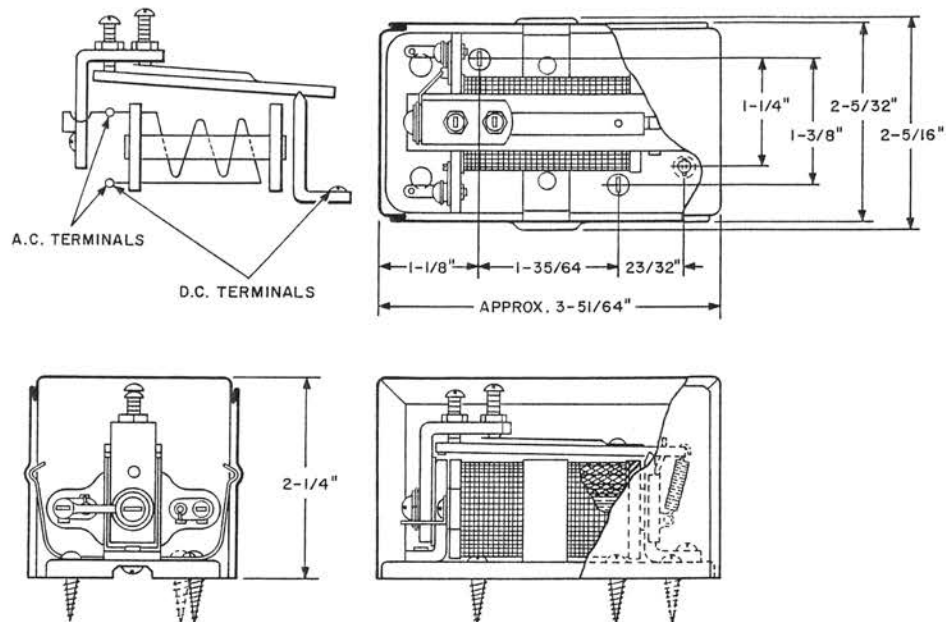
For other burnishers, see TOOLS.





## BUZZERS

4C



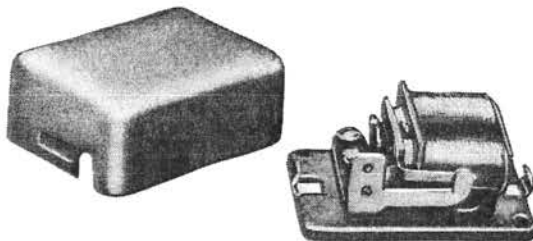
High resistance buzzer equipped with a light olive gray dust cover. Designed to operate on either direct current of 24 volts or alternating ringing current of 16-2/3 cycles. Approximate resistance is 1200 ohms.

When mounted on metal surfaces a number 176A-49 Backboard is required and must be ordered separately.

Comcode: 100 014 281

For use with private branch exchange switchboards.

## 7 Type



operated on ac, connections are made directly to coils eliminating the make and break contact and thus the need of contact maintenance. Will normally operate without readjustment on the voltage ranges listed under individual codes. The minimum effective resistance to dc or impedance to 60 cycle ac of these buzzers should be assumed to be approximately 3 times the nominal resistance.

Equipped with heavy silver contacts and reed mounted armature with a flat retractible spring and stop. Overall dimensions are 1-1/8 inches high, 2-11/16 inches deep, and 1-31/32 inches wide. Light olive gray finish.

7AW, BW, CW, DW, EW, and FW Types: Intended for either dc or 50-60 cycle ac operations. (See table). When

## BUZZERS

## 7 Type (Continued)

Code No.	Comcode	Min.	DC	Operating Voltage		Approx. Resistance (Ohms)
				Max.	60 Cycle AC	
7AW-49	100 014 398	14		40	15	270
7BW-49	100 014 406	2		6	4	10.5
7CW-49	100 014 414	2		8	3	2.6
7DW-49	100 014 422	4		15	4	15.8
7EW-49	100 014 430	10		20	10	105
7FW-49	100 014 448	20		60	20	682

## KS-8108L2, KS-8109L2, and KS-8110L2

Designed to operate on either ac or dc voltages. Each buzzer has one coil, an exterior screw for adjusting the contact gap, and two exterior binding posts. The base and press on cover are of magnetic material.

KS-8108L2: 0.5-0.8 ohms resistance and will operate on 3.4 to 4.5 volts dc or 60 cycle ac.

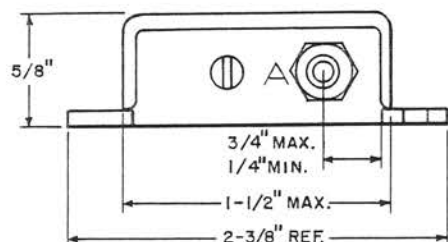
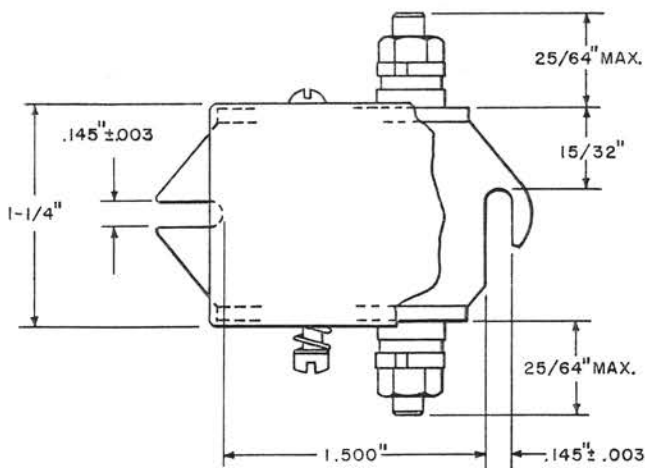
Comcode: 400 021 762

KS-8109L2: 55 ohms resistance and will operate on 14 to 30 volts dc or 60 cycle ac.

Comcode: 997 912 662

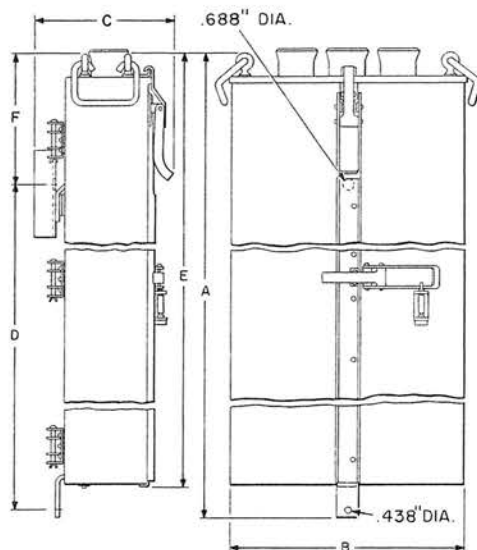
KS-8110L2: 300 ohms resistance and will operate on 24 to 50 volts dc or 60 cycle ac.

Comcode: 400 021 788



## CABINETS

29 Type



Each consists of a metal housing having hinged doors and a wooden backboard. Brackets for pole or wall mounting are furnished.

29A1 and B1: One nipple is provided in the top plate, and two cable entrance holes are provided in the bottom of each cabinet. Used initially in furnishing cross-connecting facilities in the distribution cable plant.

29C2, D2, and E2: Three nipples are provided in the top plate, and four cable entrance holes are provided in the bottom of each cabinet. A lead disk 0.125 inch thick is soldered flush with the top of each nipple. Used initially for control points in dedicated plant.

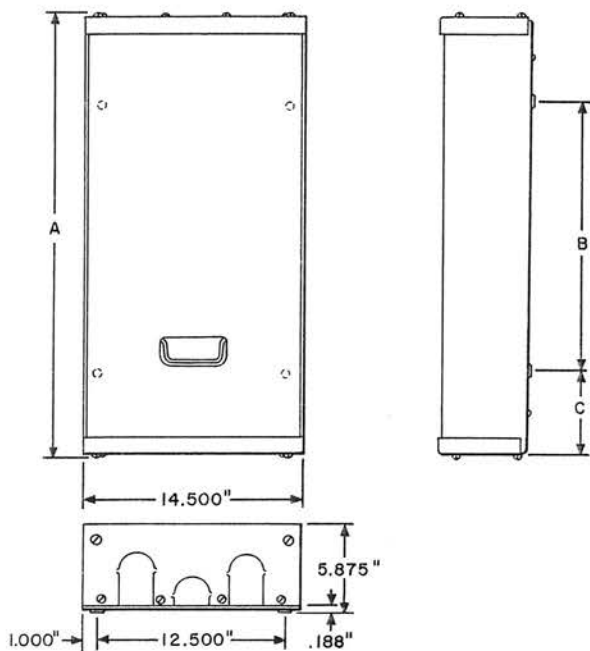
29C3-800, D3-1200, and E3-1800: Same as 29C2, D2, and E2 except equipped with wiring brackets and distributing rings on the wooden backboard, and they are not equipped with the lead disk. Used initially for furnishing access and control points in dedicated outside plant.

Code No.	Comcode	A	B	Dimensions (Inches)		E	F
				C	D		
29A1	100 014 562	29.250	10.187	8.500	21.250	26.875	7.500
29B1	100 014 570	46.875	10.187	8.500	38.875	44.500	7.500
29C2	100 014 596	39.500	16.562	9.250	30.000	37.375	9.000
29D2	100 014 620	48.375	16.562	9.250	38.875	46.000	9.000
29E2	100 014 653	53.250	18.312	11.750	44.500	51.000	8.312
29C3-800	100 014 604	39.500	16.562	9.250	30.000	37.375	9.000
29D3-1200	100 014 638	48.375	16.562	9.250	38.875	46.000	9.000
29E3-1800	100 014 661	53.250	18.312	11.750	44.500	51.000	8.312



## CABINETS

## 31A1-450 and 31B1-1050



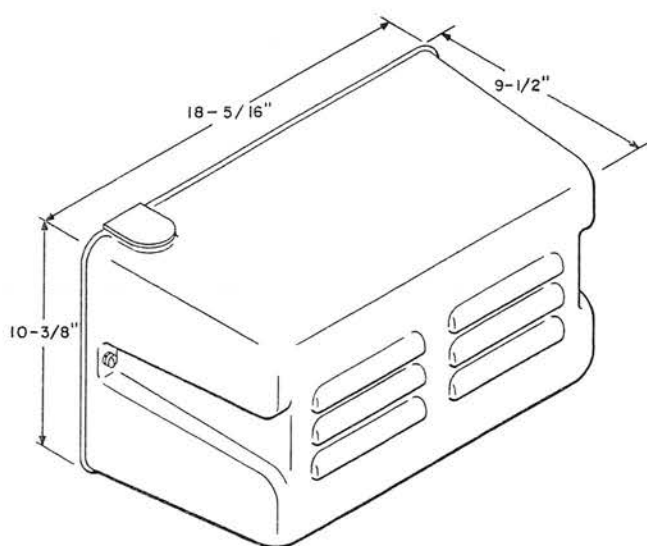
Each consists of a sheet metal intermediate section provided with a door. The door is provided with slot type knockouts for cable entrance. A wooden backboard, equipped with wiring brackets and distributing rings, is mounted in each cabinet.

Code No.	Comcode	Dimensions (Inches)		
		A	B	C
31A1-450	100 014 679	29.500	18.000	5.562
31B1-1050	100 014 687	50.250	35.000	7.438

## CABINETS

## Apparatus

## ED-82051-70, Group 1

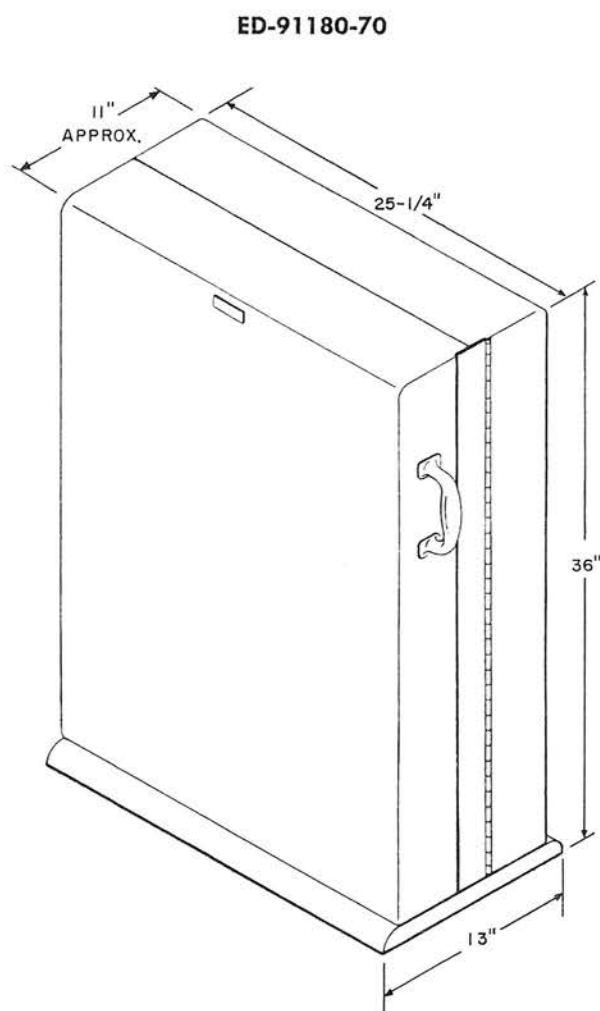


A molded fiber glass cabinet with a stippled light olive gray finish. Cabinet is wall mounted on a wooden backboard and has ventilation louvers and cable entrances. Used to enclose the 101J Power Plant.

Comcode: 600 016 596

## CABINETS

## Apparatus



Metal cabinet with a hinged steel gate and removable metal cover. The cabinet is arranged for wall or floor mounting. Has a capacity of 18 mounting plates 14-1/8, 19, or 23 inches long by 1-3/4 inches wide. Consists of cabinet groups 23, 24, 28, 30, and 32; wooden base groups 18, 29, and 31; nameplate group NP; and mounting framework groups 3, 4, 5, 6, 9, 15, and 16. The groups required as described below must be specified on the order.

Group	Comcode	Description
18	600 016 646	Gray green finished wooden base.
23 and NP	600 016 661	Light olive gray wrinkle enamel finished cabinet, less wooden base.

Group	Comcode	Description
24 and NP	600 016 844	Gray green textured vinyl finished cabinet with louvers, less wooden base.
28 and NP	600 016 307	Light olive gray wrinkle enamel finished cabinet with louvers, less wooden base.
29	600 016 653	Light olive gray finished wooden base.
30 and NP	600 016 315	Medium gray textured vinyl finished cabinet with louvers, less wooden base.
31	600 016 323	Medium gray lacquer finished wooden base.
32 and NP	600 016 851	Light olive gray wrinkle enamel finished cabinet, less wooden base.

Additional framework required for mounting is listed below.

Group	Number of Mounting Plates	Size (Inches)	Terminal Quantity	Strips Type
3	14	19	{ 14 4	195 100
4	18	19	5	100
5	18	14-1/8	{ 18 5	195 100
6	14	23	4	100
9	18	19	18	195
15	18	19 or 23	—	—
16	One cable tie bar	—	—	—

**ED-91180-72**

Same construction as ED-91180-70 except the cabinet has a capacity of 15 mounting plates 23 inches long by 2 inches wide. Consists of cabinet groups 19, 21, 25, 26, and 35; wooden base groups 22 and 27; nameplate group NP; and mounting framework group 20. The groups required as described below must be specified on the order. When floor mounted, groups 19 and 25 require one ED-91180-70, Group 18 gray green wooden base.

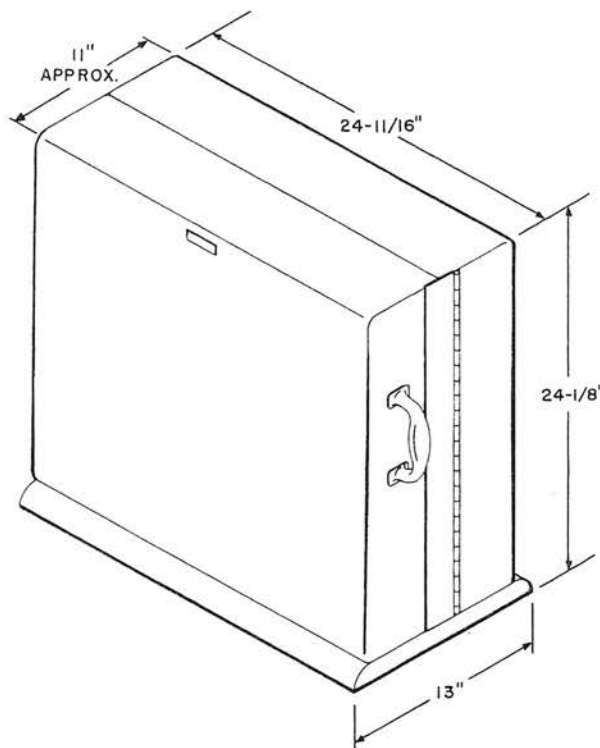
## CABINETS

## Apparatus

## ED-91180-72 (Continued)

Group	Comcode	Description
19 and NP	600 016 869	Gray green textured vinyl finished cabinet complete for fifteen 23-inch long by 2-inch wide mounting plates, less wooden base.
20	600 016 877	Framework for mounting twelve 23-inch long by 2-inch wide mounting plates and four 100 type terminal strips. Shipped unassembled when group 20 is ordered individually.
21 and NP	600 016 885	Light olive gray wrinkle enamel finished cabinet complete for fifteen 23-inch long by 2-inch wide mounting plates, less wooden base.
22	600 003 578	Light olive gray lacquer finished wooden base.
25 and NP	600 016 893	Gray green textured vinyl finished cabinet complete with louvers for fifteen 23-inch long by 2-inch wide mounting plates, less wooden base.
26 and NP	600 016 901	Dark brown wrinkle enamel finished cabinet complete with louvers for fifteen 23-inch long by 2-inch wide mounting plates, less wooden base.
27	600 016 919	Brown semigloss lacquer finished wooden base.
35 and NP	600 016 927	Light olive gray wrinkled enamel finished cabinet complete with louvers for fifteen 23-inch long by 2-inch wide mounting plates, less wooden base.

## ED-91194-70



Metal cabinet with a hinged steel gate and removable metal cover. The cabinet is arranged for wall or floor stand mounting. The cabinet has a capacity of 11 mounting plates 14-1/8, 19, or 23 inches long by 1-3/4 or 2 inches wide. Requires one ED-91180-70, Group 29 light olive gray wooden base when floor mounted. Consists of cabinet groups 18 and 22; nameplate group 2; and mounting framework groups 3, 4, 5, 6, 7, 8, 13, and 14. The group required as described below must be specified on the order.

Group	Comcode	Description
18 and NP2	600 016 778	Light olive gray wrinkle enamel finished cabinet, less wooden base.
22 and NP2	600 016 935	Light olive gray wrinkle enamel finished cabinet complete with louvers for eleven 1-3/4 or 2-inch wide mounting plates, less wooden base.



## CABINETS

## Apparatus

Additional framework required for mounting is listed below.

Group	Number of Mounting Plates	Size (Inches)	Terminal Quantity	Strips Type
3	7	19	{ 7 4	195 100
4	11	19	3	100
5	11	14-1/8	{ 11 3	195 100
6	7	23	4	100
7	11	14-1/8	2	193
8	11	19	11	195
13	11	19 or 23	—	—
14	One cable tie bar	—	—	—

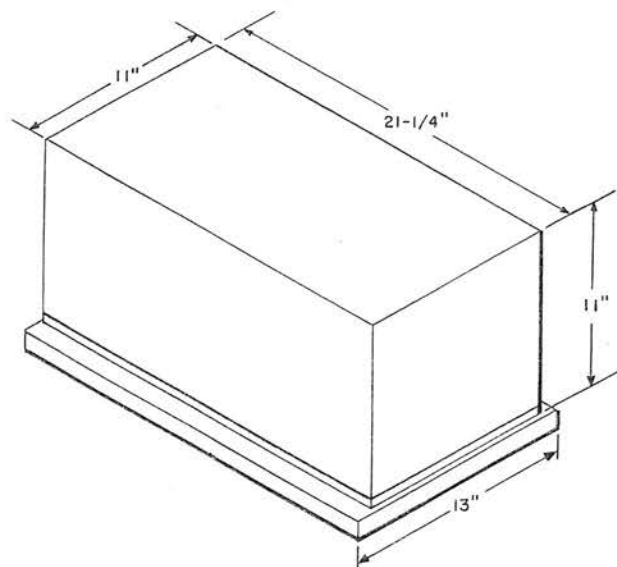
Group	Comcode	Description
19 and NP2	600 016 976	Gray green textured vinyl finished cabinet complete with louvers for nine 23-inch long by 2-inch wide mounting plates, less wooden base.
21 and NP2	600 016 984	Light olive gray wrinkle enamel finished cabinet complete with louvers for nine 23-inch long by 2-inch wide mounting plates, less wooden base.

ED-91472-70

ED-91194-72

Same construction as ED-91194-70 except the cabinet has a capacity of nine mounting plates 23 inches long by 2 inches wide. Consists of cabinet groups 15, 17, 19, and 21; nameplate group 2; and mounting framework group 16. The groups required as described below must be specified on the order. When floor mounted, groups 15 and 19 require one ED-91180-70, Group 18 gray green wooden base; groups 17 and 21 require one ED-91180-70, Group 29 light olive gray wooden base.

Group	Comcode	Description
15 and NP2	600 016 943	Gray green textured vinyl finished cabinet complete for nine 23-inch long by 2-inch wide mounting plates, less wooden base.
16	600 016 950	Framework for mounting six 23-inch long by 2-inch wide mounting plates and four 100 type terminal strips. Shipped unassembled when group 16 is ordered individually.
17 and NP2	600 016 968	Light olive gray wrinkle enamel finished cabinet complete for nine 23-inch long by 2-inch wide mounting plates, less wooden base.



A metal cabinet with a hinged steel gate and removable metal cover. The cabinet is arranged for wall or table mounting and has a capacity of four mounting plates, 14-1/8 or 19 inches long by 1-3/4 inches wide. The overall dimensions shown in the above illustration include the insulating board. Without the insulating board, the overall dimensions of the cabinet are 21-1/4 inches wide by 11 inches high by 11 inches deep. Consists of cabinet groups 2, 3, 8, 9, 10, 14, 16, and 18; nameplate group NP;



CABINETS

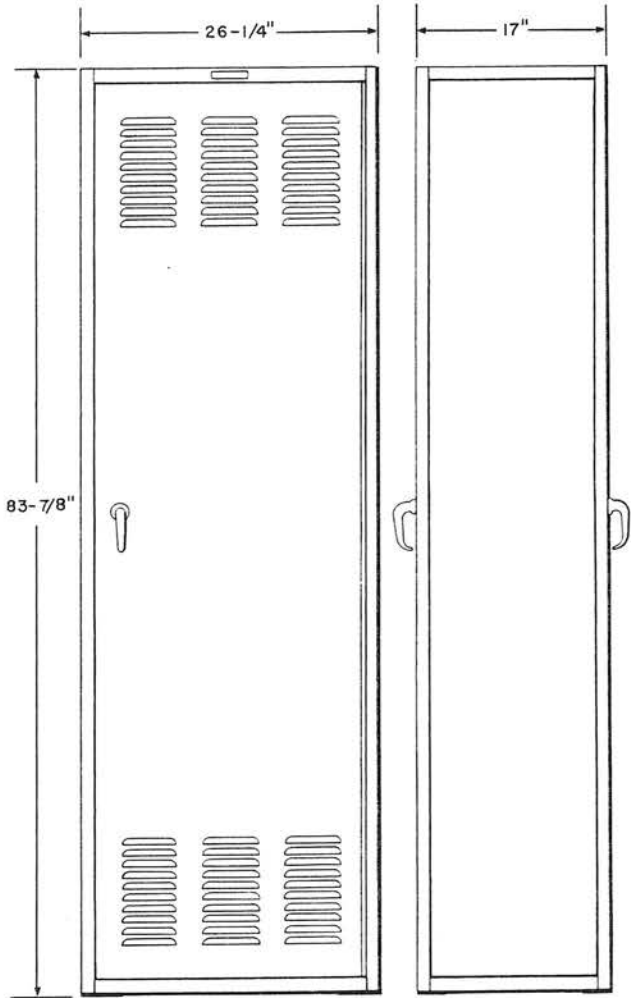
Apparatus

ED-91472-70 (Continued)

insulating board groups 4, 5, 15, and 17; and mounting framework group 1. The groups required as described below must be specified on the order.

Group	Comcode	Description
1	600 016 992	Supplementary details for mounting four 14-1/8 inch long by 1-3/4 inch wide mounting plates and four 195 Terminal Strips in cabinets per group 2 or 3.
2 and NP	600 017 008	Olive green finished cabinet complete with cover.
3 and NP	600 017 016	Walnut finished cabinet complete with cover.
4	600 017 024	Olive green finished insulating board.
5	600 017 032	Walnut finished insulating board.
8 and NP	600 017 040	Light olive gray finished cabinet complete with cover. Used for housing external alarm equipment.
9 and NP	600 017 057	Light olive gray finished cabinet complete with cover. Used to mount message registers.
10 and NP	600 017 065	Aluminum gray finished cabinet complete with cover.
14 and NP	600 017 073	Gray enamel finished cabinet complete with cover. Used to mount engine room alarm equipment.
15	600 017 081	Light gray lacquer finished insulating board.
16 and NP	600 017 099	Light olive gray wrinkle finished cabinet complete with cover. Used for 10-15 amp hour 15-19 volt; 10 amp hour 17-21 volt, 19-24 volt, or 21-26 volt power plant.
17	600 017 107	Light olive gray finished insulated board.
18 and NP	600 017 115	Light olive gray finished cabinet complete with cover.

ED-91981-70



A floor supported common systems steel cabinet with doors opening to the front and rear. Consists of cabinet groups 6, 15, 16, 17, and 18 and nameplate group NP. The groups required as described below must be specified on the order.

Group	Comcode	Description
6 and NP	600 016 349	Gray green vinyl finished cabinet with louvers for mounting forty-five 23-inch by 1-3/4 inch mounting plates.
15	600 017 123	Junction details for joining cabinets without side panels.

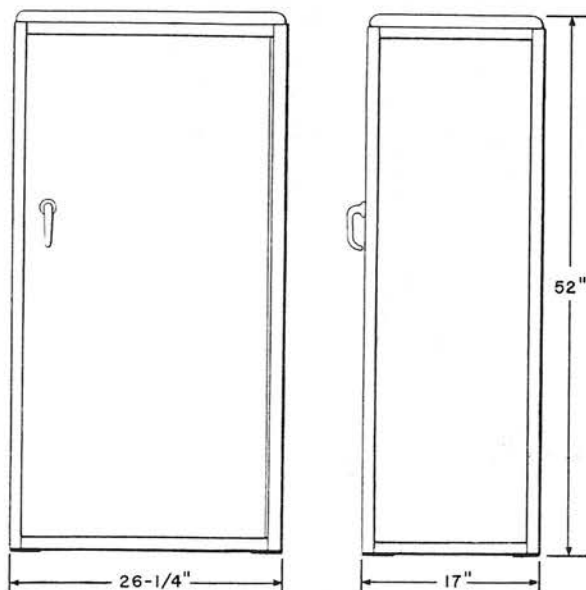
## CABINETS

## Apparatus

Group	Comcode	Description
16 and NP	600 016 356	Light olive gray finished cabinet without louvers for mounting forty 23-inch by 2-inch mounting plates.
17 and NP	600 016 364	Light olive gray finished cabinet with louvers for mounting forty 23-inch by 2-inch mounting plates.
18 and NP	600 016 372	Light olive gray finished cabinet with louvers for mounting forty-five 23-inch by 1-3/4 inch mounting plates.

A metal cabinet with fixed mounting frame, having a hinged door in front and lift off panel in back. The cabinet is arranged for floor mounting and has a capacity of 26 mounting plates 23 inches long by 1-3/4 inches wide or 23 mounting plates 23 inches long by 2 inches wide. Consists of cabinet groups 2, 4, 6, and 7 and nameplate group NP. The groups required as described below must be specified on the order.

## ED-92185-70

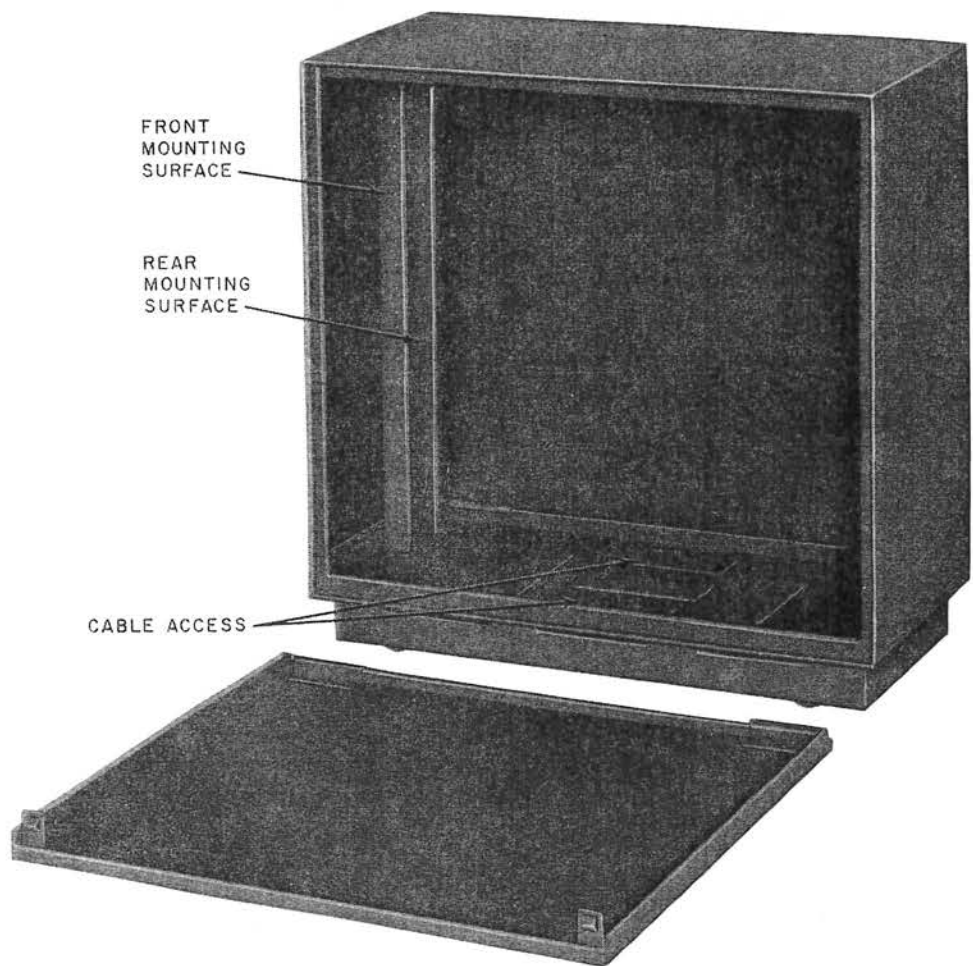


Group	Comcode	Description
2 and NP	600 017 131	Gray green wrinkle enamel finished cabinet; door without louvers. Arranged to mount twenty-three 23-inch long by 2-inch wide mounting plates.
4 and NP	600 016 406	Gray green wrinkle enamel finished cabinet; door without louvers. Arranged to mount twenty-six 23-inch long by 1-3/4 inch wide mounting plates.
6 and NP	600 016 414	Gray green wrinkle enamel finished cabinet; door and rear lift out panel have louvers. Arranged to mount twenty-three 23-inch long by 2-inch wide mounting plates.
7 and NP	600 017 149	Gray green wrinkle enamel finished cabinet; door and rear lift out panel have louvers. Arranged to mount twenty-six 23-inch long by 1-3/4 inch wide mounting plates.

CABINETS

Apparatus

KS-20018



KS-20018, L3 CABINET WITH FRONT PANEL REMOVED

The cabinets are constructed from aluminum sheets and consist of a framework housing and a front and rear panel. These are furnished in a two-tone gray textured vinyl finish. The framework housing is a dark convert gray while the two panels are a light olive gray. The cabinets house data equipment at remote stations. The different sizes of cabinets are designed to enclose one data set or a multiple arrangement of data sets.

List No.	Comcode	Description
1	996 536 702	Cabinet 12 inches deep, 24 inches wide, and 12 inches high. Provides an inside vertical mounting

List No.	Comcode	Description
		of 9 inches on 23 inch wide mounting plates.
2	400 318 275	Cabinet 12 inches deep, 24 inches wide, and 17 inches high. Provides an inside vertical mounting of 14 inches on 23 inch wide mounting plates.
3	400 318 283	Cabinet 12 inches deep, 24 inches wide, and 24 inches high. Provides an inside vertical mounting of 20 inches on 23 inch wide mounting plates.



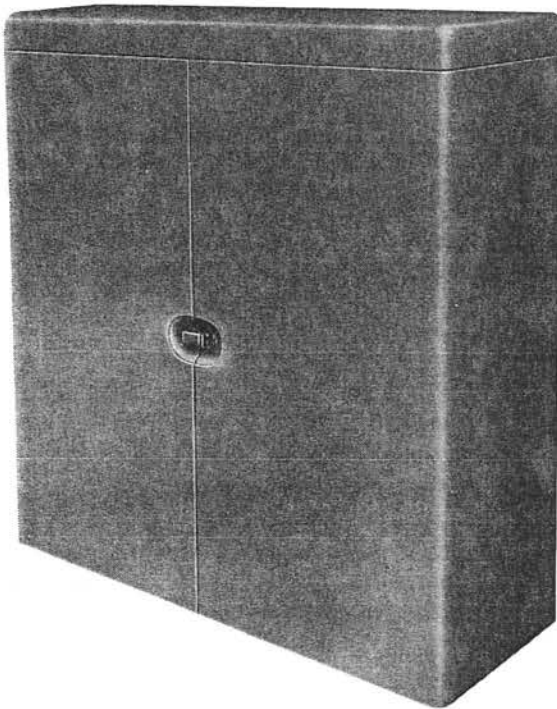
## CABINETS

## Apparatus

List No.	Comcode	Description	List No.	Comcode	Description
4	400 318 291	Cabinet 12 inches deep, 24 inches wide, and 30 inches high. Provides an inside vertical mounting of 26 inches on 23 inch wide mounting plates.	7	400 345 898	Cabinet 17 inches deep, 24 inches wide, and 30 inches high. Provides inside vertical mounting of 26 inches on 23 inch wide mounting plates.
5	400 345 872	Cabinet 12 inches deep, 20 inches wide, and 9 inches high. Provides inside vertical mounting of 6 inches on 19 inch wide mounting plates.	8	400 369 195	Cabinet 17 inches deep, 24 inches wide, and 24 inches high. Provides an inside vertical mounting of 20 inches on 23 inch wide mounting plates.
6	400 345 880	Cabinet 12 inches deep, 13 inches wide, and 9 inches high. Provides inside vertical mounting of 6 inches on 11.75 inch wide mounting plates.			

## Equipment

## ED-69488-50



A floor-supported single rack steel cabinet with light olive gray finish designed to take one 26A Apparatus Mounting and one ED-69366-51, Group 3, Terminal Plate Assembly. The terminal plate assembly is mounted on top of the apparatus mounting. The sides and ends are removable in two halves by removing the lift off top and releasing a spring catch on each set. This allows lowering of hinged tracks on which the apparatus mounting rolls. Requires approximately 30 inches of clear space in front of cabinet to allow complete lowering of track. Provision is made for floor mounting when required. **The group required as described below must be specified on the order.** All items in group 2 are shipped loose. Dimensions are 32-1/2 inches wide by 32-1/2 inches high by 13 inches deep.

Group	Description
1	Single rack cabinet with an apparatus mounting and terminal plate assembly. Comcode: 600 016 232
2	Single rack cabinet. Comcode: 600 017 156



## CABINETS

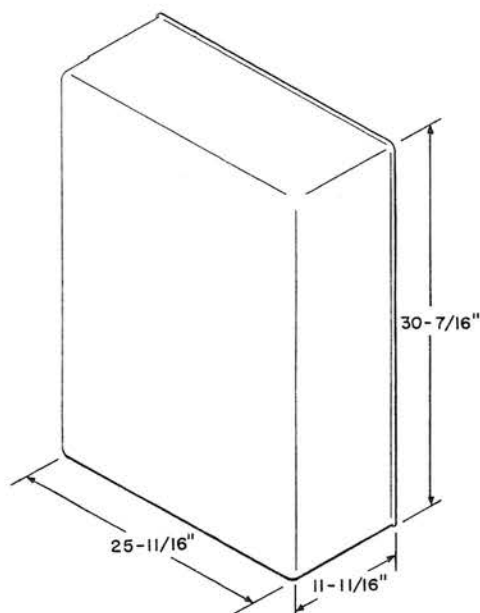
## Equipment

## ED-69489-50

Same as ED-69488-50 except has a double rack and has a capacity of two 26A Apparatus Mountings and two ED-69366-51, Group 3 Terminal Plate Assemblies. Dimensions are 32-1/2 inches wide by 32-1/2 inches high by 24-3/8 inches deep. The group required as described below must be specified on the order.

Group	Description
1	Double rack cabinet with two apparatus mountings and two terminal plate assemblies. Comcode: 600 016 240
2	Double rack cabinet. Comcode: 600 016 570

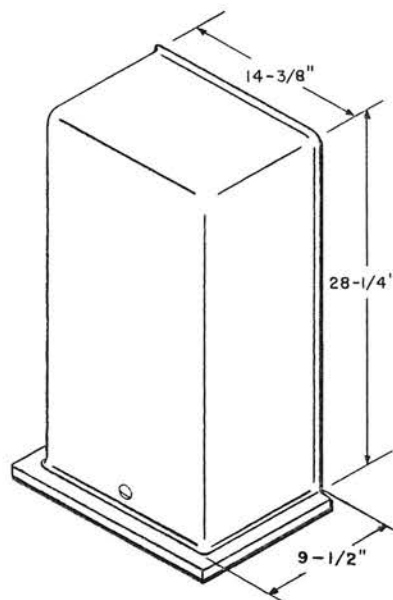
## ED-69368-50



Designed for wall mounting a 26A Apparatus Mounting. Consists of a cover group 2, nameplate group NP, and a backboard group 3. The groups required as described below must be specified on the order. Assorted hardware used for mounting the 26A Apparatus Mounting is shipped unassembled.

Group	Description
2 and NP	Cover for group 3. Has a light olive gray wrinkle enamel finish. Comcode: 600 016 231
3	Backboard for mounting. Comcode: 600 003 321

## ED-69462-50



Designed for floor or wall mounted number 301 type key service units. Consists of a base plate assembly group 1, cover group 2, floor board assembly group 3, and nameplate group NP. The groups required as described below must be specified on the order. The floor board assembly is shipped separate; other assorted hardware remains unassembled until equipment is mounted.

Group	Description
1	Base plate assembly with mounting hardware. Comcode: 600 017 164
2 and NP	Glass fiber cover for group 1. Comcode: 600 017 172
3	Floor board assembly with mounting hardware. Comcode: 600 016 174

## CABLES

## Switchboard

## A-Type

The A-type switchboard cables are provided with a thin plastic (polyvinyl chloride) covering. Cables are prefixed by code numbers.

Cables prefixed by code numbers below 300 employ BU wire. The conductors are tinned and have polyvinyl chloride insulation (PVC).

Cables prefixed by code numbers 400 through 405 employ BH wire. The conductors are tinned and have extruded polyvinyl chloride, cotton braid, lacquer treated insulation.

Cables prefixed by code numbers in the 750 to 759 series, except 754, employ conductors of polyethylene insulated wire. Each wire is shielded with a tinned copper braid having a number 26 AWG ground wire braided into the shield.

A general table of A-type cables follows giving the gauge of wire, the color combination codes, and the number of conductors, triples, pairs, and singles. Two additional tables follow the general table and cover codes 400 through 405 and 750 through 759.

Code No.	Comcode	Conductors	No.	PAIRS		SINGLES			Dimensions	
				Gauge	Colors*	No.	Gauge	Colors*	(Inches)	Shape
16A	100 014 695	63	20	22	1C-20C	20	22	1C-20C	.54	Round
24A	100 014 729	43	20	22	1C-20C	—	—	—	.46	Round
50A	100 014 752	33	10	22	1C-10C	10	22	1C-10C	.41	Round
62A	100 014 786	63	15	22	1C-15C	—	—	—	.54	Round
			15	22	1C-15C	—	—	—		
66A	100 014 802	103	20	22	1C-20C	—	—	—	.67	Round
			20	22	1C-20C	—	—	—		
			10	22	1C-10C	—	—	—		
69A(a)	100 014 836	208	20	22	1C-20C	—	—	—	.93	Round
			20	22	1C-20C	—	—	—		
			20	22	1C-20C	—	—	—		
			20	22	1C-20C	—	—	—		
			20	22	1C-20C	—	—	—		
70A	100 014 869	83	20	22	1C-20C	—	—	—	.61	Round
			20	22	1C-20C	—	—	—		
74A	100 014 893	22	10	22	1C-10C	—	—	—	.36	Round
97A	100 014 943	132	20	22	1C-20C	—	—	—	.74	Round
			20	22	1C-20C	—	—	—		
			20	22	1C-20C	—	—	—		
			4	22	1C-4C	—	—	—		
106A	100 014 984	103	20	22	1C-20C	20	22	1C-20C	.66	Round
			20	22	1C-20C	—	—	—		
182A	100 015 007	12	6	22	1C-6C	—	—	—	.29	Round
183A	100 015 031	53	20	22	1C-20C	10	22	1C-10C	.50	Round
191A	100 015 064	93	20	22	1C-20C	20	22	1C-20C	.63	Round
			10	22	1C-10C	10	22	1C-10C		
205A	100 015 080	39	12	22	1C-12C	12	22	1C-12C	.43	Round
230A	100 015 114	136	6	22	1C-6C	—	—	—	.75	Round
			20	22	1C-20C	—	—	—		
			20	22	1C-20C	—	—	—		
			20	22	1C-20C	—	—	—		
233A	100 015 148	127	2	22	1C-2C	20	22	1C-20C	.72	Round
			20	22	1C-20C	20	22	1C-20C		
			20	22	1C-20C	—	—	—		
234A	100 015 163	164	20	22	1C-20C	—	—	—	.82	Round
			20	22	1C-20C	—	—	—		
			20	22	1C-20C	—	—	—		
			20	22	1C-20C	—	—	—		
235A(a)	100 105 189	208	20	22	1C-20C	20	22	1C-20C	.92	Round
			20	22	1C-20C	20	22	1C-20C		
			20	22	1C-20C	—	—	—		
			20	22	1C-20C	—	—	—		

\*See Chart I.

## CABLES

## Switchboard

## A-Type (Continued)

Code No.	Comcode	Conductors	PAIRS			SINGLES			Dimensions (Inches)	Shape
			No.	Gauge	Colors*	No.	Gauge	Colors*		
243A(b)	100 015 247	312	20	22	1C-20C	20	22	1C-20C	1.12	Round
			20	22	1C-20C	20	22	1C-20C		
			20	22	1C-20C	20	22	1C-20C		
			20	22	1C-20C	20	22	1C-20C		
			20	22	1C-20C	20	22	1C-20C		
252A	100 849 892	12	6	24	1C-6C	—	—	—	.26	Round
253A	100 015 296	22	10	24	1C-10C	—	—	—	.33	Round
254A	100 015 312	33	10	24	1C-10C	10	24	1C-10C	.37	Round
255A	100 015 338	43	20	24	1C-20C	—	—	—	.42	Round
256A	100 015 353	63	20	24	1C-20C	20	24	1C-20C	.49	Round
257A	100 015 379	83	20	24	1C-20C	—	—	—	.56	Round
			20	24	1C-20C	—	—	—		
258A	100 015 395	103	20	24	1C-20C	20	24	1C-20C	.62	Round
			20	24	1C-20C	—	—	—		
259A	100 015 411	127	20	24	1C-20C	20	24	1C-20C	.66	Round
			20	24	1C-20C	20	24	1C-20C		
260A	100 015 437	153	2	24	1C-2C	—	—	—	.71	Round
			20	24	1C-20C	20	24	1C-20C		
			20	24	1C-20C	20	24	1C-20C		
			10	24	1C-10C	10	24	1C-10C		
261A	100 015 452	164	20	24	1C-20C	—	—	—	.75	Round
			20	24	1C-20C	—	—	—		
			20	24	1C-20C	—	—	—		
			20	24	1C-20C	—	—	—		
262A(a)	100 015 478	208	20	24	1C-20C	—	—	—	.84	Round
			20	24	1C-20C	—	—	—		
			20	24	1C-20C	—	—	—		
			20	24	1C-20C	—	—	—		
263A(b)	100 015 494	312	20	24	1C-20C	20	24	1C-20C	1.01	Round
			20	24	1C-20C	20	24	1C-20C		
			20	24	1C-20C	20	24	1C-20C		
			20	24	1C-20C	20	24	1C-20C		
			20	24	1C-20C	20	24	1C-20C		
264A	100 015 510	185	20	24	1C-20C	20	24	1C-20C	.77	Round
			20	24	1C-20C	20	24	1C-20C		
			20	24	1C-20C	20	24	1C-20C		
265A	100 015 536	26	12	24	1C-12C	—	—	—	.35	Round
266A	100 015 551	50	12	24	1C-12C	—	—	—	.45	Round
			12	24	1C-12C	—	—	—		
267A	100 015 577	146	12	24	1C-12C	—	—	—	.71	Round
			12	24	1C-12C	—	—	—		
			12	24	1C-12C	—	—	—		
			12	24	1C-12C	—	—	—		
			12	24	1C-12C	—	—	—		
			12	24	1C-12C	—	—	—		
			12	24	1C-12C	—	—	—		
269A	100 015 593	74	12	24	1C-12C	—	—	—	.53	Round
			12	24	1C-12C	—	—	—		
			12	24	1C-12C	—	—	—		
270A	100 015 619	104	20	24	1C-20C	—	—	—	.62	Round
			20	24	1C-20C	—	—	—		
			10	24	1C-10C	—	—	—		

\*See Chart I.



## CABLES

## Switchboard

## A-Type (Continued)

Code No.	Comcode	Conductors	PAIRS			SINGLES			Dimensions	
			No.	Gauge	Colors*	No.	Gauge	Colors*	(Inches)	Shape
271A	100 015 635	185	20	22	1C-20C	20	22	1C-10C	.88	Round
			20	22	1C-20C	20	22	1C-10C		
			20	22	1C-20C	20	22	1C-10C		
274A	100 015 676	93	20	24	1C-20C	10	24	1C-10C	.58	Round
			20	24	1C-20C	—	—	—		
276A	100 015 692	26	12	22	1C-12C	—	—	—	.37	Round
280A	100 015 742	153	20	22	1C-20C	20	22	1C-20C	.80	Round
			20	22	1C-20C	20	22	1C-20C		
			10	22	1C-10C	10	22	1C-10C		
283A	100 849 900	210	17	24	1C-17C	—	—	—	.84	Round
800A	100 016 369	42	20	26	1C-20C	—	—	—	.30	Round
801A	100 016 377	63	20	26	1C-20C	20	26	1C-20C	.34	Round
802A	100 016 385	103	20	26	1C-20C	20	26	1C-20C	.43	Round
			20	26	1C-20C	—	—	—		
803A	100 016 393	82	20	26	1C-20C	—	—	—	.39	Round
			20	26	1C-20C	—	—	—		
804A	100 016 401	144	20	26	1C-20C	—	—	—	.50	Round
			20	26	1C-20C	—	—	—		
			20	26	1C-20C	—	—	—		
805A	100 016 419	164	10	26	1C-10C	—	—	—	.53	Round
			20	26	1C-20C	—	—	—		
			20	26	1C-20C	—	—	—		
			20	26	1C-20C	—	—	—		
			20	26	1C-20C	—	—	—		
806A(c)	100 016 427	206	20	26	1C-20C	—	—	—	.59	Round
			20	26	1C-20C	—	—	—		
			20	26	1C-20C	—	—	—		
			20	26	1C-20C	—	—	—		
			20	26	1C-20C	—	—	—		
807A	100 016 435	34	16	26	1C-16C	—	—	—	.25	Round
808A	100 016 443	66	16	26	1C-16C	—	—	—	.33	Round
			16	26	1C-16C	—	—	—		
809A	100 016 450	132	16	26	1C-16C	—	—	—	.44	Round
			16	26	1C-16C	—	—	—		
			16	26	1C-16C	—	—	—		
			16	26	1C-16C	—	—	—		
810A(d)	100 016 468	264	16	26	1C-16C	—	—	—	.61	Round
			16	26	1C-16C	—	—	—		
			16	26	1C-16C	—	—	—		
			16	26	1C-16C	—	—	—		
			16	26	1C-16C	—	—	—		
			16	26	1C-16C	—	—	—		
			16	26	1C-16C	—	—	—		
			16	26	1C-16C	—	—	—		

\*See Chart I.

(a) Minimum number of good conductors is 205 as cable may include 1 defective pair and 1 defective single.

(b) Minimum number of good conductors is 305 as cable may include 1 defective pair and 1 defective single.

(c) Minimum number of good conductors is 204 as cable may include 1 defective pair.

(d) Minimum number of good conductors is 262 as cable may include one defective pair.



## CABLES

## Switchboard

## 750A Type

Code No.	Comcode	Conductors	No.	PAIRS Gauge	Color*	Approx. Dimensions (Inches)
750A (a)	100 997 394	4	2	22	1 & 2	.35 x .22
751A	100 997 402	6	3	22	1 to 3	.43
752A	100 997 410	12	6	22	1 to 5, 21	.57
753A	100 997 428	24	12	22	1 to 5, 21 to 25, 41 & 42	.68
754E (b) (c)	100 997 436	2	1	19	1	.425
755A (a)	100 000 768	4	2	19	1 & 2	.37 x .23
756A	100 016 278	16	8	19	1 to 5, 21 to 23	.71
757A	100 016 286	20	10	19	1 to 5, 21 to 25	.74
758A	100 016 294	8	4	22	1 to 4	.48
759A	100 016 302	16	8	22	1 to 5, 21 to 23	.62

\*See Chart II.

(a) Furnished with braided covers having crepe paper tape applied longitudinally over the shielded pairs. Over this is applied a braid of slate cotton.

(b) Twisted pair covered with extruded jacket of polyethylene, two braided shields of copper wire silver coated, and a polyvinyl-chloride jacket. Nominal characteristic impedance of 124 ohms at 4 mc, a nominal mutual capacitance 12.6 mmf per foot, and nominal attenuations per 100 feet of .245 db at 1 mc, .490 db at 4 mc and .786 db at 10 mc.

(c) Furnished in cartons of 500 feet. Larger lengths will be furnished on billable reels.

## CABLES

## Switchboard

## M-Type

The M-type switchboard cables are provided with a thin plastic (polyvinyl chloride) covering. Cables are prefixed by code numbers. The conductors are number 22 AWG C Wire, tinned, having polyvinyl chloride insulation, cotton

covered, and lacquered.

A general table of M-type cable follows giving the gauge of wire, the color combination codes, and the number of conductors, pairs, and signals.

Code No.	Comcode	Conductors	PAIRS			SINGLES			Dimensions (Inches)	Shape
			No.	Gauge	Color*	No.	Gauge	Color**		
16M	100 014 703	63	20	22	181-200	20	22	1-20	.71 x .41	Oval
24M	100 014 737	43	20	22	181-200	—	—	—	.60 x .37	Oval
50M	100 014 760	33	10	22	181-190	10	22	1-10	.43 Dia	Round
62M	100 839 604	63	15	22	181-195	—	—	—	.54 Dia	Round
			15	22	181-195	—	—	—		
66M	100 014 810	103	20	22	181-200	—	—	—	.72 Dia	Round
			20	22	181-200	—	—	—		
			10	22	181-190	—	—	—		
69M(a)	100 014 844	208	20	22	181-200	—	—	—	.99 Dia	Round
			20	22	181-200	—	—	—		
			20	22	181-200	—	—	—		
			20	22	181-200	—	—	—		
			20	22	181-200	—	—	—		
70M	100 014 877	83	20	22	181-200	—	—	—	.79 x .49	Oval
			20	22	181-200	—	—	—		
74M	100 014 901	21	10	22	181-190	—	—	—	.37 Dia	Round
79M	100 839 612	21	10	22	181-190	—	—	—	.41 x .24	Oval
84M(b) (c)	100 839 620	63	20	22	181-200	20	22	1-20	1.32 x .32	Flat
97M	100 839 638	132	20	22	181-200	—	—	—	.74 Dia	Round
			20	22	181-200	—	—	—		
			20	22	181-200	—	—	—		
			4	22	181-184	—	—	—		
100M	100 839 646	83	20	24	181-200	—	—	—	.68 x .40	Oval
			20	24	181-200	—	—	—		
103M	100 839 653	42	20	24	181-200	—	—	—	.51 x .32	Oval
106M	100 839 661	103	20	22	181-200	20	22	1-20	.66 Dia	Round
			20	22	181-200	—	—	—		
125M	101 309 383	23	10	19	181-190	20	22	1-20	.59 x .37	Oval
182M	100 015 015	13	6	22	181-186	—	—	—	.31 Dia	Round
183M	100 839 679	53	20	22	181-200	10	22	1-10	.50 Dia	Round
190M(d)	100 839 687	30	5	22	1, 3, 5, 7, 9	10	22	1-10	.38 x .23	Oval
			5	22	182, 184, 186, 188, & 190	10	22	1-10	.38 x .23	Oval
191M	100 839 695	93	20	22	181-200	20	22	1-20	.63 Dia	Round
			10	22	181-190	10	22	1-10		
205M	100 839 703	39	12	22	181-192	12	22	1-12	.43 Dia	Round
227M(c)	100 839 711	83	20	24	1-20	—	—	—	1.32 x .35	Flat
			20	24	181-200	—	—	—		
230M	100 839 729	136	6	22	181-186	—	—	—	.75 Dia	Round
			20	22	181-200	—	—	—		
			20	22	181-200	—	—	—		
			20	22	181-200	—	—	—		
232M(c)	100 839 737	83	20	22	1-20	—	—	—	1.57 x .37	Flat
			20	22	181-200	—	—	—		
233M	100 986 868	123	20	22	181-200	20	22	1-20	.71 Dia	Round
			20	22	181-200	20	22	1-20		

\*See Chart II.

\*\*See Chart III.

## CABLES

## Switchboard

## M-Type (Continued)

Code No.	Comcode	Conductors	PAIRS			SINGLES			Dimensions (Inches)	Shape
			No.	Gauge	Color*	No.	Gauge	Color**		
234M	100 839 745	164	20	22	181-200	—	—	—	.82 Dia	Round
			20	22	181-200	—	—	—		
			20	22	181-200	—	—	—		
			20	22	181-200	—	—	—		
235M(a)	100 839 752	208	20	22	181-200	20	22	1-20	.92 Dia	Round
			20	22	181-200	20	22	1-20		
			20	22	181-200	—	—	—		
			20	22	181-200	—	—	—		
236M(b)(c)	100 839 760	63	20	24	181-200	20	24	1-20	.76 x .37	Flat
239M(b)(c)	100 839 778	103	20	22	1-20	20	22	1-20	1.57 x .39	Flat
			20	22	181-200	—	—	—		
241M(b)(c)	100 839 786	43	20	22	181-200	—	—	—	.76 x .34	Flat
242M(b)(c)	100 986 876	63	20	22	181-200	20	22	1-20	1.57 x .33	Flat
243M(e)	100 839 802	312	20	22	181-200	20	22	1-20	1.12 Dia	Round
			20	22	181-200	20	22	1-20		
			20	22	181-200	20	22	1-20		
			20	22	181-200	20	22	1-20		
			20	22	181-200	20	22	1-20		
250M	100 839 810	63	10	24	181-190	20	24	1-20	.50 Dia	Round
			10	24	181-190	—	—	—		
251M	100 839 828	83	20	24	181-200	20	24	1-20	.56 Dia	Round
			10	24	181-190	—	—	—		
252M	100 839 836	12	6	24	181-186	—	—	—	.26 Dia	Round
253M	100 839 844	22	10	24	181-190	—	—	—	.33 Dia	Round
254M	100 839 851	33	10	24	181-190	10	24	1-10	.37 Dia	Round
255M	100 839 869	43	20	24	181-200	—	—	—	.42 Dia	Round
256M	100 839 877	63	20	24	181-200	20	24	1-20	.49 Dia	Round
257M	100 839 885	83	20	24	181-200	—	—	—	.56 Dia	Round
			20	24	181-200	—	—	—		
258M	100 839 893	103	20	24	181-200	—	—	—	.74 x .44	Oval
			20	24	181-200	—	—	—		
259M	100 839 901	127	—	—	—	20	24	1-20	.66 Dia	Round
			2	24	181-182	20	24	1-20		
			20	24	181-200	20	24	1-20		
260M	100 839 919	153	20	24	181-200	—	—	—	.71 Dia	Round
			20	24	181-200	20	24	1-20		
			10	24	181-190	10	24	1-10		
261M	100 839 927	164	20	24	181-200	—	—	—	.75 Dia	Round
			20	24	181-200	—	—	—		
			20	24	181-200	—	—	—		
			20	24	181-200	—	—	—		
262M(a)	100 839 935	208	20	24	181-200	—	—	—	.84 Dia	Round
			20	24	181-200	—	—	—		
			20	24	181-200	—	—	—		
			20	24	181-200	—	—	—		
263M(e)	100 839 943	312	20	24	181-200	20	24	1-20	1.01 Dia	Round
			20	24	181-200	20	24	1-20		
			20	24	181-200	20	24	1-20		
			20	24	181-200	20	24	1-20		
			20	24	181-200	20	24	1-20		

\*See Chart II.

\*\*See Chart III.

## CABLES

## Switchboard

## M-Type

Code No.	Comcode	Conductors	PAIRS			SINGLES			Dimensions (Inches)	Shape
			No.	Gauge	Color*	No.	Gauge	Color**		
264M	100 839 950	185	20	24	181-200	20	24	1-20	.77 Dia	Round
			20	24	181-200	20	24	1-20		
			20	24	181-200	20	24	1-20		
			20	24	181-200	20	24	1-20		
265M	100 839 968	26	12	24	181-192	—	—	—	.35 Dia	Round
266M	100 839 976	50	12	24	181-192	—	—	—	.45 Dia	Round
			12	24	181-192	—	—	—		
			12	24	181-192	—	—	—		
267M	100 839 984	146	12	24	181-192	—	—	—	.71 Dia	Round
			12	24	181-192	—	—	—		
			12	24	181-192	—	—	—		
			12	24	181-192	—	—	—		
			12	24	181-192	—	—	—		
			12	24	181-192	—	—	—		
269M	100 839 992	74	12	24	181-192	—	—	—	.53 Dia	Round
			12	24	181-192	—	—	—		
			12	24	181-192	—	—	—		
270M	100 840 008	104	20	24	181-200	—	—	—	.62 Dia	Round
			20	24	181-200	—	—	—		
			10	24	181-190	—	—	—		
271M	100 840 016	186	20	22	181-200	20	22	1-20	.88	Round
			20	22	181-200	20	22	1-20		
			20	22	181-200	20	22	1-20		
272M	100 840 024	34	16	24	181-200	—	—	—	.38	Round
273M	100 840 032	123	20	24	181-200	20	24	1-20	.66	Round
			20	24	181-200	20	24	1-20		
275M	100 840 040	103	20	22	181-200	20	22	1-20	.76 x .55	Oval
			20	22	181-200	—	—	—		
276M	100 840 057	26	12	22	181-192	—	—	—	.37 Dia	Round
277M(b) (c)	100 840 065	21	10	22	181-190	—	—	—	.76 x .28	Flat
278M	100 840 073	68	20	22	181-200	24	24	1-24	.67 x .39	Oval
279M(b) (c)	100 840 081	68	20	22	181-200	24	22	1-24	1.57 x .33	Flat
281M	100 840 099	123	20	22	181-200	20	22	1-20	.72	Round
			20	22	181-200	20	22	1-20		
282M	100 840 107	63	10	22	181-190	20	22	1-20	.54	Round
			10	22	181-190	—	—	—		

\*See Chart II.

\*\*See Chart III.

- (a) Minimum number of good conductors is 205 as cable may include 1 defective pair and 1 defective single.  
 (b) Has pressboard tape core.  
 (c) Conductors are bound with a textile binder, cover with paper tape, coated crepe paper tape and a textile braid and then printed with gray cable print.  
 (d) Conductors are bound with a textile binder but have no additional covering over the cores.  
 (e) Minimum number of good conductors is 309 as cable may include 1 defective pair and 1 defective single.



**CABLES****Switchboard****400 Type M**

Consists of 22 gauge conductors of AM2 wire with slate colored thermoplastic jacket. Has a dielectric strength of 2500 volts ac.

Code No. (a)	Comcode	Conductors	No. Pairs	Color (b)	No. Triples	Color (b)	Dia. (Ins.)
400M	101 241 446	18	—	—	6	1b-6b	0.41
401M	101 241 453	10	5	1b-5b	—	—	0.32
402M	101 241 461	20	10	1b-10b	—	—	0.41
403M	101 241 479	6	3	1b-3b	—	—	0.26
404M	101 241 487	9	—	—	3	1b-3b	0.31
405M	101 241 495	30	—	—	10	1b-3b	0.49

(a) Replaces 400A through 405A Cables, respectively

(b) See Chart IV

For general purpose use on Toll Transmission equipment and battery supply.

**500 Type M****Toll-Quadded**

Code No.	Comcode	Conductors*	No. of Quads	Gauge	Quad Color**	Approx Diameter (Inches)
500M	100 840 115	8	2	22	1 & 2	.26
501M	100 840 123	16	4	22	1-4	.33
502M	100 840 131	32	8	22	1-8	.45
503M	100 840 149	40	10	22	1-10	.49
504M	100 840 156	52*	12	22	1-12	.55
505M	100 840 164	68*	16	22	1-16	.62
506M	100 840 172	84*	20	22	1-20	.67

\*Includes 1 spare quad.

\*\*See Chart V.

## CABLES

## Switchboard

## 721 Type

Rubber insulated, twisted, tinned number 22 AWG conductors covered with a rubber jacket. One conductor has longitudinal ridges on the rubber insulation as a means of identification. Cable has 1 pair, 2 conductors and is approximately 0.28 inch in diameter. See Charts IV and V for color combinations.

Comcode: 101 007 888  
100 015 999 (Less reel)

## 722 Type

Has number 22 AWG conductors of K Wire with no binding or outer covering. Cable has 10 pairs, 20 conductors and is approximately 0.33 inch in diameter. See Charts IV and V for color combinations.

Comcode: 100 016 005

## 723 Type

Consists of one 720 Cable and one cable same as 720 except for having a red tracer bound together with slate cotton braid. Cable has 2 pairs, 4 conductors and is approximately 0.78 by 0.40 inch in diameter. See Charts IV and V for color combinations.

Comcode: 100 016 013 (Carton)  
100 016 021 (Reel)

## 724 Type

A flexible coaxial cable consisting of an inner conductor of number 20 AWG solid copper wire covered with solid stabilized polyethylene of natural color to a diameter of approximately 0.200 inch, and an outer conductor consisting of a double braid of tinned copper wire covered with a sheath of stabilized polyethylene of natural color. The overall diameter is approximately 0.31 inch.

Characteristic Impedance: 75 ohms

Capacitance: 21 uuf per foot.

Attenuation: 0.23 db per 100 feet at 1 mc.

0.54 db per 100 feet at 5 mc.

0.80 db per 100 feet at 10 mc.

Comcode: 100 016 039 (Carton)  
100 016 047 (Reel)

## 725 Type

Round flexible cable consisting of 30 conductors of number 24 AWG tinned copper wire, each insulated with two servings of cellulose acetate rayon yarn, a close serving

of cotton yarn, and a coating of cellulose acetate lacquer. Has no binding, serving, or external braiding, but each end of cable is tied to prevent untwisting of the conductors. The overall diameter is approximately 0.29 inch.

Colors are as follows:

Blue	Red-orange
Orange	Red-green
Green	Red-brown
Brown	Red-slate
Slate	Red-blue-white
Blue-white	Red-blue-orange
Blue-orange	Red-blue-green
Blue-green	Red-blue-brown
Blue-brown	Red-blue-slate
Blue-slate	Blue-Novelty red white
Red-blue	Orange-Novelty red white
	Green-Novelty red white
	Brown-Novelty red white
	Slate-Novelty red white
	Blue-White-Novelty red white
	Blue-Orange-Novelty red white
	Blue-Brown-Novelty red white
	Blue-Slate-Novelty red white

Note: Color listed as "Novelty red white" consists of one ply of red yarn twisted together with one ply of white yarn to form a single thread.

Comcode: 100 016 054

## 726 Type

A flexible high-attenuation coaxial cable consisting of an inner conductor of number 20 AWG nichrome wire covered with a solid stabilized polyethylene of natural color to a diameter of approximately 0.200 inch, and an outer conductor consisting of a double braid of tinned copper wire covered with a sheath of brown polyethylene. The overall diameter is approximately 0.31 inch.

Characteristic Impedance: 75 ohms.

Capacitance: 21 uuf per foot.

Comcode: 100 016 062 (Carton)

100 016 070 (Reel)

## 727A, 728A, and 729A

Flexible coaxial cables, each consisting of an inner conductor of solid copper wire, covered with solid stabilized polyethylene of natural color to a diameter of approximately 0.200 inch, and an outer conductor consisting of a double braid of tinned copper wire and a jacket as indicated in the table.

## CABLES

## Switchboard

## 727A, 728A, and 729A (Continued)

Intended for use as an outdoor patching cable for breaks in coaxial lines.

Corona-free at voltages up to 3500 volts rms.

Attenuation: 0.23 db per 100 feet at 1 mc.  
0.54 db per 100 feet at 5 mc.  
0.80 db per 100 feet at 10 mc.  
2.2 db per 100 feet at 70 mc.  
5.0 db per 100 feet at 300 mc.  
10.0 db per 100 feet at 1000 mc.

Impedance: 727A—75 ohms at 2 mc.  
728A—75 ohms at 10 mc.  
729A—75 ohms at 2 mc.

Capacitance: 727A—21 uuf per foot.  
728A—20.5 uuf per foot.  
729A—21 uuf per foot.

728A has a return loss of at least 35 db for any length up to 210 feet, over the frequency range of 55 to 95 mc, when driven and terminated in 75-ohm resistance impedances.

Code No.	Comcode	Diameter of Inner Conductor	Jacket Material	Approximate Diameter (Inch)	Color
*727A	100 016 088 (Carton) 100 016 096 (Reel)	20 AWG	Polyethylene	.31	Natural
728A	100 016 104 (Carton) 100 016 112 (Reel)	.0311 inch	Polyethylene	.31	Slate
**729A	100 016 120 (Carton) 100 016 138 (Reel)	20 AWG	Polyvinyl chloride	.36	Black

\*Has a longitudinal red rayon tracer under the jacket for identification purposes.

\*\*Has a longitudinal triangular ridge on the jacket for identification purposes.

## 730A

A coaxial cable consisting of number 23 AWG solid copper-covered steel center conductor insulated with a natural color polyethylene two-tinned copper braided shields and covered with a light olive gray polyvinyl chloride jacket. It has an overall diameter of 0.260 inch maximum.

Used for patching and cabling in L type carrier systems.

Comcode: 100 847 060

## 760A Type

Has two conductors of number 22 AWG copper wire, each insulated with an extruded coating of polyethylene. Insulated conductors are twisted into a pair which is covered with an extruded polyethylene jacket, two braided shields of silver coated copper wire, and a polyvinyl chloride slate colored jacket. The overall diameter is approximately 0.305 inch. Has nominal characteristic impedance of 124 ohms at 4 mc, a nominal mutual capacitance of 12.6 uuf per foot, and nominal attenuations per 100 feet of 0.135 db at 100 kc, 0.345 db at 1 mc, 0.70 db at 4 mc, and 1.15 db at 10 mc.

Comcode: 100 016 310 (Carton)  
100 016 328 (Reel)

## CABLES

## Switchboard

## 761A1 Type

Has two conductors of number 24 AWG tinned copper wire, each insulated with an extruded coating of polyethylene. The insulated conductors are twisted into a pair which is covered with two braided shields of tinned copper wire and a light olive gray plastic jacket. The overall diameter is approximately 0.225 inch. Has a maximum mutual capacitance of 17.5 pF/ft.

## 762A

Consists of ten shielded pairs (761A1 through 761A10 cables) which are stranded together and covered with a light olive gray plastic jacket. Modification consists of substituting various colored jackets on individual 761A1 cables to provide color coding. Cable is oval shaped, 0.64 by 0.81 inch in diameter.

For use on L type multiplex.

Comcode: 100 016 351

Code No.	Comcode	Pair Colors (a)
761A1	101 307 924	1
761A2	101 420 586	2
761A3	101 420 594	3
761A4	101 420 602	4
761A5	101 420 610	5
761A6	101 378 636	21
761A7	101 378 644	22
761A8	101 378 651	23
761A9	101 378 669	24
761A10	101 378 677	25
761A11	101 378 685	41
761A12	101 378 693	42
761A13	101 378 701	43
761A14	101 378 719	44
761A15	101 378 727	45
761A16	101 378 735	45A
761A17	101 378 743	20A

(a) See Chart II.

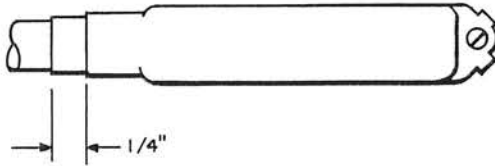




## CABLES

## Connector

## B25A Type



A beige, vinyl jacketed cable containing 25 pairs of number 24 AWG color coded conductors. Equipped with a KS-16690L1 Connector and KS-16689L3 Plug. A dust cover is furnished for the plug and connector. Can be obtained in 5, 15, 30, 60, or 100-foot lengths. Lengths must be specified on order.

Used as an extension cable for connecting between plug ended telephone sets and connector ended bridging terminals or apparatus cabinets.

Comcode: 100 017 326 5 Ft  
100 017 334 15 Ft  
100 017 342 30 Ft  
100 017 359 60 Ft  
100 017 367 100 Ft

## CABLES

## Multiple Sheath

## ABAM Type

Has number 22 AWG copper tinned conductors with polyethylene and polyvinyl chloride insulation and covered with an aluminum and polyvinyl chloride sheath. Has an average ac capacitance of 0.083 uf per mile of cable with

a conductor resistance of not more than 192 ohms per mile of cable at 68° F. Attenuation is approximately 1.8 db at 1000 Hz.

Code No.	Comcode	Minimum Number of Good Pairs	Approximate Overall Diameter (Inches)	Approximate Weight Per Foot (Lbs.)	Factory Stock Lengths (Feet)	Reel No.
ABAM6	100 019 504	6	0.42	0.12	1000	442
ABAM11	100 019 512	11	0.51	0.13	2500	414
ABAM16	100 019 520	16	0.57	0.17	2500	414
ABAM26	100 019 538	26	0.67	0.24	2500	414
ABAM51	100 019 546	51	0.95	0.43	1000	415
ABAM76	100 019 553	76	1.10	0.64	1000	415
ABAM101	100 019 561	101	1.22	0.77	1000	415
ABAM152	100 019 579	152	1.45	1.11	1000	416
ABAM202	100 019 587	202	1.68	1.46	1000	416
ABAM303	100 019 595	303	2.00	2.14	1000	417
ABAM404	100 019 603	404	2.28	2.81	1000	417
ABAM606	100 019 611	606	2.76	4.17	750	418

Intended for terminating exchange type cable and for certain building cable uses.

## ABMM Type

Has number 24 AWG cooper tinned conductors with polyethylene and polyvinyl chloride insulation and covered with an aluminum and polyvinyl chloride sheath. Has an average ac capacitance of 0.083 uf per mile of cable with

a conductor resistance of not more than 302 ohms per mile of cable at 68° F. Attenuation is approximately 2.3 db at 1000 Hz.

Code No.	Comcode	Minimum Number of Good Pairs	Approximate Overall Diameter (Inches)	Approximate Weight Per Foot (Lbs.)	Factory Stock Lengths (Feet)	Reel No.
ABMM101	100 019 629	101	1.02	0.56	1000	414
ABMM152	100 019 637	152	1.19	0.78	1000	414
ABMM202	100 019 645	202	1.34	0.99	1000	415
ABMM303	100 019 652	303	1.62	1.45	1000	416
ABMM404	100 019 660	404	1.84	1.89	1000	416
ABMM606	100 019 678	606	2.22	2.75	700	416
ABMM909	100 019 686	909	2.66	4.02	700	417

Intended for terminating exchange type cable and for certain building cable uses.

## CABLES

## Multiple Sheath

In descriptions of multiple sheath cables, the terms BT and GT are used. The definition of each term is provided as follows.

**Buried Tape-Armored Cable (BT)**

In cases where protection against low frequency induction from power lines or somewhat more mechanical protection is desired, a steel tape armor can be furnished. This type of sheath covering is similar to that used for jute protected cables, except for the addition of two servings of steel tapes. This protection consists of the following materials in the order named:

1. Asphalt compound.
2. One or more layers impregnated paper.
3. Asphalt compound.
4. One layer impregnated jute.
5. Asphalt compound.
6. Two layers steel tape.
7. Asphalt compound.
8. One or two layers impregnated jute.
9. Asphalt compound.
10. Coating of whitening.

For this construction the increase in diameter varies with the size of cable from about 0.3 inch to about 0.6 inch.

**Gopher Protected Cable (GT)**

Where conditions do not justify the heavy steel tapes used for regular tape armored cables and but little mechanical protection is required, such as for example, protection against rodents, a single tape armored cable is available using thin steel tape. This protection consists of the following materials in the order named:

1. Asphalt compound.
2. One layer impregnated paper.
3. Asphalt compound.

4. One layer steel tape.
5. Asphalt compound.
6. One or more layers impregnated paper.
7. Asphalt compound.
8. One or two layers impregnated jute.
9. Asphalt compound.
10. Coating of whitening.

**BHAA and BHAG Type****Electrical Characteristics**

DC Resistance: Approximately 117 ohms not to exceed 186 ohms per loop mile at 68° F.

Capacitance: 0.083 uf, approximately, per mile at 1000 Hz.

Attenuation: 1.8 db, approximately, per mile at 1000 Hz.

Dielectric Strength: BHAA—In excess of 8000 volts dc between conductors, in excess of 10,000 volts dc between conductors and sheath. BHAG—In excess of 8000 volts dc between conductors, in excess of 20,000 volts dc between conductors and sheath.

**Mechanical Characteristics**

Sheath: BHAA 11 to 600 pairs, (Alpeth)  
Aluminum and Polyethylene.

BHAG 11 to 600 pairs, (PAP)  
Polyethylene, Aluminum and Polyethylene.

Conductors: Number 22 AWG solid copper, insulated with extruded polyethylene applied directly to the wires.

All cables are color coded in accordance with the color code identification shown in Chart V.

Intended use: BHAA—Outside plant—General

BHAG—Outside plant—Buried



## CABLES

## Multiple Sheath

## BHAA and BHAG Type (Continued)

The mechanical characteristics of BHAA and BHAG Cables are indicated in the following tabulation.

## BHAA Type

Code	Comcode	Approximate Outside Diameter (Inches)	Approximate Weight Per Foot (LBS)	Standard Feet	Length Reel
BHAA 11	100 021 088	.50	.12	4250	414
BHAA 11 BT	100 021 096	.82	.63	4250	417
BHAA 11 GT	100 021 104	.74	.31	4250	417
BHAA 16	100 021 112	.55	.15	4250	414
BHAA 16 BT	100 021 120	.87	.70	4250	418
BHAA 16 GT	100 021 138	.79	.36	4250	417
BHAA 25	100 021 146	.64	.20	4250	414
BHAA 25 BT	100 021 153	.96	.82	4250	419
BHAA 25 GT	100 021 161	.88	.43	4250	418
BHAA 50	100 021 179	.81	.35	4260	416
BHAA 50 BT	100 021 187	1.13	1.09	4250	420
BHAA 50 GT	100 021 195	1.05	.63	4250	420
BHAA 75	100 021 203	1.01	.52	2800	416
BHAA 75 BT	100 021 211	1.42	1.68	2800	418
BHAA 75 GT	100 021 229	1.32	.94	2800	417
BHAA 100	100 021 237	1.12	.66	2800	416
BHAA 100 BT	100 021 245	1.53	1.93	2800	420
BHAA 100 GT	100 021 252	1.43	1.09	2800	418
BHAA 150	100 021 260	1.33	.93	2100	417
BHAA 150 BT	100 021 278	1.74	2.38	2100	419
BHAA 150 GT	100 021 286	1.64	1.44	2100	418
BHAA 200	100 021 294	1.49	1.20	2100	417
BHAA 200 BT	100 021 302	1.90	2.81	2100	420
BHAA 200 GT	100 021 310	1.80	1.77	2100	420
BHAA 300	100 021 328	1.83	1.76	1400	417
BHAA 300 BT	100 021 336	2.26	3.73	1400	420
BHAA 300 GT	100 021 344	2.15	2.47	1400	419
BHAA 400	100 021 351	2.08	2.30	1200	417
BHAA 400 BT	100 021 369	2.51	4.51	1200	420
BHAA 400 GT	100 021 377	2.40	3.09	1200	420
BHAA 600	100 021 385	2.47	3.37	—	—
BHAA 600 BT	100 021 393	2.92	6.00	—	—
BHAA 600 GT	100 021 401	2.81	4.34	—	—

(BT) Buried tape

(GT) Gopher tape

## CABLES

## Multiple Sheath

Code	Comcode	BHAG Type			
		Approximate Outside Diameter (Inches)	Approximate Weight Per Foot (LBS)	Standard Feet	Length Reel
BHAG 11	100 021 419	.60	.16	4250	414
BHAG 11 BT	100 021 427	.92	.75	4250	419
BHAG 11 GT	100 021 435	.84	.37	4250	418
BHAG 16	100 021 443	.65	.19	4250	415
BHAG 16 BT	100 021 450	.97	.82	4250	419
BHAG 16 GT	100 021 468	.89	.42	4250	419
BHAG 25	100 021 476	.74	.25	4250	415
BHAG 25 BT	100 021 484	1.06	.95	4250	420
BHAG 25 GT	100 021 492	.98	.51	4250	419
BHAG 50	100 021 518	.98	.43	4250	417
BHAG 50 BT	100 021 526	1.30	1.30	4250	420
BHAG 50 GT	100 021 534	1.22	.76	4250	420
BHAG 75	100 021 559	1.11	.58	2800	416
BHAG 75 BT	100 021 567	1.52	1.83	2800	419
BHAG 75 GT	100 021 575	1.42	1.02	2800	418
BHAG 100	100 021 583	1.22	.73	2800	417
BHAG 100 BT	100 021 591	1.63	2.08	2800	420
BHAG 100 GT	100 021 609	1.53	1.20	2800	420
BHAG 150	100 021 625	1.44	1.02	2100	417
BHAG 150 BT	100 021 633	1.85	2.59	2100	420
BHAG 150 GT	100 021 641	1.75	1.57	2100	419
BHAG 200	100 021 666	1.67	1.33	2100	418
BHAG 200 BT	100 021 674	2.10	3.14	2100	*420
BHAG 200 GT	100 021 682	1.99	1.97	2100	*420
BHAG 300	100 021 708	1.96	1.91	1400	418
BHAG 300 BT	100 021 716	2.39	4.00	1400	420
BHAG 300 GT	100 021 724	2.28	2.65	1400	420
BHAG 400	100 021 732	2.22	2.48	1200	419
BHAG 400 BT	100 021 740	2.65	4.82	1200	*420
BHAG 400 GT	100 021 757	2.54	3.31	1200	*420
BHAG 600	100 021 773	2.62	3.61	—	—
BHAG 600 BT	100 021 781	3.07	6.38	—	—
BHAG 600 GT	100 021 799	2.96	4.63	—	—

\* Outside lags  
 (BT) Buried tape  
 (GT) Gopher tape

## CABLES

## Multiple Sheath

## BHBA and BHBG Type

## Electrical Characteristics

DC Resistance: Approximately 85 ohms not to exceed 92 ohms per loop mile at 68° F.

Capacitance: 0.083 uf, approximately, per mile at 1000 Hz.

Attenuation: 1.3 db, approximately, per mile at 1000 Hz.

Dielectric Strength: BHBA—In excess of 10,000 volts dc between conductors and sheath. BHBG—In excess of 20,000 volts dc between conductors and sheath.

## Mechanical Characteristics

Sheath: BHBA 6 to 300 pairs, (Alpeth) Aluminum and Polyethylene.

BHBG 6 to 300 pairs, (PAP) Polyethylene, Aluminum, Polyethylene.

Conductors: Number 19 AWG solid copper, insulated with extruded polyethylene applied directly over the wires.

All cables are color coded in accordance with the color code identification shown in Chart V.

Intended use: BHBA—Outside plant—General  
BHBG—Outside plant—Buried

The mechanical characteristics of BHBA and BHBG cables are shown in the following tabulations.

## BHBA Type

Code	Comcode	Approximate Outside Diameter (Inches)	Approximate Weight Per Foot (LBS)	Standard Feet	Length Reel
BHBA 6	100 022 060	.51	.13	4200	414
BHBA 6 BT	100 022 078	.83	.65	4200	418
BHBA 6 GT	100 022 086	.75	.32	4200	417
BHBA 11	100 022 094	.61	.19	4200	414
BHBA 11 BT	100 022 102	.93	.79	4200	419
BHBA 11 GT	100 022 110	.85	.44	4200	418
BHBA 16	100 022 128	.69	.25	4200	415
BHBA 16 BT	100 022 136	1.01	.91	4200	419
BHBA 16 GT	100 022 144	.93	.49	4200	419
BHBA 25	100 022 151	.81	.35	2800	415
BHBA 25 BT	100 022 169	1.13	1.09	2800	417
BHBA 25 GT	100 022 177	1.05	.63	2800	416
BHBA 50	100 022 185	1.13	.65	2800	416
BHBA 50 BT	100 022 193	1.54	1.92	2800	420
BHBA 50 GT	100 022 201	1.44	1.09	2800	418
BHBA 75	100 022 219	1.33	.92	2100	416
BHBA 75 BT	100 022 227	1.74	2.37	2100	419
BHBA 75 GT	100 022 235	1.64	1.43	2100	418
BHBA 100	100 022 243	1.49	1.19	2100	417
BHBA 100 BT	100 022 250	1.90	2.80	2100	420
BHBA 100 GT	100 022 268	1.80	1.75	2100	420
BHBA 150	100 022 276	1.83	1.74	1400	417
BHBA 150 BT	100 022 284	2.26	3.71	1400	420
BHBA 150 GT	100 022 292	2.15	2.45	1400	419
BHBA 200	100 022 300	2.08	2.27	1200	417
BHBA 200 BT	100 022 318	2.51	4.48	1200	420
BHBA 300 GT	100 022 326	2.40	3.07	1200	420
BHBA 300	100 022 334	2.47	3.32	700	417
BHBA 300 BT	100 022 342	2.92	5.95	700	418
BHBA 300 GT	100 022 359	2.81	4.29	700	418

(BT) Buried tape  
(GT) Gopher tape

## CABLES

## Multiple Sheath

## BHBG Type

Code	Comcode	Approximate Outside Diameter (Inches)	Approximate Weight Per Foot (LBS)	Standard Feet	Length Reel
BHBG 6	100 022 367	.61	.16	4200	414
BHBG 6 BT	100 022 375	.93	.76	4200	419
BHBG 6 GT	100 022 383	.85	.38	4200	418
BHBG 11	100 022 409	.71	.23	4200	415
BHBG 11 BT	100 022 417	1.03	.91	4200	420
BHBG 11 GT	100 022 425	.95	.48	4200	419
BHBG 16	100 022 441	.79	.29	4200	415
BHBG 16 BT	100 022 458	1.11	1.02	4200	420
BHBG 16 GT	100 022 466	1.03	.57	4200	420
BHBG 25	100 022 482	.98	.43	2800	415
BHBG 25 BT	100 022 490	1.30	1.30	2800	417
BHBG 25 GT	100 022 508	1.22	.76	2800	417
BHBG 50	100 022 524	1.23	.72	2800	417
BHBG 50 BT	100 022 532	1.64	2.08	2800	420
BHBG 50 GT	100 022 540	1.54	1.20	2800	420
BHBG 75	100 022 565	1.44	1.01	2100	417
BHBG 75 BT	100 022 573	1.85	2.58	2100	420
BHBG 75 GT	100 022 581	1.75	1.56	2100	420
BHBG 100	100 022 607	1.67	1.31	2100	418
BHBG 100 BT	100 022 615	2.10	3.12	2100	*420
BHBG 100 GT	100 022 623	1.99	1.96	2100	*420
BHBG 150	100 022 656	1.96	1.88	1400	418
BHBG 150 BT	100 022 672	2.39	3.98	1400	420
BHBG 150 GT	100 022 680	2.28	2.63	1400	420
BHBG 200	100 022 698	2.22	2.45	1200	419
BHBG 200 BT	100 022 706	2.65	4.79	1200	*420
BHBG 200 GT	100 022 714	2.53	3.29	1200	*420
BHBG 300	100 022 722	2.62	3.56	700	417
BHBG 300 BT	100 022 730	3.07	6.33	700	420
BHBG 300 GT	100 022 748	2.96	4.58	700	420

\* Outside lags  
 (BT) Buried tape  
 (GT) Gopher tape



## CABLES

## Multiple Sheath

## BKMA and BKMG Type

## Electrical Characteristics

DC Resistance: Approximately 24 ohms not to exceed 292 ohms per loop mile at 68° F.

Capacitance: Approximately 0.083 uf not to exceed 0.090 uf per mile at 1000 Hz.

Attenuation: 2.3 db, approximately, per mile at 1000 Hz.

Dielectric Strength: BKMA—In excess of 5000 volts dc between conductors, and between conductors and sheath. BKMG—In excess of 5000 volts dc between conductors, in excess of 20,000 volts dc between conductors and sheath.

## Mechanical Characteristics

Sheath: BKMA 11 to 900 pairs, (Alpeth) Aluminum and Polyethylene.

BKMG 11 to 900 pairs, (PAP) Polyethylene, Aluminum, Polyethylene.

Conductors: Number 24 AWG solid copper, insulated with extruded polyethylene applied directly to the wires.

All cables are color coded in accordance with the color code identification shown in Chart V.

Intended use: BKMA—Outside plant—General  
BKMG—Outside Plant—Buried

The mechanical characteristics of BKMA and BKMG cables are indicated in the following tabulations.

## BKMA Type

Code	Comcode	Approximate Outside Diameter (Inches)	Approximate Weight Per Foot (LBS)	Standard Feet	Length Reel
BKMA 11	100 022 987	.44	.09	4200	414
BKMA 11 BT	100 022 995	.72	.43	4200	417
BKMA 11 GT	100 023 001	.68	.26	4200	416
BKMA 16	100 023 019	.48	.11	4200	414
BKMA 16 BT	100 023 027	.76	.47	4200	417
BKMA 16 GT	100 023 035	.72	.30	4200	417
BKMA 25	100 023 043	.55	.15	4200	414
BKMA 25 BT	100 023 050	.87	.70	4200	418
BKMA 25 GT	100 023 068	.79	.36	4200	417
BKMA 50	100 023 076	.69	.25	4200	415
BKMA 50 BT	100 023 084	1.01	.91	4200	419
BKMA 50 GT	100 023 092	.93	.09	4200	419
BKMA 75	100 023 100	.80	.34	4200	416
BKMA 75 BT	100 023 118	1.12	1.07	4200	420
BKMA 75 GT	100 023 126	1.04	.62	4200	420
BKMA 100	100 023 134	.96	.45	3150	416
BKMA 100 BT	100 023 142	1.28	1.31	3150	418
BKMA 100 GT	100 023 159	1.20	.78	3150	418
BKMA 150	100 023 167	1.11	.63	2100	416
BKMA 150 BT	100 023 175	1.52	1.88	2100	417
BKMA 150 GT	100 023 183	1.42	1.06	2100	417
BKMA 200	100 023 191	1.24	.80	2100	416
BKMA 200 BT	100 023 209	1.65	2.18	2100	419
BKMA 200 GT	100 023 217	1.55	1.28	2100	417
BKMA 300	100 023 225	1.46	1.14	1260	415
BKMA 300 BT	100 023 233	1.87	2.73	1260	417
BKMA 300 GT	100 023 241	1.77	1.70	1260	417
BKMA 400	100 023 258	1.69	1.50	1260	416
BKMA 400 BT	100 023 266	2.12	3.33	1260	418
BKMA 400 GT	100 023 274	2.01	2.16	1260	417
BKMA 600	100 023 282	2.01	2.19	—	—
BKMA 600 BT	100 023 290	2.44	4.33	—	—
BKMA 600 GT	100 023 308	2.33	2.95	—	—
BKMA 900	100 023 316	2.41	3.20	—	—
BKMA 900 BT	100 023 324	2.86	5.77	—	—
BKMA 900 GT	100 023 332	2.75	4.15	—	—

(BT) Buried tape

(GT) Gopher tape

## CABLES

## Multiple Sheath

## BKMG Type

Code	Comcode	Approximate Outside Diameter (Inches)	Approximate Weight Per Foot (LBS)	Standard Feet	Length Reel
BKMG 11	100 023 340	.54	.12	4200	414
BKMG 11 BT	100 023 357	.86	.67	4200	418
BKMG 11 GT	100 023 365	.78	.33	4200	417
BKMG 11	100 023 373	.58	.15	4200	414
BKMG 16 BT	100 023 381	.90	.72	4200	419
BKMG 16 GT	100 023 399	.82	.36	4200	417
BKMG 25	100 023 407	.65	.19	4200	414
BKMG 25 BT	100 023 415	.97	.82	4200	419
BKMG 25 GT	100 023 423	.89	.42	4200	419
BKMG 50	100 023 431	.79	.29	4200	415
BKMG 50 BT	100 023 449	1.11	1.02	4200	420
BKMG 50 GT	100 023 456	1.03	.57	4200	420
BKMG 75	100 023 464	.97	.42	4200	417
BKMG 75 BT	100 023 472	1.29	1.28	4200	420
BKMG 75 GT	100 023 480	1.21	.75	4200	420
BKMG 100	100 023 498	1.06	.51	3150	416
BKMG 100 BT	100 023 506	1.47	1.71	3150	420
BKMG 100 GT	100 023 514	1.37	.93	3150	419
BKMG 150	100 023 522	1.21	.70	2100	416
BKMG 150 BT	100 023 530	1.62	2.04	2100	418
BKMG 150 GT	100 023 548	1.52	1.17	2100	417
BKMG 200	100 023 555	1.36	.89	2100	417
BKMG 200 BT	100 023 563	1.77	2.37	2100	420
BKMG 200 GT	100 023 571	1.67	1.41	2100	419
BKMG 300	100 023 589	1.63	1.27	1260	416
BKMG 300 BT	100 023 597	2.06	3.04	1260	417
BKMG 300 GT	100 023 605	1.95	1.90	1260	417
BKMG 400	100 023 613	1.81	1.62	1260	417
BKMG 400 BT	100 023 621	2.24	3.57	1260	420
BKMG 400 GT	100 023 639	2.13	2.32	1260	418
BKMG 600	100 023 647	2.14	2.36	—	—
BKMG 600 BT	100 023 654	2.57	4.62	—	—
BKMG 600 GT	100 023 662	2.46	3.17	—	—
BKMG 900	100 023 670	2.56	3.43	—	—
BKMG 900 BT	100 023 688	3.01	6.14	—	—
BKMG 900 GT	100 023 696	2.90	4.43	—	—

(BT) Buried tape  
(GT) Gopher tape

## CABLES

## Multiple Sheath

## BKTA and BKTG Type

## Mechanical Characteristics

## Electrical Characteristics

DC Resistance: Approximately 440 ohms not to exceed 472 ohms per loop mile at 68° F.

Capacitance: Approximately 0.083 uf not to exceed 0.090 uf per mile at 1000 Hz, at 60° F.

Attenuation 2.9 db, approximately, per mile at 1000 Hz.

Dielectric Strength: BKTA—In excess of 3000 volts dc between conductors, in excess of 5000 volts dc between conductors and sheath. BKTG—In excess of 3000 volts dc between conductors, in excess of 20,000 volts dc between conductors and sheath.

Sheath: BKTA 11 to 900 pairs, (Alpeth) Aluminum and Polyethylene.

BKTG 11 to 900 pairs, (PAP) Polyethylene, Aluminum, Polyethylene.

Conductors: Number 26 AWG solid copper, insulated with extruded polyethylene applied directly to the wires.

All cables are color coded in accordance with color code identification shown in Chart V.

Intended use: BKTA—Outside plant—General

BKTG—Outside plant—Buried

The mechanical characteristics of BKTA and BKTG cables are indicated in the following tabulations.

## BKTA Type

Code	Comcode	Approximate Outside Diameter (Inches)	Approximate Weight Per Foot (LBS)	Standard Feet	Length Reel
BKTA 11	100 023 969	.39	.07	4800	414
BKTA 11 BT	100 023 977	.67	.38	4800	417
BKTA 11 GT	100 023 985	.63	.23	4800	417
BKTA 16	100 023 993	.43	.09	4800	414
BKTA 16 BT	100 024 009	.71	.42	4800	418
BKTA 16 GT	100 024 017	.67	.26	4800	417
BKTA 25	100 024 025	.48	.11	4800	414
BKTA 25 BT	100 024 033	.76	.47	4800	418
BKTA 25 GT	100 024 041	.72	.30	4800	418
BKTA 50	100 024 058	.59	.18	4800	414
BKTA 50 BT	100 024 066	.91	.76	4800	420
BKTA 50 GT	100 024 074	.83	.43	4800	419
BKTA 75	100 024 082	.68	.24	4800	415
BKTA 75 BT	100 024 090	1.00	.89	4800	420
BKTA 75 GT	100 024 108	.92	.48	4800	420
BKTA 100	100 024 116	.75	.29	4800	416
BKTA 100 BT	100 024 124	1.07	.99	4800	420
BKTA 100 GT	100 024 132	.99	.56	4800	420
BKTA 150	100 024 140	.94	.43	3200	416
BKTA 150 BT	100 024 157	1.26	1.27	3200	418
BKTA 150 GT	100 024 165	1.18	.76	3200	418
BKTA 200	100 024 173	1.04	.54	3200	416
BKTA 200 BT	100 024 181	1.45	1.73	3200	419
BKTA 200 GT	100 024 199	1.35	.95	3200	419
BKTA 300	100 024 207	1.20	.77	2400	416
BKTA 300 BT	100 024 215	1.61	2.10	2400	420
BKTA 300 GT	100 024 223	1.51	1.23	2400	418
BKTA 400	100 024 231	1.35	.98	2400	417
BKTA 400 BT	100 024 249	1.76	2.46	2400	420
BKTA 400 GT	100 024 256	1.66	1.50	2400	420
BKTA 600	100 024 264	1.66	1.43	—	—
BKTA 600 BT	100 024 272	2.09	3.24	—	—
BKTA 600 GT	100 024 280	1.98	2.08	—	—
BKTA 900	100 024 298	1.97	2.08	—	—
BKTA 900 BT	100 024 306	2.40	4.18	—	—
BKTA 900 GT	100 024 314	2.29	2.84	—	—

(BT) Buried tape

(GT) Gopher tape



## CABLES

## Multiple Sheath

Code	Comcode	BKTG Type		Standard Feet	Length Reel
		Approximate Outside Diameter (Inches)	Approximate Weight Per Foot (LBS)		
BKTG 11	100 024 322	.49	.10	4800	414
BKTG 11 BT	100 024 330	.77	.47	4800	419
BKTG 11 GT	100 024 348	.73	.29	4800	418
BKTG 16	100 024 355	.53	.12	4800	419
BKTG 16 BT	100 024 363	.85	.66	4800	419
BKTG 16 GT	100 024 371	.77	.32	4800	419
BKTG 25	100 024 389	.58	.15	4800	416
BKTG 25 BT	100 024 397	.90	.72	4800	420
BKTG 25 GT	100 024 405	.82	.36	4800	419
BKTG 50	100 024 413	.69	.22	4800	416
BKTG 50 BT	100 024 421	1.01	.88	4800	420
BKTG 50 GT	100 024 439	.93	.46	4800	420
BKTG 75	100 024 447	.78	.28	4800	416
BKTG 75 BT	100 024 454	1.10	1.00	4800	420
BKTG 75 GT	100 024 462	1.02	.56	4800	420
BKTG 100	100 024 470	.92	.37	4800	417
BKTG 100 BT	100 024 488	1.24	1.19	4800	420
BKTG 100 GT	100 024 496	1.16	.68	4800	420
BKTG 150	100 024 504	1.04	.49	3200	416
BKTG 150 BT	100 024 512	1.45	1.67	3200	419
BKTG 150 GT	100 024 520	1.35	.90	3200	419
BKTG 200	100 024 538	1.14	.61	3200	417
BKTG 200 BT	100 024 546	1.55	1.89	3200	420
BKTG 200 GT	100 024 553	1.45	1.05	3200	419
BKTG 300	100 024 561	1.32	.84	2400	417
BKTG 300 BT	100 024 579	1.73	2.29	2400	420
BKTG 300 GT	100 024 587	1.63	1.35	2400	420
BKTG 400	100 024 595	1.46	1.07	2400	417
BKTG 400 BT	100 024 603	1.87	2.66	2400	420
BKTG 400 GT	100 024 611	1.77	1.63	2400	420
BKTG 600	100 024 629	1.78	1.55	—	—
BKTG 600 BT	100 024 637	2.21	3.47	—	—
BKTG 600 GT	100 024 645	2.10	2.24	—	—
BKTG 900 (a)	100 024 652	2.10	2.24	—	—
BKTG 900 BT(a)	100 024 660	2.53	4.47	—	—
BKTG 900 GT(a)	100 024 678	2.42	3.04	—	—

(a) Not fully color coded. Composed of color coded multiunits having a sequence identical either clockwise or counter-clockwise.

(BT) Buried tape

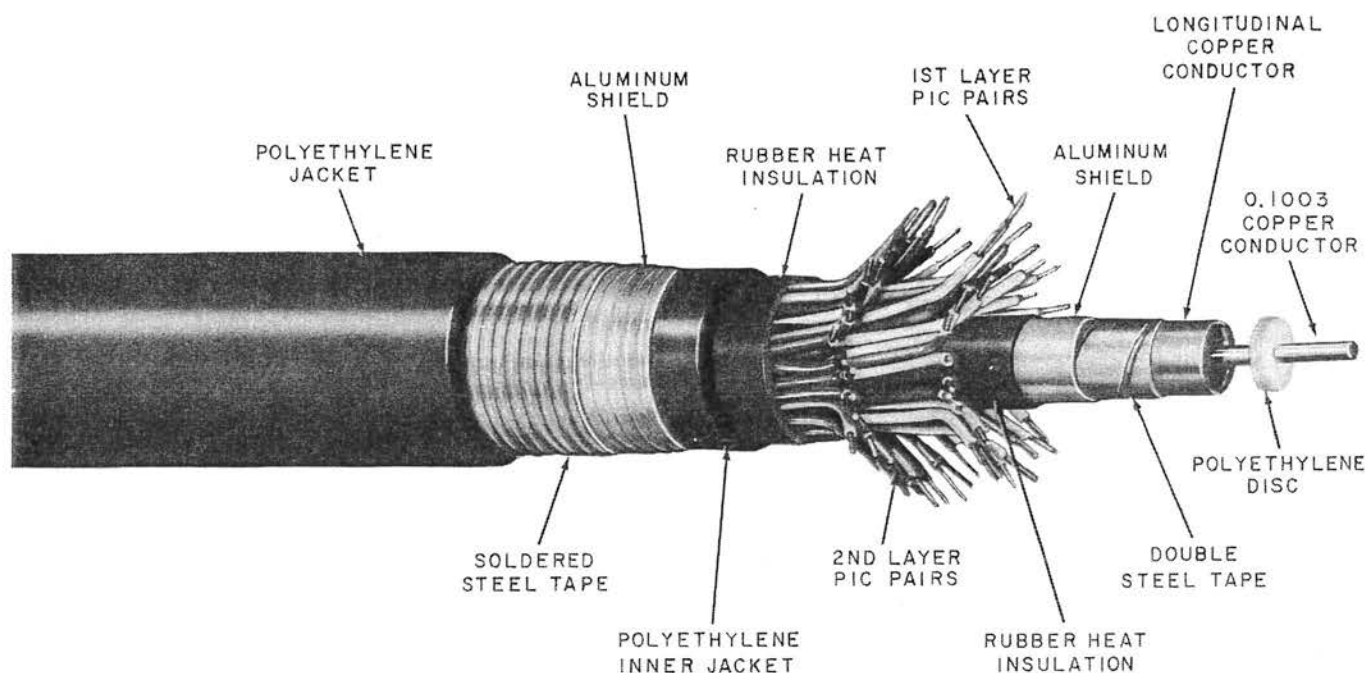
(GT) Gopher tape



## CABLES

## Multichannel Educational Television Cable (ETV)

CA-3015



A cable consisting of one coaxial and a choice of 16, 37, or 63 PIC pairs of 19 gauge conductors. Intended for high frequency transmission.

The pairs are insulated with solid polyethylene and the coaxial with polyethylene discs. The cable has a PASP sheath. The pairs are color coded.

The weights and diameters vary according to the number of PIC pairs included and are approximately as follows:

No. of Pairs	Weight (Lbs. per Ft.)	Diameter (Inches)
16	0.66	1.16
37	0.94	1.37
63	1.25	1.56

The electrical characteristics are as follows:

The characteristic impedance is approximately 75 ohms at 1 MHz and above.

The velocity of propagation at 70°F is 176,000 miles per second at 10-200 MHz.

The dc resistance of the inner and outer conductors of the coaxial is 0.102 and 0.054 ohm, respectively, per 100 feet at 70°F.

The nominal values of impedance at 70°F are as follows:

Frequency (MHz)	Attenuation (DB at 100 Ft.)
10	0.23
50	0.53
100	0.75
200	1.06
216	1.11

The design average mutual capacitance per mile of the pairs is 0.083 uf.

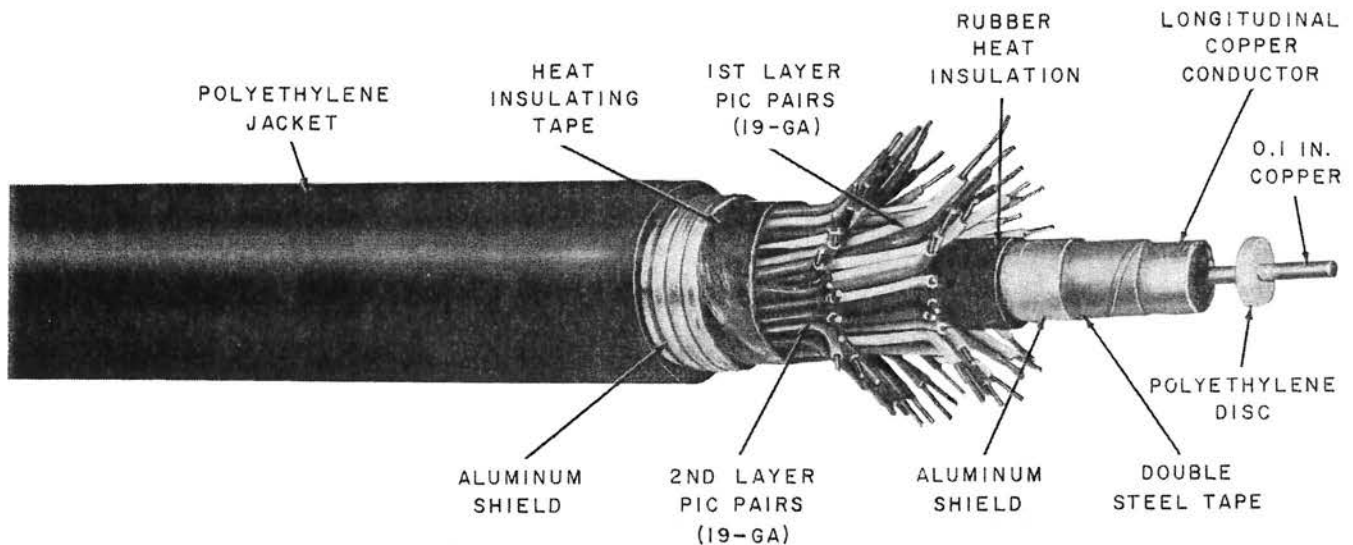
The dielectric strength of the insulation is as follows:

Core to sheath	— 20,000 volts
Conductor to conductor of 19 gauge pairs and to outer conductor of the coaxial	— 10,000 volts

## CABLES

## Multichannel Educational Television Cable (ETV)

CA-3016



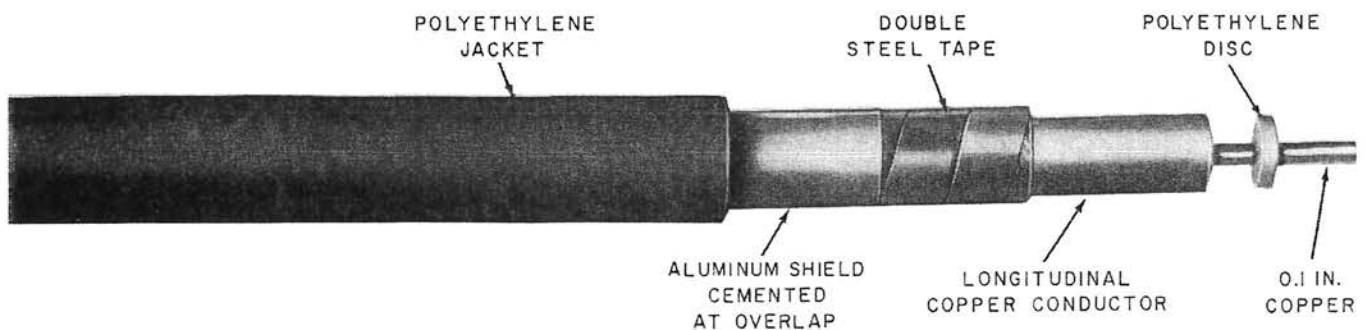
This cable is the same as CA-3015 except as follows:

Dielectric strength—core to sheath, 10,000 volts.

The cable has an ALPETH sheath and the weights and diameters are as follows:

No. of Pairs	Weight (Lbs. per Ft.)	Diameter (Inches)
16	0.44	0.99
37	0.66	1.19
63	0.98	1.38

CA-3185



A single coaxial cable manufactured for high frequency transmission.

The center conductor is 0.1003 inch in diameter, insulated with polyethylene discs. The outer conductor consists of a longitudinal seam tube of single copper tape having a wall thickness of approximately 0.012 inch thick and an inside diameter of approximately 0.375 inch. The

cable has a shield consisting of two steel tapes over the copper tube and a sheath of ALPETH with bonded aluminum overlap.

The cable weighs approximately 0.2 pound per foot and is approximately 0.61 inch in diameter.

The following electrical characteristics apply:

## CABLES

## Multichannel Educational Television Cable (ETV)

## CA-3185 (Continued)

The characteristic impedance is approximately 75 ohms at 1 MHz and above.

The velocity of propagation at 70°F is 176,000 miles per second at 10-200 MHz.

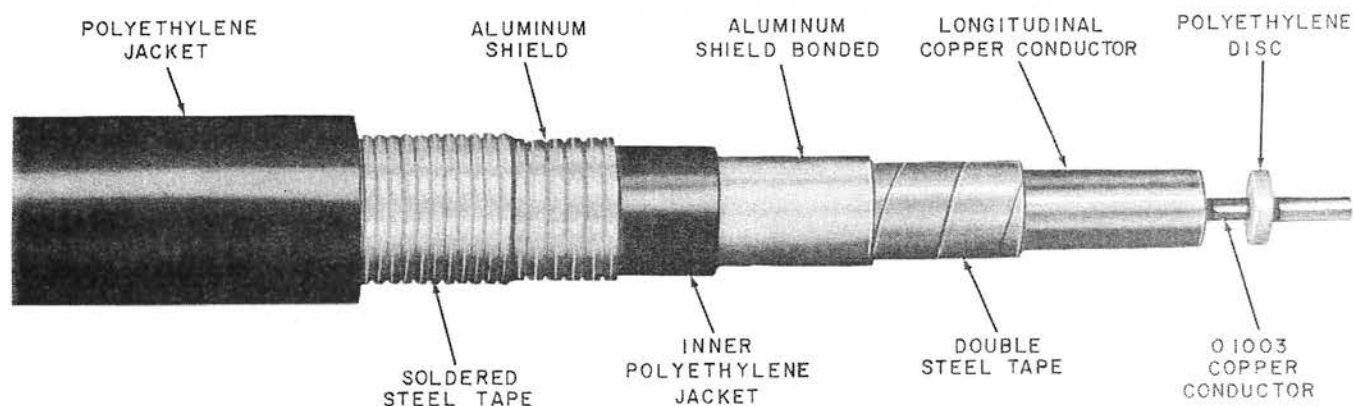
The dc resistance of the center conductor and outer conductor is 0.102 ohm and 0.054 ohm, respectively, per 100 feet at 70°F.

The nominal values of impedance at 70°F are as follows:

Frequency (MHz)	Attenuation (DB at 100 Ft.)
10	0.23
50	0.53
100	0.75
200	1.06
216	1.11

Replaces CA-1878.

## CA-3198



This cable is the same as CA-3185 except as follows:

The cable has a PASP sheath with an additional moisture barrier under the inner jacket consisting of longitudinal aluminum tape with bonded overlap.

The cable weighs approximately 0.35 pound per foot and is approximately 0.84 inch in diameter.

Replaces the CA-3002.



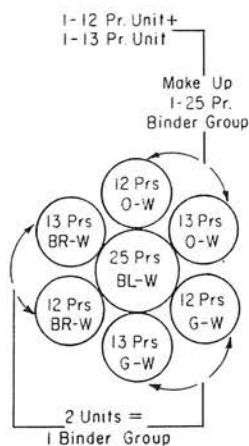
## CABLES

## Exchange Even-Count Cable

Polyethylene-Insulated Conductor (PIC)  
Cable

PIC cable is composed of conductors which are insulated with polyethylene. Polyethylene has excellent insulating and dielectric qualities and can be applied to the conductors by an extrusion process. It is resistant to moisture to a degree that makes sealing of the cable sheath unnecessary except at buried or submerged splicing points. It is obtainable in distinctive colors.

## Even-Count PIC Cable



## 100 Pairs

EVEN-COUNT PIC cable is so designated because it does not have an extra pair for each 100 pairs or fraction thereof. Since all pairs in PIC cables are guaranteed to be free from opens, shorts, crosses, and grounds, the extra pair is not needed as a substitute for defects. It is obvious that, without extra pairs, the pairs within a cable may be divided into uniform size groups. Twenty-five pairs have been selected as the most suitable sizes for this uniform group. All standard size cables, except those smaller than 25 pairs, can be divided by this number. The pairs of the 25-pair group are identified by a simple code which uses 10 colors, 5 for tip and 5 for ring, with no duplication. The 25-pair groups are bound with bicolor binders. The color of these binders follows the same color code as used for pairs. Such an arrangement permits fast and easy identification of any conductor or pair in a 25-pair group without the aid of translation charts, mechanical devices, or tag boards. The maximum standard size cable of this design is then 600 pairs. The features of the uniform 25-pair color code group are used for larger than 600 pair cables, but the identification of

the groups is accomplished by placing them in layers within the cable. The groups in each layer have distinct binder colors and are arranged systematically with respect to a group having a blue-white binder. EVEN PIC cables are manufactured to supply most of the requirements for cables of 600 or smaller. Some EVEN PIC will be manufactured in sizes larger than 600, but pulp insulated cables will predominate in the larger sizes.

For mechanical lay-up reasons, it is necessary in some instances to divide the uniform 25-pair groups into two or three smaller units. Each of these units is bound with the colored binder of the group with which it is associated and the pair color code advances progressively through one unit to another. A combination of these units, which adds to 25 pairs, is designated as a binder group. A binder group may consist of three units (2 of 8 pairs and 1 of 9 pairs), or two units (1 of 12 pairs and 1 of 13 pairs), or a single unit of 25 pairs. Examples of cross-sections and color-code identification are shown in the following list.

Twenty-five different pair twist lengths are used for the pairs of a binder group. This permits splicing of subscriber cables, binder group-to-binder group and pair-to-pair, by color code, for at least 10 miles without excessive crosstalk.

## EVEN COUNT PIC CABLE (ALL SIZES AND GAUGES) COLOR CODE IDENTIFICATION

Pair No.	Group Binder		COLOR OF INSULATION	
			Tip	Ring
1	Blue	White	White	Blue
2	Blue	White	White	Orange
3	Blue	White	White	Green
4	Blue	White	White	Brown
5	Blue	White	White	Slate
6	Blue	White	Red	Blue
7	Blue	White	Red	Orange
8	Blue	White	Red	Green
9	Blue	White	Red	Brown
10	Blue	White	Red	Slate
11	Blue	White	Black	Blue
12	Blue	White	Black	Orange
13	Blue	White	Black	Green
14	Blue	White	Black	Brown
15	Blue	White	Black	Slate
16	Blue	White	Yellow	Blue
17	Blue	White	Yellow	Orange
18	Blue	White	Yellow	Green
19	Blue	White	Yellow	Brown
20	Blue	White	Yellow	Slate
21	Blue	White	Violet	Blue
22	Blue	White	Violet	Orange





## CABLES

## Exchange Even-Count Cable

Pair No.	Group Binder		COLOR OF INSULATION		Pair No.	Group Binder		COLOR OF INSULATION	
			Tip	Ring				Tip	Ring
23	Blue	White	Violet	Green	75	Green	White	Violet	Slate
24	Blue	White	Violet	Brown	76	Brown	White	White	Blue
25	Blue	White	Violet	Slate	77	Brown	White	White	Orange
26	Orange	White	White	Blue	99	Brown	White	Violet	Brown
50	Orange	White	Violet	Slate	100	Brown	White	Violet	Slate
51	Green	White	White	Blue	101	Slate	White	White	Blue
52	Green	White	White	Orange	102	Slate	White	White	Orange
74	Green	White	Violet	Brown	103	Slate	White	White	Green

## Inside Wiring

## AT-7441

Thermoplastic insulated and jacketed cable. Light olive gray jacket will be provided in all pair sizes listed below.

Has annealed number 24 AWG copper conductors insulated with semirigid PVC compounds distinctively colored for conductor identification. The insulated conductors are twisted into pairs. In pair sizes 6 to 25 inclusive, the pairs are stranded in layer construction to form the core. In the 50- to 100-pair sizes, two to four units of 25 pairs each, as required, are stranded together to form the core. Each unit is bound with a different colored textile yarn. The first 25 pairs (Unit No. 1) is bound with blue-white yarn, and each successive unit is bound with orange-white, green-white, or brown-white yarn, respectively. Over the core is applied a light olive gray colored jacket of thermoplastic compound, underlaid by a nylon jacket slitting cord.

Conductor has a diameter of 0.020 inch. The thickness of the insulating wall is 0.006 inch minimum and the average diameter of the insulated conductor is 0.036 inch. The average thickness of the jacket is:

0.035 inch for the 6 to 25 pairs  
0.045 inch for the 50 to 100 pairs

The diameters and weights of the cables are:

No. of Pairs	Approx Diameter (Inches)	Approx Weight (Lbs per 1000 Ft)
6	0.26	36
12	0.32	61
16	0.35	77
21	0.38	97
25	0.41	112
50	0.56	221
75	0.65	320
100	0.73	420

## COLOR CODE

Pair No.	Conductor		Pair No.	Conductor	
	Tip	Ring		Tip	Ring
1	White	Blue	14	Black	Brown
2	White	Orange	15	Black	Slate
3	White	Green	16	Yellow	Blue
4	White	Brown	17	Yellow	Orange
5	White	Slate	18	Yellow	Green
6	Red	Blue	19	Yellow	Brown
7	Red	Orange	20	Yellow	Slate
8	Red	Green	21	Violet	Blue
9	Red	Brown	22	Violet	Orange
10	Red	Slate	23	Violet	Green
11	Black	Blue	24	Violet	Brown
12	Black	Orange	25	Violet	Slate
13	Black	Green			

Conductor Resistance: 53 ohms, average, per 1000 circuit feet at 68° F.

Mutual Capacitance (Dry): 0.025 uf, average per 1000 feet.

Voltage Test: The finished cable will withstand 2000 volts RMS between conductors.

Attenuation (Dry): 0.56 db, average, per 1000 feet at 1000 Hz.

The cables, excepting short pieces, are furnished on reels, each containing one to five lengths. Short pieces of 50 to 150 feet are furnished in coils. Short pieces of any pair size are limited to 5 percent of the total length of that size in a shipment. The lengths on reels are as shown in the table. Number of pairs and color must be specified on the order.

No. of Pairs	Nominal Length on Reel (Feet)	Minimum Length for One Piece (Feet)	Minimum Length for Any Remaining Piece (Feet)
6	15,280	150	880
12	10,040	150	660
16	8,330	150	500
21	7,020	150	420
25	6,000	150	360
50	3,090	150	200
75	2,250	150	200
100	1,740	150	200

Intended primarily for use in PBX and station wiring.

## CABLES

## Colors of Insulation on Conductors

## Color Code Identification

In all types of switchboard cable, the outer insulation on the conductors is colored in accordance with a definite color scheme so that they may be easily identified. In the tabulations of switchboard cable on preceding pages, under the heading of **Color**, the various color combinations of the conductors are identified by the numbers shown.

## CHART I

## PAIRS

Combination No.	Colors of Insulation*	Paired With**
1c	Blue-1-white	Blue-2-white
2c	Orange-1-white	Orange-2-white
3c	Green-1-white	Green-2-white
4c	Brown-1-white	Brown-2-white
5c	Slate-1-white	Slate-2-white
6c	Blue-1-red	Blue-2-red
7c	Orange-1-red	Orange-2-red
8c	Green-1-red	Green-2-red
9c	Brown-1-red	Brown-2-red
10c	Slate-1-red	Slate-2-red
11c	Blue-1-black	Blue-2-black
12c	Orange-1-black	Orange-2-black
13c	Green-1-black	Green-2-black
14c	Brown-1-black	Brown-2-black
15c	Slate-1-black	Slate-2-black
16c	Blue-1-yellow	Blue-2-yellow
17c	Orange-1-yellow	Orange-2-yellow
18c	Green-1-yellow	Green-2-yellow
19c	Brown-1-yellow	Brown-2-yellow
20c	Slate-1-yellow	Slate-2-yellow

\*1 Single dot marking. For example, Blue-1-white is a blue wire with single white dots spaced approximately 11/16-inch apart.

\*\*2 Double dot marking. For example, Orange-2-red is an orange wire with two red dots spaced approximately 3/16-inch apart. The distance between pairs of dots is approximately 11/16-inch.

## SPARE PAIRS

Combination No.	Colors of Insulation*	Paired With**
1c	White-1-black	White-2-black
2c	White-1-yellow	White-2-yellow
3c	Red-1-white	Red-2-white
4c	Red-1-yellow	Red-2-yellow
5c	Red-1-black	Red-2-black

## SINGLES

Combination No.	Colors of Insulation***	Combination No.	Colors of Insulation***
1c	Blue-3-white	11c	Blue-3-black
2c	Orange-3-white	12c	Orange-3-black
3c	Green-3-white	13c	Green-3-black
4c	Brown-3-white	14c	Brown-3-black
5c	Slate-3-white	15c	Slate-3-black
6c	Blue-3-red	16c	Blue-3-yellow
7c	Orange-3-red	17c	Orange-3-yellow
8c	Green-3-red	18c	Green-3-yellow
9c	Brown-3-red	19c	Brown-3-yellow
10c	Slate-2-red	20c	Slate-3-yellow

## SPARE SINGLES

Combination No.	Colors of Insulation***
1c	White-3-black
2c	White-3-yellow
3c	Red-3-white
4c	Red-3-yellow
5c	Red-3-black

\*1 Single dot marking. For example, Blue-1-white is a blue wire with single white dots spaced approximately 11/16-inch apart.

\*\*2 Double dot marking. For example, Orange-2-red is an orange wire with two red dots spaced approximately 3/16-inch apart. The distance between pairs of dots is approximately 11/16-inch.

\*\*\*3 Dash marking. For example, Green-3-white is a green wire with white dashes, approximately 5/16-inch long, spaced approximately 11/16-inch apart.

## CHART II

## PAIRS

Combination No.	Colors of Insulation	Paired With
1	Blue	White
2	Orange	White
3	Green	White
4	Brown	White
5	Slate	White
6	Blue-white	White
7	Blue-orange	White
8	Blue-green	White
9	Blue-brown	White
10	Blue-slate	White
11	Orange-white	White
12	Orange-green	White
13	Orange-brown	White
14	Orange-slate	White
15	Green-white	White



## CABLES

## Colors of Insulation on Conductors

CHART II (Continued)			PAIRS		
Combination No.	Colors of Insulation	Paired With	Combination No.	Colors of Insulation	Paired With
16	Green-brown	White	70	Blue-slate	Red-white
17	Green-slate	White	71	Orange-white	Red-white
18	Brown-white	White	72	Orange-green	Red-white
19	Brown-slate	White	73	Orange-brown	Red-white
20	Slate-white	White	74	Orange-slate	Red-white
21	Blue	Red	75	Green-white	Red-white
22	Orange	Red	76	Green-brown	Red-white
23	Green	Red	77	Green-slate	Red-white
24	Brown	Red	78	Brown-white	Red-white
25	Slate	Red	79	Brown-slate	Red-white
26	Blue-white	Red	80	Slate-white	Red-white
27	Blue-orange	Red	81	Blue	Black-white
28	Blue-green	Red	82	Orange	Black-white
29	Blue-brown	Red	83	Green	Black-white
30	Blue-slate	Red	84	Brown	Black-white
31	Orange-white	Red	85	Slate	Black-white
32	Orange-green	Red	86	Blue-white	Black-white
33	Orange-brown	Red	87	Blue-orange	Black-white
34	Orange-slate	Red	88	Blue-green	Black-white
35	Green-white	Red	89	Blue-brown	Black-white
36	Green-brown	Red	90	Blue-slate	Black-white
37	Green-slate	Red	91	Orange-white	Black-white
38	Brown-white	Red	92	Orange-green	Black-white
39	Brown-slate	Red	93	Orange-brown	Black-white
40	Slate-white	Red	94	Orange-slate	Black-white
41	Blue	Black	95	Green-white	Black-white
42	Orange	Black	96	Green-brown	Black-white
43	Green	Black	97	Green-slate	Black-white
44	Brown	Black	98	Brown-white	Black-white
45	Slate	Black	99	Brown-slate	Black-white
46	Blue-white	Black	100	Slate-white	Black-white
47	Blue-orange	Black	101	Blue	Red-black
48	Blue-green	Black	102	Orange	Red-black
49	Blue-brown	Black	103	Green	Red-black
50	Blue-slate	Black	104	Brown	Red-black
51	Orange-white	Black	105	Slate	Red-black
52	Orange-green	Black	106	Blue-white	Red-black
53	Orange-brown	Black	107	Blue-orange	Red-black
54	Orange-slate	Black	108	Blue-green	Red-black
55	Green-white	Black	109	Blue-brown	Red-black
56	Green-brown	Black	110	Blue-slate	Red-black
57	Green-slate	Black	111	Orange-white	Red-black
58	Brown-white	Black	112	Orange-green	Red-black
59	Brown-slate	Black	113	Orange-brown	Red-black
60	Slate-white	Black	114	Orange-slate	Red-black
61	Blue	Red-white	115	Green-white	Red-black
62	Orange	Red-white	116	Green-brown	Red-black
63	Green	Red-white	117	Green-slate	Red-black
64	Brown	Red-white	118	Brown-white	Red-black
65	Slate	Red-white	119	Brown-slate	Red-black
66	Blue-white	Red-white	120	Slate-white	Red-black
67	Blue-orange	Red-white	121	Red-blue	White
68	Blue-green	Red-white	122	Red-orange	White
69	Blue-brown	Red-white	123	Red-green	White
			124	Red-brown	White
			125	Red-slate	White



## CABLES

### Colors of Insulation on Conductors

CHART II (Continued)

Combination No.	PAIRS Colors of Insulation	Paired With
126	Red-blue-white	White
127	Red-blue-orange	White
128	Red-blue-green	White
129	Red-blue-brown	White
130	Red-blue-slate	White
131	Red-orange-white	White
132	Red-orange-green	White
133	Red-orange-brown	White
134	Red-orange-slate	White
135	Red-green-white	White
136	Red-green-brown	White
137	Red-green-slate	White
138	Red-brown-white	White
139	Red-brown-slate	White
140	Red-slate-white	White
141	Red-blue	Red
142	Red-orange	Red
143	Red-green	Red
144	Red-brown	Red
145	Red-slate	Red
146	Red-blue-white	Red
147	Red-blue-orange	Red
148	Red-blue-green	Red
149	Red-blue-brown	Red
150	Red-blue-slate	Red
151	Red-orange-white	Red
152	Red-orange-green	Red
153	Red-orange-brown	Red
154	Red-orange-slate	Red
155	Red-green-white	Red
156	Red-green-brown	Red
157	Red-green-slate	Red
158	Red-brown-white	Red
159	Red-brown-slate	Red
160	Red-slate-white	Red
161	Black-blue	Red
162	Black-orange	Red
163	Black-green	Red
164	Black-brown	Red
165	Black-slate	Red
166	Black-blue-white	Red
167	Black-blue-orange	Red
168	Black-blue-green	Red
169	Black-blue-brown	Red
170	Black-blue-slate	Red
171	Black-orange-white	Red
172	Black-orange-green	Red
173	Black-orange-brown	Red
174	Black-orange-slate	Red
175	Black-green-white	Red
176	Black-green-brown	Red
177	Black-green-slate	Red
178	Black-brown-white	Red
179	Black-brown-slate	Red
180	Black-slate-white	Red

Combi-  
nation

No. Colors of insulation

Combination No.	Colors of insulation	Paired With
181	Blue	Blue-Novelty red white
182	Orange	Orange-Novelty red white
183	Green	Green-Novelty red white
184	Brown	Brown-Novelty red white
185	Slate	Slate-Novelty red white
186	Blue-white	Blue-white-Novelty red white
187	Blue-orange	Blue-orange-Novelty red white
188	Blue-green	Blue-green-Novelty red white
189	Blue-brown	Blue-brown-Novelty red white
190	Blue-slate	Blue-slate-Novelty red white
191	Orange-white	Orange-white-Novelty red white
192	Orange-green	Orange-green-Novelty red white
193	Orange-brown	Orange-brown-Novelty red white
194	Orange-slate	Orange-slate-Novelty red white
195	Green-white	Green-white-Novelty red white
196	Green-brown	Green-brown-Novelty red white
197	Green-slate	Green-slate-Novelty red white
198	Brown-white	Brown-white-Novelty red white
199	Brown-slate	Brown-slate-Novelty red white
200	Slate-white	Slate-white-Novelty red white

Note: Color listed as "Novelty red white" consists of one ply of red yarn twisted together with one ply of white yarn to form a single thread.

PAIRS

CHART III  
SINGLESCombi-  
nation

No. Colors of Insulation

Combi-  
nation

No. Colors of Insulation

1	Red-blue	31	Black-orange-white
2	Red-orange	32	Black-orange-green
3	Red-green	33	Black-orange-brown
4	Red-brown	34	Black-orange-slate
5	Red-slate	35	Black-green-white
6	Red-blue-white	36	Black-green-brown
7	Red-blue-orange	37	Black-green-slate
8	Red-blue-green	38	Black-brown-white
9	Red-blue-brown	39	Black-brown-slate
10	Red-blue-slate	40	Black-slate-white
11	Red-orange-white	41	Red-black-blue
12	Red-orange-green	42	Red-black-orange
13	Red-orange-brown	43	Red-black-green
14	Red-orange-slate	44	Red-black-brown
15	Red-green-white	45	Red-black-slate
16	Red-green-brown	46	Red-black-blue-white
17	Red-green-slate	47	Red-black-blue-orange
18	Red-brown-white	48	Red-black-blue-green
19	Red-brown-slate	49	Red-black-blue-brown
20	Red-slate-white	50	Red-black-blue-slate
21	Black-blue	51	Red-black-orange-white
22	Black-orange	52	Red-black-orange-green
23	Black-green	53	Red-black-orange-brown
24	Black-brown	54	Red-black-orange-slate
25	Black-slate	55	Red-black-green-white
26	Black-blue-white	56	Red-black-green-brown
27	Black-blue-orange	57	Red-black-green-slate
28	Black-blue-green	58	Red-black-brown-white
29	Black-blue-brown	59	Red-black-brown-slate
30	Black-blue-slate	60	Red-black-slate-white

## CABLES

## Colors of Insulation on Conductors

## CHART IV

PAIRS WITH BRAIDED COTTON CONDUCTORS			Combi- nation No.	Colors of Insulation	Paired With
Combi- nation No.	Colors of Insulation	Paired With	19b	Brown-slate	Brown-slate-red
1b	Blue	Blue-red	20b	Slate-white	Slate-white-red
2b	Orange	Orange-red			
3b	Green	Green-red			
4b	Brown	Brown-red			
5b	Slate	Slate-red	1b	White	Red
6b	Blue-white	Blue-white-red			
7b	Blue-orange	Blue-orange-red			
8b	Blue-green	Blue-green-red			
9b	Blue-brown	Blue-brown-red			
10b	Blue-slate	Blue-slate-red			
11b	Orange-white	Orange-white-red			
12b	Orange-green	Orange-green-red			
13b	Orange-brown	Orange-brown-red			
14b	Orange-slate	Orange-slate-red			
15b	Green-white	Green-white-red			
16b	Green-brown	Green-brown-red			
17b	Green-slate	Green-slate-red			
18b	Brown-white	Brown-white-red			

SPARE PAIRS		
1b	White	Red

TRIPLES WITH BRAIDED COTTON CONDUCTORS		
1b	Blue	Blue-red and white
2b	Orange	Orange-red and white
3b	Green	Green-red and white
4b	Brown	Brown-red and white
5b	Slate	Slate-red and white
6b	Blue-white	Blue-white-red and white
7b	Blue-orange	Blue-orange-red and white
8b	Blue-green	Blue-green-red and white
9b	Blue-brown	Blue-brown-red and white
10b	Blue-slate	Blue-slate-red and white

## CHART V

## QUADS

Quad No.	First Pair	Second Pair
1	Blue	Blue-Red
2	Orange	Orange-red
3	Green	Green-red
4	Brown	Brown-red
5	Slate	Slate-red
6	Blue-white	Blue-white-red
7	Blue-orange	Blue-orange-red
8	Blue-green	Blue-green-red
9	Blue-brown	Blue-brown-red
10	Blue-slate	Blue-slate-red
11	Orange-white	Orange-white-red
12	Orange-green	Orange-green-red
13	Orange-brown	Orange-brown-red
14	Orange-slate	Orange-slate-red
15	Green-white-red	Green-white-red
16	Green-brown	Green-brown-red
17	Green-slate	Green-slate-red
18	Brown-white	Brown-white-red
19	Brown-slate	Brown-slate-red
20	Slate-white	Slate-white-red
Spare	Red	Red-white

Blue-Novelty black white	Blue-Novelty red white
Orange-Novelty black white	Orange-Novelty red white
Green-Novelty black white	Green-Novelty red white
Brown-Novelty black white	Brown-Novelty red white
Slate-Novelty black white	Slate-Novelty red white
Blue-white-Novelty black white	Blue-white-Novelty red white
Blue-orange-Novelty black white	Blue-orange-Novelty red white
Blue-green-Novelty black white	Blue-green-Novelty red white
Blue-brown-Novelty black white	Blue-brown-Novelty red white
Blue-slate-Novelty black white	Blue-slate-Novelty red white
Orange-white-Novelty black white	Orange-white-Novelty red white
Orange-green-Novelty black white	Orange-green-Novelty red white
Orange-brown-Novelty black white	Orange-brown-Novelty red white
Orange-slate-Novelty black white	Orange-slate-Novelty red white
Green-white-Novelty black white	Green-white-Novelty red white
Green-brown-Novelty black white	Green-brown-Novelty red white
Green-slate-Novelty black white	Green-slate-Novelty red white
Brown-white-Novelty black white	Brown-white-Novelty red white
Brown-slate-Novelty black white	Brown-slate-Novelty red white
Slate-white-Novelty black white	Slate-white-Novelty red white
Black	Black-red

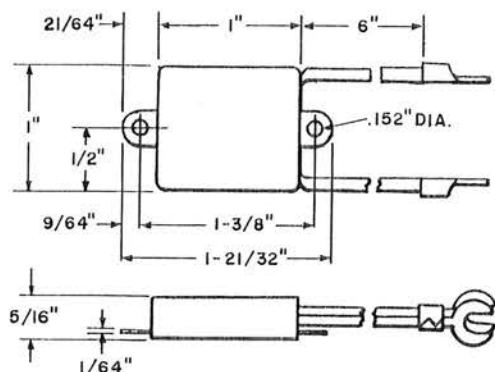
Note: Color listed as "Novelty black white" or "Novelty red white" consists of one ply of black or red yarn twisted together with one ply of white yarn to form a single thread.





## CAPACITORS

152A

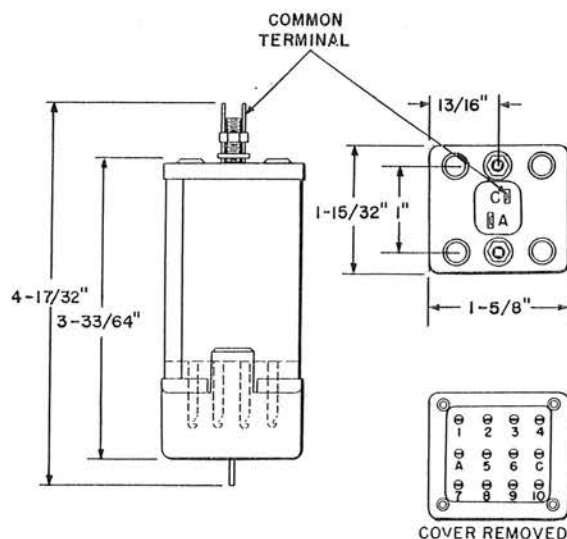


Plastic film capacitor, cord tips arranged for number 4 screw rated 0.1 uf, maximum .115 uf, minimum .085 uf.

Intended for use in station circuits to eliminate radio interference caused by sparking at pulse contacts of dials.

Comcode: 100 026 962

187 Type



Consists of 10 small paper units potted in metal can with metal cover. One side of each unit is connected to common terminal; other side is connected to one of 10 terminals.

For mounting on 1 3/4 inch horizontal, 1 1/2 inch vertical centers. Two nuts and washers are furnished.

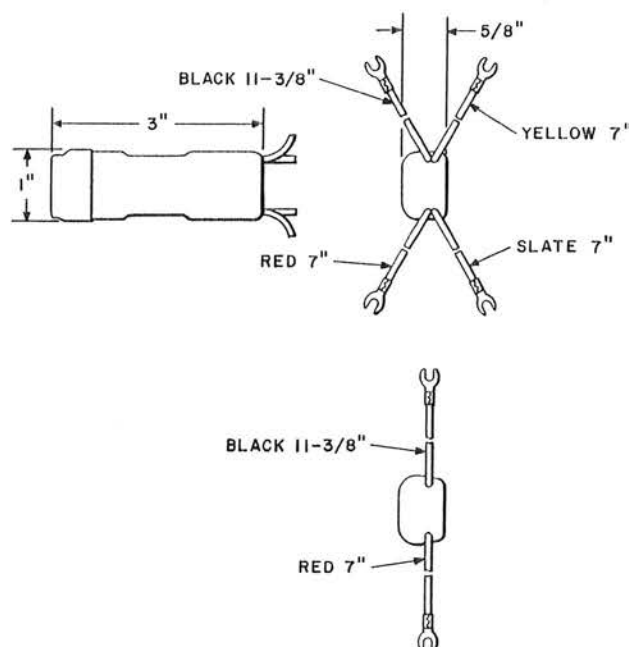
Suitable for use on continuously applied potentials not exceeding 300 volts dc or ac (60 Hz or less) and at operating temperatures not exceeding 120° F.

Code No.	Comcode	Obtainable Capacitance	To Within
*187A	100 027 085	0 to .346 uf	.00133 uf
187B	100 027 093	0 to .069 uf	.00066 uf
†187C	100 027 101	0 to .00584 uf	.000084 uf

\*Together with 25A Bracket replaces 57AK and 57E Capacitors on equipments arranged for lug mounting.

†Together with 25B Bracket replaces 134A Capacitor on equipments arranged for lug mounting.

195 Type



Plastic film capacitors wrapped in tape. The cord tips are arranged for number 4, 5, or 6 screws.

Used in miscellaneous telephone sets.

Code No.	Capacitance (UF)		Test Voltage (DC)	Between Leads
	Max	Min		
195A	{ (a) 2.5	2.0	500	Red and black
	{ (b) .63	.5	500	Yellow and slate
Comcode: 100 027 127				
(c) 195B	{ (a) 2.5	2.0	500	Red and black
	{ (b) .63	.5	500	Yellow and slate
Comcode: 100 027 135				
195C	(a) 2.5	2.0	500	Red and black
Comcode: 100 027 143				



## CAPACITORS

## 195 Type (Continued)

(a) Suitable for use on continuously applied potentials not exceeding 130 volts dc or 100 volts ac (60 Hz or less) and at operating temperatures not exceeding 150° F.

(b) Suitable for use on continuously applied potentials not exceeding 200 volts dc or 180 volts ac (60 Hz or less) and at operating temperatures not exceeding 150° F.

(c) 195B is same as 195A except that it meets a cross-talk requirement of 50 uuf maximum between capacitor units.

## 198 Type

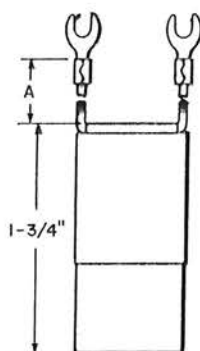
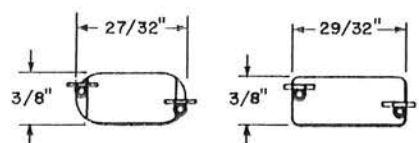


Fig. 1

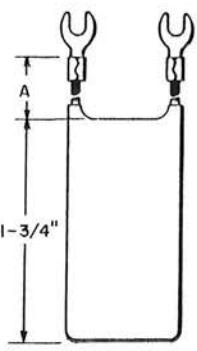


Fig. 2

Plastic film wax impregnated capacitors each having an enveloping gray finish, except 198C which is wrapped with tape.

Code No.	Fig. No.	Dimension A (Inches)	Color of Leads	Capacitance (UF)	
				Max	Min
198A	1	2-1/2	Black	.625	.5
198B	1	4	Yellow	.625	.5
198C	2	2-1/2	Yellow	.5	.4

198A: Intended for use in the L1AW-49 Ringer.

Comcode: 100 027 150

198B: Intended for use in the number 687 type subscriber set.

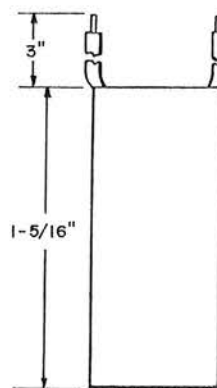
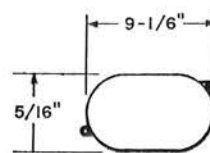
Comcode: 100 027 168

198C: Intended for use in the 687AW-49 Subscriber Set.

Comcode: 100 027 176

Suitable for use on continuously applied potentials not exceeding 200 volts dc or 180 volts ac (60 Hz or less) and at operating temperatures not exceeding 150° F.

## 361C

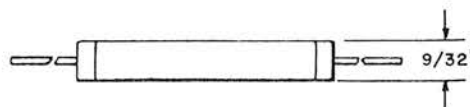
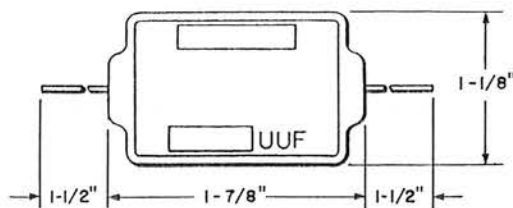


Plastic film capacitor, maximum 0.15 uf and minimum 0.10 uf.

Suitable for use on continuously applied potentials not exceeding 250 volts dc or 180 volts ac (60 Hz or less) at operating temperatures not exceeding 150° F. Used on number 1011 type hand set.

Comcode: 100 028 331

## 402 Type



## CAPACITORS

Mica capacitors equipped with tinned wire terminal leads. Case is of insulating material. Capacitors can be obtained in any nominal capacitance value from 10 to 25,000 uuf. Nominal capacitance value desired must be specified in the order; the value is stamped on each capacitor.

Code No.	Capacitance Limits
402B	$\pm (0.5\% + 1 \text{ uuf})$
402C	$\pm (1\% + 1 \text{ uuf})$
402D	$\pm (5\% + 1 \text{ uuf})$

Suitable for use on continuously applied potentials not exceeding 200 volts dc or 200 volts ac (60 Hz or less) and at operating temperatures within the range  $-50^{\circ}\text{F}$  to  $+185^{\circ}\text{F}$ .

## 437 Type

NOTE:  
TERMINAL DESIGNATIONS  
FOR REFERENCE ONLY.

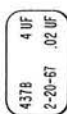
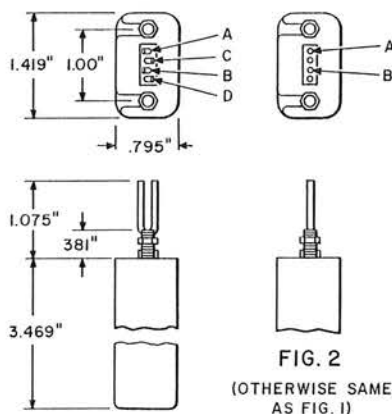


FIG. 1

Metallized mylar capacitors potted in synthetic gel in aluminum cans. Minimum capacitance values are stamped on end of can.

Number 24 type brackets required when mounted in place of number 57 or similar type capacitors. Each mounting stud is connected electrically to can.

Suitable for use on continuously applied potentials not exceeding 200 volts dc or 180 volts ac (60 Hz or less) and at operating temperatures not exceeding  $70^{\circ}\text{C}$ .

Code No.	Comcode	Fig. No.	Capacitance (UF) Between Terminals			
			(A-B)		(C-D)	
			Max	Min	Max	Min
437A	100 039 031	2	5.00	4.00	—	—
*437B	100 039 049	1	5.00	4.00	.03	.02
*437C	100 039 056	1	2.50	2.00	2.50	2.00
*437D	100 039 064	1	5.00	4.00	.06	0.5
†*437E	100 039 072	1	2.50	2.00	2.50	2.00
437QA	100 039 080	2	4.36	4.28	—	—
*437QB	100 039 098	1	4.36	4.28	.03	.02

\*Consists of two separate capacitors insulated but not shielded from each other. These capacitors should not be used bridged off or across two separate transmission circuits. Should not be used in the same circuit where effect of capacitance between the separate units will be detrimental to transmission.

†Same as 437C except the two units are matched so they do not differ by more than 0.11 uf.

## 439 Type

NOTE:  
TERMINAL DESIGNATIONS  
FOR REFERENCE ONLY.

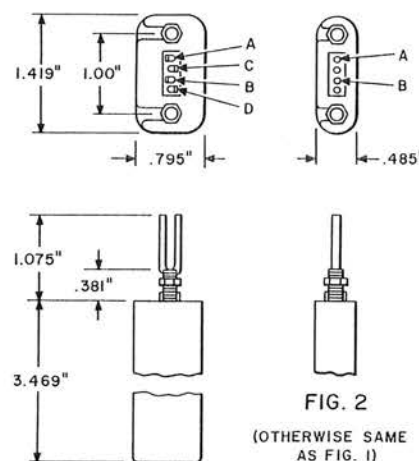


FIG. 1

Metallized mylar capacitors potted in synthetic gel in aluminum cans. Minimum capacitance values unless otherwise noted are stamped on end of can.

## CAPACITORS

## 439 Type (Continued)

Where adjacent electrical potentials exist, closest recommended mounting centers are 0.891 inch for Fig. 1 and 0.576 inch for Fig. 2 by 1.512 inches. Requires number 24 type brackets when mounted in place of number 57 or similar type capacitors. Each mounting stud is connected electrically to can.

Suitable for use on continuously applied potentials not exceeding 200 volts dc or 180 volts ac (60 Hz or less) and at operating temperatures not exceeding 70° C.

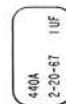
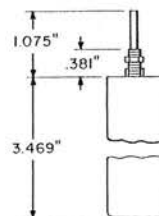
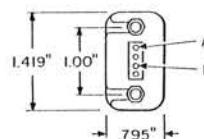
Code No.	Comcode	Fig. No.	Capacitance (UF) Between Terminals			
			(A-B)		(C-D)	
			Max	Min	Max	Min
439A	100 039 106	2	2.50	2.00	—	—
*439B	100 039 114	1	2.50	2.00	.03	.02
*439C	100 039 122	1	1.25	1.00	1.25	1.00
*439D	100 039 130	1	2.50	2.00	.06	.05
*439E	100 039 148	1	1.50	1.20	1.50	1.20
†*439H	100 039 155	1	1.25	1.00	1.25	1.00
439QA	100 039 171	2	2.18	2.14	—	—
439QB	100 039 189	2	2.16	2.10	—	—
439QC	100 039 197	2	2.22	2.16	—	—
439QD	100 039 205	2	2.24	2.08	—	—
439QE	100 039 213	2	2.16	2.04	—	—
439QF	100 039 221	2	2.28	2.16	—	—
*439QG	100 039 239	1	2.28	2.16	.03	.02
*439QH	100 039 247	1	1.08	1.05	1.25	1.00

\*Consists of two separate capacitors insulated but not shielded from each other. These capacitors should not be used bridged off or across two separate transmission circuits; should not be used in the same circuit where effect of capacitance between the separate units will be detrimental to transmission.

†Same as 439C except the two units are matched so they do not differ by more than .055 uf.

## 440 Type

NOTE:  
TERMINAL DESIGNATIONS  
FOR REFERENCE ONLY.



Metallized mylar capacitors potted in synthetic gel in aluminum cans. Where adjacent electrical potentials exist, closest recommended mounting centers are 0.891 inch by 1.512 inches. Require number 24 type brackets when mounted in place of number 57 or similar type capacitors. Each mounting stud is connected electrically to can.

Code No.	Comcode	Capacitance (UF)	
		Max	Min
440A	100 039 254	1.25	1.00
*440C	100 039 262	.62	.50
440F	100 039 270	1.57	1.25
440QA	100 039 288	1.09	1.07
440QB	100 039 296	1.12	1.04

\*For use as plate blocking capacitor in repeater circuits where high insulation resistance is required.

Suitable for use on continuously applied potentials not exceeding 300 volts dc or 300 volts ac (60 Hz or less) and at operating temperatures not exceeding 70° C.

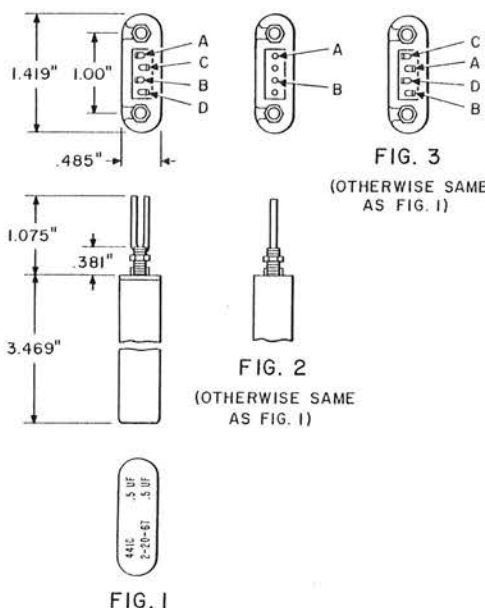


## CAPACITORS

## 441 Type

NOTE:

TERMINAL DESIGNATIONS FOR REFERENCE ONLY.



Metallized mylar capacitors potted in synthetic gel in aluminum cans. Minimum capacitance values are stamped on end of can unless otherwise noted.

Where adjacent electrical potentials exist, closest recommended mounting centers are 0.576 inch by 1.512 inches. Require number 24 type brackets when mounted in place of number 57 or similar type capacitors. Each mounting stud is connected electrically to can.

Suitable for use on continuously applied potentials not exceeding 200 volts dc or 180 volts ac (60 Hz or less) and at operating temperatures not exceeding 70° C.

Code No.	Comcode	Fig. No.	Capacitance Between Terminals (UF)			
			(A-B)		(C-D)	
			Max	Min	Max	Min
441A	100 039 304	2	1.250	1.000	—	—
441B	100 039 312	2	.625	.500	—	—
*441C	100 039 320	1	.625	.500	.625	.500
441D	100 039 338	2	.320	.250	—	—
*441E	100 039 346	1	.320	.250	.320	.250
*441F	100 039 353	1	.320	.250	.625	.500
*441G	100 039 361	1	.085	** .065	.160	.125
*441H	100 039 379	1	.030	.020	.030	.020

Code No.	Comcode	Fig. No.	Capacitance Between Terminals (UF)			
			(A-B)		(C-D)	
			Max	Min	Max	Min
441J	100 039 387	2	.160	1.25	—	—
441K	100 039 395	2	.135	.100	—	—
441L	100 039 403	2	.085	** .065	—	—
441M	100 039 411	2	.060	† .040	—	—
441N	100 039 429	2	.030	.020	—	—
441P	100 039 437	2	.006	‡ .004	—	—
*441R	100 039 445	1	.013	.010	.013	.010
441S	100 039 452	2	1.600	1.300	—	—
*441T	100 039 460	1	.135	.100	.135	.100
441U	100 039 478	2	.040	.030	—	—
***441W	100 039 486	3	—	—	—	—
441Y	100 039 494	1	.135	.100	.160	.140
441QA	100 039 502	2	1.090	1.070	—	—
441QB	100 039 510	2	1.080	1.050	—	—
441QC	100 039 528	2	1.110	1.080	—	—
441QD	100 039 536	2	1.120	1.040	—	—
441QE	100 039 544	2	1.080	1.020	—	—
441QF	100 039 551	2	1.140	1.080	—	—
441QG	100 039 569	2	.545	.535	—	—
441QH	100 039 577	2	.540	.525	—	—
441QJ	100 039 585	2	.555	.540	—	—
441QK	100 039 593	2	.560	.520	—	—
441QL	100 039 601	2	.540	.510	—	—
441QM	100 039 619	2	.570	.540	—	—
441QN	100 039 627	2	.275	.265	—	—
441QP	100 039 635	2	.280	.260	—	—
441QR	100 039 643	2	.270	.250	—	—
441QS	100 039 650	2	.290	.270	—	—
441QT	100 039 668	2	.115	.105	—	—
441QU	100 039 676	2	.110	.100	—	—
441QW	100 039 684	2	.120	.110	—	—

\*Consists of two separate capacitors insulated but not shielded from each other. These capacitors should not be used bridged off or across two separate transmission circuits; should not be used in same circuit where effect of capacitance between separate units will be detrimental to transmission.

\*\*Stamped .075 UF on end of can.

\*\*\*Consists of three 0.1 uf units having a common C terminal. Stamped C, .1, .1, .1, on wide sides of can adjacent to the corresponding terminals.

†Stamped .05 UF on end of can.

‡Stamped .005 UF on end of can.



## CAPACITORS

## 442 Type

NOTE:  
TERMINAL DESIGNATIONS FOR REFERENCE  
ONLY.

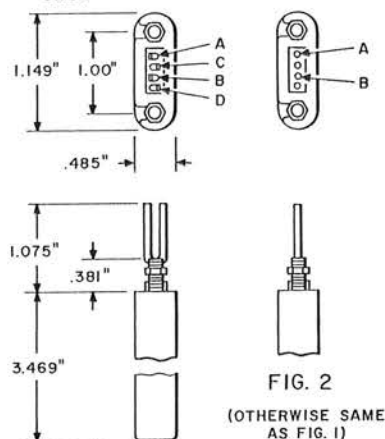


FIG. 1

Metallized mylar capacitors potted in synthetic gel in metal cans. Minimum capacitance values are stamped on end of can.

Where adjacent electrical potentials exist, closest recommended mounting centers are 0.576 inch by 1.512 inches. Require number 24 type brackets when mounted in place of number 57 or similar type capacitors. Each mounting stud is connected electrically to the can.

Suitable for use on continuously applied potentials not exceeding 300 volts dc or 300 volts ac (60 Hz or less) and at operating temperatures not exceeding 70° C.

Code No.	Comcode	Fig. No.	Capacitance (UF) Between Terminals			
			(A-B)		(C-D)	
			Max	Min	Max	Min
442A	100 039 692	2	.6200	.500	—	—
442B	100 039 700	2	.3200	.250	—	—
442C	100 039 718	2	.1250	.100	—	—
442D	100 039 726	2	.0600	.050	—	—
*442E	100 039 734	1	.0300	.020	.0300	.020
*442F	100 039 742	1	.0065	.005	.0065	.005
442H	100 039 759	2	.1600	.125	—	—
442QA	100 039 767	2	.545	.535	—	—

\*Consists of two separate capacitors insulated but not shielded from each other. Should not be used bridged off or across two separate transmission circuits; should not be used in same circuit where effect of capacitance between separate units will be detrimental to transmission.

## 447 Type

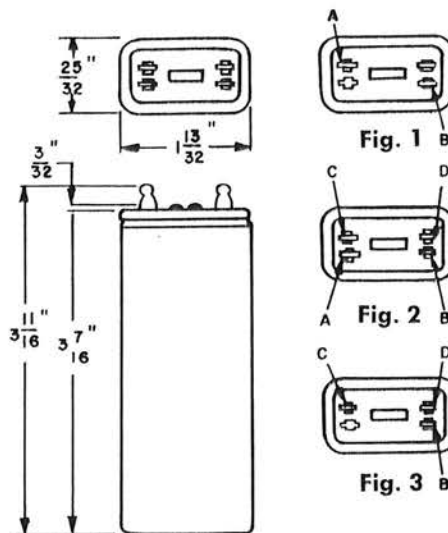


Fig. 1

Fig. 2

Fig. 3

Paper capacitors potted in wax in aluminum cans. Minimum capacitance values unless otherwise noted are stamped on can.

447A, B, D, E, F, and G: Suitable for use on continuously applied potentials not exceeding 200 volts dc or 180 volts ac (60 Hz or less) and at operating temperatures not exceeding 120° F.

447H, J, K, and L: Suitable for use on continuously applied potentials not exceeding 130 volts dc or 100 volts ac (60 Hz or less) between terminals (A-B) and on continuously applied potentials not exceeding 200 volts dc or 180 volts ac (60 Hz or less) between terminals (C-D). Suitable for use at operating temperatures not exceeding 120° F.

## CAPACITORS

Code No.	Comcode	Fig. No.	(A-B)		Capacitance Between Terminals (UF) (C-D)		(C-B)	
			Max	Min	Max	Min	Max	Min
447A	100 039 817	1	2.50	2.00	—	—	—	—
*447B	100 039 825	2	1.25	1.00	1.25	1.00	—	—
(a)447D	100 039 833	3	—	—	1.25	1.00	.62	.50
* (b)447E	100 039 841	2	1.25	1.00	1.25	1.00	—	—
(a)(c)447F	100 039 858	3	—	—	1.25	1.00	.62	.50
*447G	100 039 866	2	.048	(d) .032	2.50	2.00	—	—
447H	100 039 874	2	2.50	2.00	1.25	1.00	—	—
447J	100 039 882	2	2.50	2.00	.625	.50	—	—
447K	100 039 890	(e)	2.50	2.00	.625	.50	—	—
447L	100 039 908	(f)	2.50	2.00	1.25	1.00	—	—

\* Consists of two separate capacitors insulated but not shielded from each other.

(a) Consists of two capacitors having one common terminal.

(b) Same as 447B except equipped with 7-3/4 inch flexible leads, having number 127 Cord Tips, at the following terminals: (A;RD-GN) (B;YEL), (C;YEL) and (D;BLK).

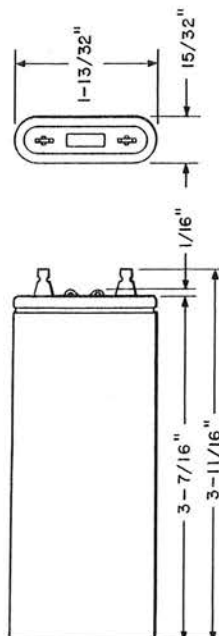
(c) Same as 447D except equipped with 7-3/4 inch flexible leads, having number 127 Cord Tips, at the following terminals: (B;RD), (C;YEL) and (D;BL).

(d) Stamped .04 UF on end of can.

(e) Same as Fig. 2 except equipped with flexible leads, having number 127 Cord Tips, at the following terminals: (A;BLK), (B;RD), (C;YEL) and (D;SL). RD and YEL leads are 8-1/4 inches long. BLK and SL leads are 7 inches long.

(f) Same as Fig. 2 except equipped with flexible leads, having number 127 Cord Tips, at the following terminals: (A BLK), (B;RD), (C;YEL) and (D;SL). RD and YEL leads are 8-1/4 inches long. BLK and SL leads are 7 inches long.

## 449 Type



Paper capacitors potted in wax in aluminum cans. Minimum capacitance values are stamped on the end of can.

Suitable for use on continuously applied potentials not exceeding 200 volts dc or 180 volts ac (60 Hz or less) and at operating temperatures not exceeding 120° F except 449J which is suitable for use on potentials not exceeding 300 volts dc or ac (60 Hz or less) and at operating temperatures not exceeding 120° F.

Code No.	Comcode	Capacitance (UF)	
		Max	Min
449A	100 039 916	1.25	1.00
449B	100 039 924	.62	.50
449C	100 039 932	.13	.10
449D	100 039 940	.80	.65
(a)449E	100 039 957	1.25	1.00
(b)449F	100 039 965	.80	.65
(c)449G	100 039 973	1.25	1.00
(c)449H	100 039 981	.62	.50
449J	100 039 999	.05	.04

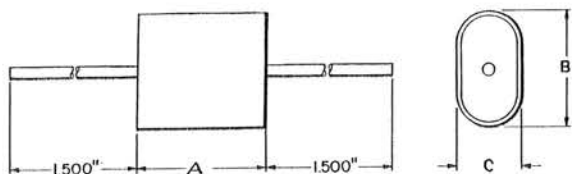
(a) Equipped with two 8-inch yellow flexible leads having number 144 Cord Tips.

(b) Equipped with two 5-1/2 inch flexible leads, one yellow and one black, having number 127 Cord Tips.

(c) Equipped with two 6-inch yellow flexible leads having number 144 Cord Tips.

## CAPACITORS

## 535 Type

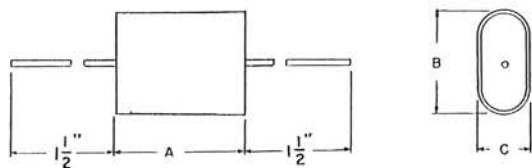


Plastic film, wax impregnated capacitors, wrapped with tape and end filled with epoxy. Equipped with tinned terminal leads.

Suitable for use on continuously applied potentials not exceeding 200 volts dc except in specific instances and at operating temperatures within the range of  $-40^{\circ}\text{F}$  and  $+150^{\circ}\text{F}$ .

The 535 type capacitors are available in varying capacitances from .00822 uf max., .007899 uf min. to 4.363 uf max., 4.277 uf min. The dimensions vary with the value of the capacitor. The A dimension is from 1 inch to 1.800 inches; the B dimension is from .600 inch to 1.300 inches and the C dimension is from .200 to .500 inch. Available capacitance and operating voltages may be established by contacting the sources in the front of this catalog.

## 542 Type



Metallized polyester film capacitors, wrapped with tape and end filled with epoxy. Equipped with tinned terminal leads.

Suitable for use on continuously applied potentials not to exceed 200 volts dc unless otherwise specified and at operating temperatures within the range of  $-40^{\circ}\text{F}$  to  $+150^{\circ}\text{F}$  unless otherwise specified.

Code No.	Comcode	Capacitance UF		Dimensions (Inches)		
		Max.	Min.	A	B	C
542A	100 046 911	.60	.40	1.000	.750	.350
542B	100 046 929	.22	.18	1.000	.610	.210
542C	100 046 978	.30	.20	1.000	.650	.250
542D	100 046 945	1.10	.90	1.800	.700	.300
542E	100 046 952	1.80	1.20	1.800	1.050	.320
542F	100 046 960	2.25	1.75	1.800	1.100	.370
542G	100 046 978	4.60	3.40	1.800	1.250	.550
542J	100 046 994	.88	.72	1.800	.670	.270
542K(a)	100 047 000	.51	.42	1.000	.900	.500
542L	100 047 018	.105	.095	1.000	.600	.200
542M	100 047 026	.58	.52	1.000	.750	.350
542N	100 047 034	1.20	.90	1.000	.900	.500
542R(b)	100 047 059	.00442	.00362	1.000	.600	.200
542S(b)	100 047 067	.0110	.0090	1.000	.600	.200
542T(b)	100 047 075	.0133	.0109	1.000	.600	.200
542U(c)	100 047 083	.0421	.0345	1.000	.600	.200
542W(a)	100 047 091	.0562	.0460	1.000	.600	.200
542Y(a)	100 047 109	.178	.146	1.000	.700	.300
542AA(c)	100 047 117	.02365	.01935	1.000	.60	.20
542AB(c)	100 047 125	.05104	.04176	1.000	.60	.20
542AC(a)	100 047 133	.07491	.06129	1.000	.60	.20
542AD(a)	100 047 141	.1100	.0900	1.000	.60	.20
542AE	100 047 158	.464	.380	1.000	.70	.30
542AF	100 047 166	.6809	.5571	1.000	.80	.40
542AG(a)	100 047 174	2.400	1.600	1.800	1.300	.550
542AH(a)	100 047 182	.162	.132	1.000	.600	.200
542AJ(a)	100 047 190	2.365	1.935	1.800	1.300	.550

(a) Maximum operating voltage 250 volts dc.

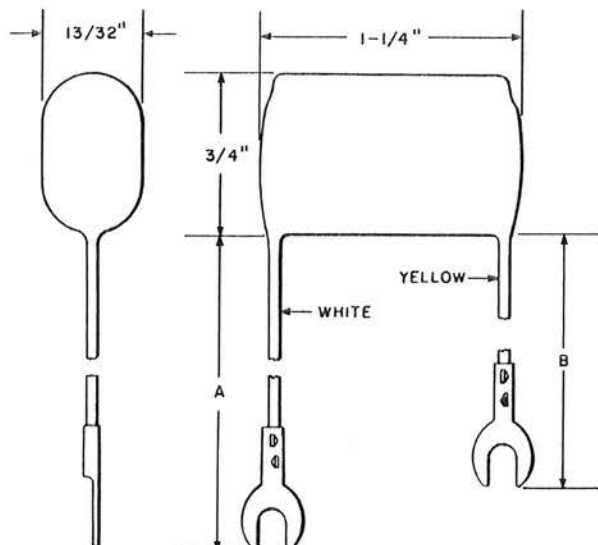
(b) Maximum operating voltage 500 volts dc.

(c) Maximum operating voltage 350 volts.



## CAPACITORS

548A and B



Metalized plastic film wax impregnated capacitors having an epoxy coating. Equipped with flexible insulated terminal leads having cord tips arranged for a number 4 screw. Capacitance is maximum .52 uf and minimum .38 uf.

Suitable for use on continuously applied potentials not exceeding 250 volts dc and at operating temperatures within the range of  $-40^{\circ}\text{F}$  and  $+150^{\circ}\text{F}$ .

548A: Forms a part of E1A-42 Ringer.

548B: Forms a part of the number 689 type subscriber sets.

Code No.	Comcode	Dimensions (Inches)	
		A	B
548A	100 047 265	6.25	4.75
548B	100 047 273	2.75	2.75

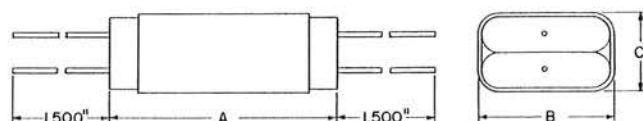
## 579 Type

Metal polyester film capacitors, wrapped with tape and end filled with epoxy. Equipped with tinned terminal leads.

Suitable for use on continuously applied potentials not exceeding the maximum operating voltage specified in the following table and at operating temperatures within the range of  $-40^{\circ}\text{F}$  to  $+150^{\circ}\text{F}$ . The configuration of these capacitors is the same as the number 542 type and the dimensions shown in the following table are keyed to that illustration.

Code No.	Comcode	Capacitance (UF)		Operating Voltage (Max. DC)	Dimensions (Inches)		
					A	B	C
579A	100 055 003	2.00	$\pm 10\%$	200	1.800	.840	.400
579B	100 055 011	1.50	$\pm 10\%$	200	1.800	.840	.400
579C	100 055 029	0.50	$\pm 20\%$	200	1.000	.680	.350
579D	100 055 037	0.464	$\pm 20\%$	250	1.000	.865	.400
579E	100 055 045	0.147	$\pm 20\%$	250	1.000	.500	.245
579F	100 055 052	0.0215	$\pm 10\%$	350	1.000	.600	.165

580A and 580B



Each consists of two metalized polyester film capacitor units wrapped together with tape and end filled with epoxy. Equipped with tinned terminal leads.

Suitable for use on continuously applied potentials not exceeding 200 volts dc and at operating temperatures within the range of  $-40^{\circ}\text{F}$  to  $+150^{\circ}\text{F}$ .

580A: Capacitance of the two units is matched so that they do not differ more than 0.11 uf.

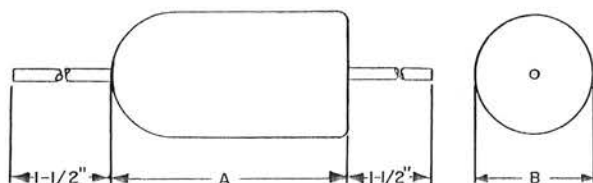
580B: Capacitance of the two units is matched so that they do not differ more than 0.055 uf.

Code No.	Comcode	Capacitance of Each Unit (UF)		Dimensions (Inches)		
				A	B	C
580A	101 568 731	2.25	$\pm 10\%$	1.800	1.150	.800
580B	100 055 078	1.125	$\pm 10\%$	1.800	1.050	.600



## CAPACITORS

## 600, 601, 602, 603, and 604 Type



Each is a tantalum, solid, polarized, electrolytic capacitor in a case of insulating material. Equipped with tinned axial terminal leads. The positive terminal is identified by a plus (+) symbol at the hemispherical end.

Suitable for use on continuously applied dc potentials not exceeding the rated operating voltage specified in the following table and at operating temperatures within the range of  $-20^{\circ}\text{F}$  to  $+150^{\circ}\text{F}$ .

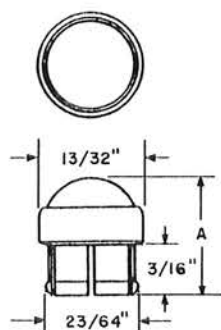
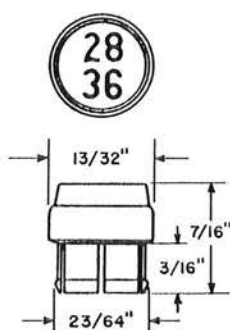
Code No.	Comcode	Rated Operating Dimensions			
		Capacitance (UF $\pm 20\%$ )	Voltage (Volts DC)	A (Inches)	B (Inches)
600A	100 056 050	1	35	.375	.195
600B	100 056 068	5	8	.375	.195
601A	100 056 084	5	35	.550	.295
601B	100 056 092	10	20	.550	.295
601C	100 056 100	25	8	.550	.295
601E	100 056 118	7	25	.550	.295
602A	100 056 126	40	20	.800	.350
602B	100 056 134	100	8	.800	.350
602C	100 056 142	20	35	.800	.350
602F(a)	100 056 167	15	35	.800	.350
602G(a)	100 056 175	20	35	.800	.350
603A	100 056 183	4	20	.500	.195
603B	100 056 191	16	4	.500	.195
604A	100 056 225	10	35	.600	.350
604B	100 056 233	50	8	.600	.350

(a) Tolerance is  $\pm 10\%$  and has special characteristics which restrict them for use only in the 3A Echo Suppressor.

## CAPS

## Lamp

## 2 Type

2 Type, Except  
2CP and CR

2CP and CR

Thick, substantial lenses made from specially selected and treated glass, unless otherwise noted. Lenses are held firmly in place in cap cases by spinning the edges over the lenses. Dimension A is 17/32 inch for the 2BR, 2BS, 2BT, 2EE, 2EF, and 2EG, and 15/32 inch for all other codes.

Used with number 12, 13, 49, and 50 type lamp sockets.

Code No.	Comcode	Symbol	Color
2A	100 079 862		White opalescent
2B	100 079 870		White opalescent
2C	100 079 888		White opalescent
2D	100 079 896		White opalescent
2E	100 079 904		White opalescent
2F	100 079 912		White opalescent
2G	100 079 920		White opalescent
2H	100 079 938		Red opalescent
2J	100 079 946		White opalescent
2K	100 079 953		White opalescent
2L	100 079 961		Green opalescent
2M	100 079 979		White opalescent
2N	100 079 987		Red opalescent
2P	100 079 995		Jeweled red
2R	100 080 001		Jeweled clear blue (frosted on rear only)
2S	100 080 019		Jeweled green
2T	100 080 027		Red opalescent
2U	100 080 035		Clear amber (frosted on rear only)
2W	100 080 043		Clear blue (frosted)
2Y	100 080 050		Green opalescent
2Z	100 080 068		White opalescent
2AA	100 080 076		Red opalescent
2AB	100 080 084		White opalescent
2AC	100 080 092		Red opalescent
2AE	100 080 118		Red opalescent
2AF	100 080 126		White opalescent
2AG	100 080 134		White opalescent
2AH	100 080 142		White opalescent
2AJ	100 080 159		White opalescent
2AK	100 080 167		White opalescent
2AL	100 080 175		Green opalescent
2AM	100 080 183		White opalescent
2AN	100 080 191		White opalescent
2AP	100 080 209		White opalescent
2AS	100 080 225		White opalescent
2AT	100 080 233		White opalescent
2AU	100 080 241		White opalescent
2AW	100 080 258		White opalescent
2AY	100 080 266		White opalescent

## CAPS

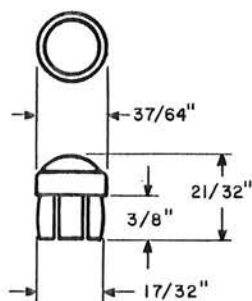
## Lamp

2 Type (Continued)				Code No.	Comcode	Symbol	Color
Code No.	Comcode	Symbol	Color	2CN	100 080 530		White opalescent
2AZ	100 080 274		Red opalescent	*2CP	100 080 548		Clear amber (frosted on rear only)
2BC	100 080 290		White opalescent	*2CR	100 080 555		Clear colorless (frosted on rear only)
2BD	100 080 308		White opalescent	2CS	100 080 563		Green opalescent
2BE	100 080 316		Green opalescent	2CT	100 080 571		Green opalescent
2BF	100 080 324		White opalescent	2CU	100 080 589		Green opalescent
2BG	100 080 332		Green opalescent	2CW	100 080 597		Green opalescent
2BH	100 080 340		Green opalescent	2CY	100 080 605		Red opalescent
2BJ	100 080 357		White opalescent	2EA	100 080 613		Red opalescent
2BN	100 080 365		Clear	2EB	100 080 621		Green opalescent
2BP	100 080 373		Clear amber (frosted on rear only)	2EC	100 080 639		White opalescent
2BU	100 080 381		White opalescent	2ED	100 080 647		White opalescent
2BW	100 080 399		Red opalescent	*2EE	100 080 654		White opalescent
2BY	100 080 407		Green opalescent	*2EF	100 080 662		Red opalescent
2CA	100 080 415		Green opalescent	*2EG	100 080 670		Green opalescent
2CB	100 080 423		Red opalescent	*Has molded plastic lens, cannot be used with lamps that dissipate more than 2-1/2 watts.			
2CC	100 080 431		Green opalescent				
2CD	100 080 449		Green opalescent				
2CE	100 080 456		White opalescent				
2CF	100 080 464		Clear amber (frosted on rear only)				
2CG	100 080 472		Red opalescent				
2CH	100 080 480		Red opalescent				
2CJ	100 080 498		Green opalescent				
2CK	100 080 506		Clear amber (frosted on rear only)				
2CL	100 080 514		Green opalescent				
2CM	100 080 522		Green opalescent				

## CAPS

## Lamp

## 4 Type



Used with number 34 type lamp sockets and 20B and similar type indicators.

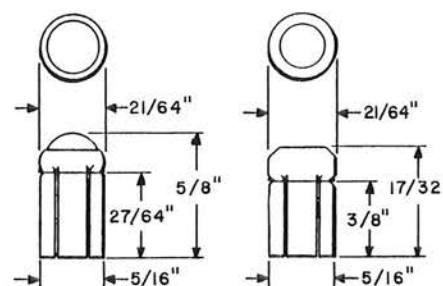
Used for pilot signals, fire alarms, and supervisor's signals.

Code No.	Comcode	Symbol	Color
4A	100 080 696		White opalescent
4B	100 080 704		Jeweled red opalescent
4C	100 080 712		Jeweled green opalescent
4D	100 080 720		Red opalescent
4F	100 080 746		Green opalescent
4G	100 080 753		White opalescent
4L	100 080 779		Green opalescent
4M	100 080 787		Clear amber (frosted on rear only)
*4N	100 080 795		White opalescent
*4P	100 080 803		Red opalescent
*4R	100 080 811		Green opalescent
*4S	100 080 829		Clear amber (frosted on rear only)
4T	100 080 837		Jeweled red opalescent

Code No.	Comcode	Symbol	Color
4U	100 080 845		Jeweled clear amber (frosted on rear only)
4W	100 080 852		Jeweled clear green (frosted on rear only)
4Y	100 080 860		Jeweled clear red (frosted on rear only)
4AA	100 080 878		Colorless opalescent

\*Inside surface of lens is concave.

## 8 Type



8 Type, Except  
8BA, BB, BD,  
CF and CG

8BA, BB, BD,  
CF, and CG

















































Used with 30 and 43A Lamp Sockets.

Code No.	Comcode	Symbol	Color
8A	100 080 886	None	White opalescent
8B	100 080 894	None	Clear
8D	100 080 910	None	Red opalescent
8E	100 080 928		White opalescent
8F	100 080 936		White opalescent



## CAPS

## Lamp

8 Type (Continued)				Code No.	Comcode	Symbol	Color
Code No.	Comcode	Symbol	Color				
				8AU	100 081 223		White opalescent
8G	100 080 944		White opalescent	8AY	100 081 249		White opalescent
8H	100 080 951		White opalescent	*8BA	100 081 256		Green opalescent
8J	100 080 969		White opalescent	*8BB	100 081 264		White opalescent
8K	100 080 977		White opalescent	8BC	100 081 272		White opalescent
8L	100 080 985	None	Green opalescent	8BD	100 081 280		White opalescent painted black, except for a raised bar across the face.
8R	100 080 993		White opalescent	8BE	100 081 298		Green opalescent
8T	100 081 017		White opalescent	8BF	100 081 306	None	Clear amber (frosted in rear only)
8U	100 081 025		White opalescent	8BG	100 081 314		White opalescent
8W	100 081 033	None	Jeweled red opalescent	8BH	100 081 322		Green opalescent
8Y	100 081 041		Green opalescent	8BJ	100 081 330		Jeweled clear blue (frosted in rear only)
8AA	100 081 058		Red opalescent	8BK	100 081 348		White opalescent
8AB	100 081 066		Green opalescent	8BL	100 081 355		Red opalescent
8AC	100 081 074		Red opalescent	8BM	100 081 363		Green opalescent
8AD	100 081 082		White opalescent	8BN	100 081 371		Green opalescent
8AE	100 081 090		White opalescent	8BP	100 081 389		White opalescent
8AF	100 081 108		White opalescent	8BR	100 081 397		Red opalescent
8AG	100 081 116		White opalescent	8BS	100 081 405		Green opalescent
8AH	100 081 124		White opalescent	8BT	100 081 413		Red opalescent
8AJ	100 081 132		Red opalescent	8BU	100 081 421		Clear blue (frosted front and rear)
8AK	100 081 140		Green opalescent	8BW	100 081 439		Red opalescent
8AL	100 081 157		White opalescent	8BY	100 081 447		Clear amber (frosted on rear only)
8AM	100 081 165		Red opalescent	8CA	100 081 454		Green opalescent
8AN	100 081 173		Green opalescent	8CB	100 081 462		White opalescent
8AP	100 081 181		White opalescent				
8AR	100 081 199		Red opalescent				
8AS	100 081 207		Green opalescent				
8AT	100 081 215		Red opalescent				

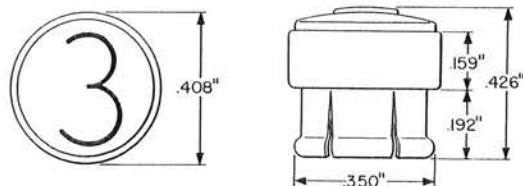
## CAPS

## Lamp

Code No.	Comcode	Symbol	Color	Code No.	Comcode	Symbol	Color
8CC	100 081 470	(S)	Red opalescent (symbol painted white)	72E	100 081 579	(4)	Black (white opalescent character)
8CD	100 081 488	(S)	Green opalescent (symbol painted white)	72F	100 081 587	(5)	Black (white opalescent character)
8CE	100 081 496	(C)	Green opalescent (symbol painted white)	72G	100 081 595	(6)	Black (white opalescent character)
8CF	100 081 504	(⊕)	White opalescent	72H	100 081 603	(7)	Black (white opalescent character)
8CG	100 081 512	(⊕)	White opalescent	72J	100 081 611	(8)	Black (white opalescent character)
8CH	100 081 520	(E)	White opalescent	72K	100 081 629	(9)	Black (white opalescent character)

\*Numbered with one or two black digits, as specified in order.

## 72 Type



Consists of a brass shell and glass lens. Used with number 12 and 49A Lamp Sockets. The 72A through 72K are also used with number 6 and 7 type indicators.

Code No.	Comcode	Symbol	Color
72A	100 081 538	(0)	Black (white opalescent character)
72B	100 081 546	(1)	Black (white opalescent character)
72C	100 081 553	(2)	Black (white opalescent character)
72D	100 081 561	(3)	Black (white opalescent character)

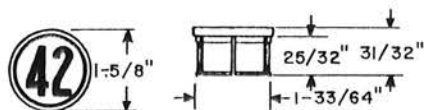
*72L	100 081 637	(12 34)	White opalescent (black characters)
*72M	100 081 645	(12 34)	Red opalescent (black characters)
*72N	100 081 652	(12 34)	Green opalescent (black characters)
72P	100 081 660	( )	This cap is intended to be used in un-equipped positions of lamp sockets. Has black face and is opaque.
*72R	100 081 678	(12 34)	Clear amber (black characters, frosted on rear only)
*72S	100 081 686	(12 34)	Black (white opalescent characters)

\*Characters as specified in order. One, two, or three characters arranged on one line; four characters arranged as shown.

## CAPS

## Lamp

74A



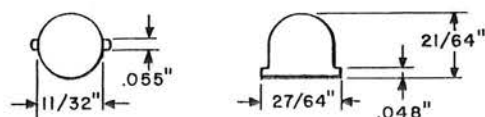
Nickel finished metal shell with flat ground glass lens.  
If specified on order, one, two, or three digits will be painted in black.

For use with lamp annunciators.

Comcode: 100 081 702

100 994 912 one character  
100 994 920 two characters  
100 994 938 three characters

75 Type

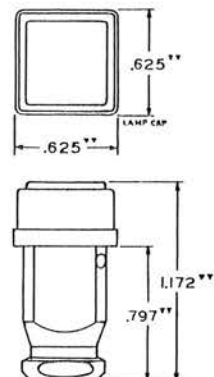


Plastic cap having two lugs for mounting.

Code No.	Comcode	Color
75A	100 081 710	White
75B	100 081 728	Red
75C	100 081 736	Green

For use with A1 Lamps in number 102 type key telephone system.

77A Type



Each consists of a plastic shell and retainer with a clear plastic lens. Equipped with a designation card that will be stamped per order with up to four characters in one line, or up to four characters in each of two lines. When an "I" is required as one of the characters, four additional characters can be stamped on that line.

Code No.	Comcode	Color
77A1	101 388 742	Beige
77A2	101 145 647	Gray
77A3	101 145 654	Green
77A4	101 145 662	White

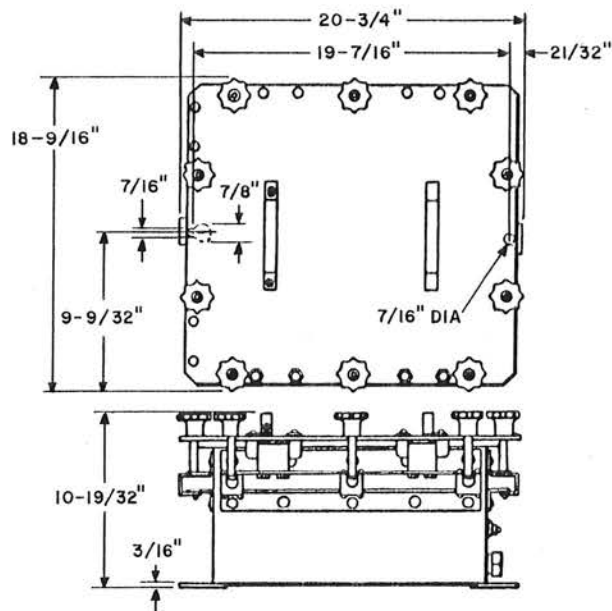
77A1, A2, and A3: Used in the 100A and B Traffic Service Positions.

77A4: Used in number 1 ESS.

## CASES

## Apparatus

## 385A



Watertight sheet metal case with removable hinged cover so arranged that by relocating the hinges it will swing open from either the right or left side. Mounts in a manhole or cable vault.

For use in housing switching relays and associated terminating apparatus used in air raid warning emergency equipment for civil defense.

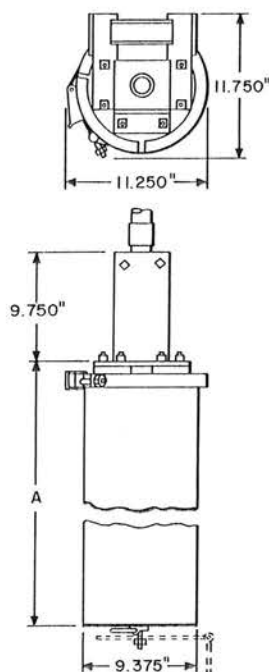
Comcode: 100 088 681



## CASES

## Apparatus

416A, B, and C



Code No.	Comcode	Dimension A (Inches)	Quantity of Inductors
416A	(a) 100 833 441	28	100
	(b) 100 091 677		
	(c) 100 091 685		
416B	(a) 100 833 458	28	200
	(b) 100 091 701		
	(c) 100 091 719		
416C	(a) 100 833 466	36	300
	(b) 100 091 735		
	(c) 100 091 743		

- (a) E/W 50 Ft Stub
- (b) E/W 75 Ft Stub
- (c) E/W 100 Ft Stub

Each has a gastight steel case, equipped with "O" ring seal, which has been hot dip galvanized and has a black enamel finish. For use in cable vaults.

Provided with mounting bolts, nuts, and lock washers, brackets, and a hinged support for use when mounting in a horizontal or vertical position.

Arranged to contain the quantities of individual codes of 1574A or 1574B Inductors as specified in the table. The inductors do not form a part of the cases. The code number and quantity of inductors required must be specified in the order and all inductors in a case must be of the same code number.

Shipped filled with dry air at approximately 9 pounds pressure and provided with an air valve in the top cover.

Equipped with a 50-foot number 24 AWG stub cable which has polyvinyl chloride insulation and is covered in a gray polyvinyl chloride sheath. Can be obtained equipped with a stub cable 75 or 100 feet long when specified in the order.

Initially used in dedicated plant installations.

## CASES

## Apparatus

703B and 704B

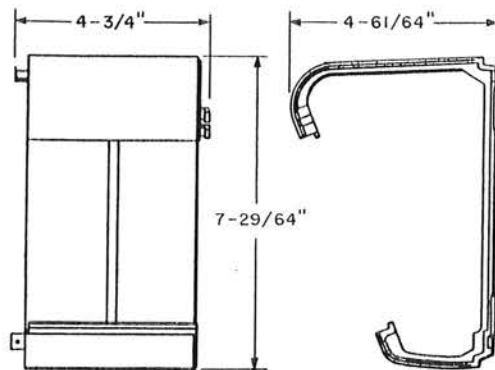


Fig. 1

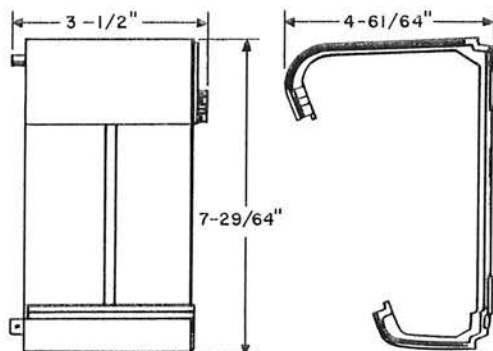


Fig. 2

Metal cases, pearl-gray wrinkle enamel finish. Provided with two flat fillister head machine screws for assembly to associated apparatus cases. Intended for use with 705B and 706B Apparatus Cases, respectively, at control centers in connection with air defense systems.

Code No.	Comcode	Fig. No.
703B	100 093 426	1
704B	100 093 442	2

705B and 706B

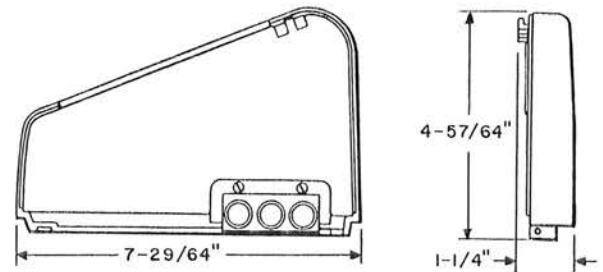


Fig. 1

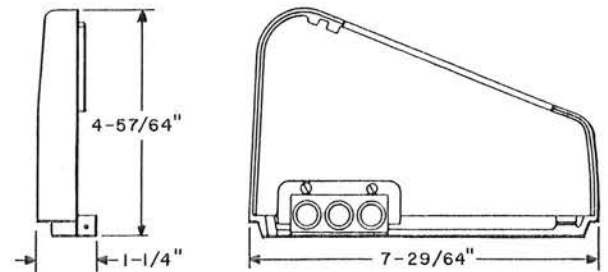


Fig. 2

Metal end covers, pearl-gray wrinkle enamel finish.

705B: Left end cover for use with 703B and 704B Apparatus Cases. See Fig. 1.

Comcode: 100 093 475

706B: Right end cover for use with 703B and 704B Apparatus Cases. Mounting screws are furnished. See Fig. 2.

Comcode: 100 093 491



CASES

Coil

The loading coil cases listed in this catalog pot the various non-phantom loading coils used in loading trunk, toll and exchange type cables.

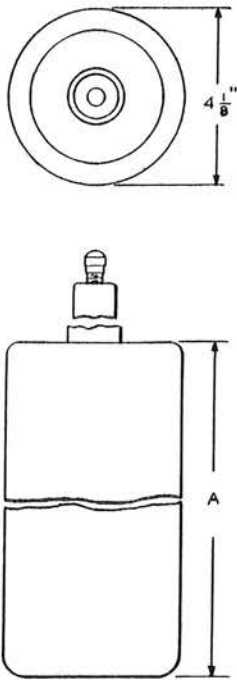
Information on side and phantom loading may be obtained by written request to Western Electric Company.

The electrical characteristics of the loading coils that can be provided in the load coil cases listed in this catalog are included in the following table:

Electrical Data			
Coil Code No.	Nominal Induct. MH	Resistance Ave. D-C	Ohms (1) 1000 Cycles
641*	44	3.7	4.2
642*	88	6.3	7.5
643*	135	9.3	11.4
644*	175	12.6	14.3
652	88	8.5	10.6
658	44	4.5	6.2
659	22	2.25	3.25

\*Loading for toll cables.

124 Type



Welded steel cases having an asphalt coating and aluminum paint finish. For use in either aerial or underground locations. Arranged to contain either number 652, 658, or 659 loading coils in the quantities specified in the table. The code number and quantity of loading coils required must be specified in the order. All loading coils in a case must be of the same code number.

Shipped filled with dry air at approximately 9 pounds pressure and provided with an air valve in the stub cable. Equipped with 10-foot number 24 AWG stub cable. Can also be obtained with stub cable 5 feet, 15 feet, or 20 feet long when specified in the order.

Used in connection with loading exchange area cables.

Code No.	Comcode	Stub Cable Length (ft)	Loading Coil	Quantity of Loading Coils	Dim. A Inches
124B	101 745 636	5	652	25	13-3/8
	101 745 644	10			
	101 745 651	15			
	101 745 669	20			
	101 745 677	5	658	25	13-3/8
	101 745 685	10			
	101 745 693	15			
	101 745 701	20			



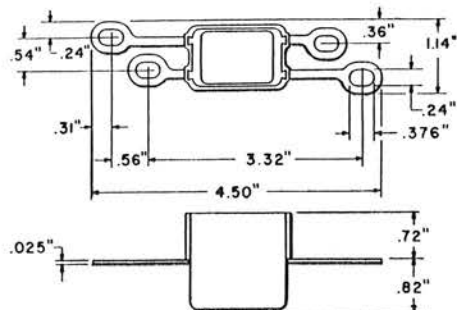
## CASES

## Coil

## 124 Type (Continued)

Code No.	Comcode	Stub Cable Length (ft)	Loading Coil	Quantity of Loading Coils	Dim. A Inches
124B	101 745 719	5	659	25	13-3/8
	101 745 727	10			
	101 745 735	15			
	101 745 743	20			
124C	101 745 750	5	652	50	19-7/8
	101 745 768	10			
	101 745 776	15			
	101 745 784	20			
	101 745 792	5	658	50	19-7/8
	101 745 800	10			
	101 745 818	15			
	101 745 826	20			
	101 745 834	5	659	50	19-7/8
	101 745 842	10			
	101 745 859	15			
	101 745 867	20			

## 137A



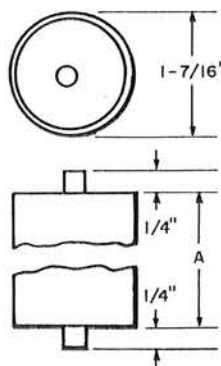
Plastic container provided with terminals which are also used for mounting on terminal distribution blocks.

Arranged to contain one 652, 658, or 659 Loading Coil or a 1574A or B Inductor. The code number of the loading coil or inductor required must be specified in the order.

When equipped with a loading coil, used in loading the B Rural Distribution System and at distribution terminals in buried plant. When equipped with an inductor, used in bridged subscriber loops to reduce transmission loss when one branch is idle.

Code No.	Comcode	Loading Coil or Inductor
137A	101 448 462	652
	101 619 757	658
	101 619 682	659
	100 094 119	1574A
	100 094 127	1574B

## 167 Type



Each consists of an insulating tube and a wood dowel. The cases are equipped with 18-inch number 22 AWG terminal leads at each end.

Arranged for potting loading coils as indicated in the following table. The quantity and code number of the coils to be potted must be specified in the order. All loading coils in a case must be the same code number.

Used to load long subscriber loops, exchange area cables, and toll cables. Designed for installation in cable splices.

Code No.	Comcode	Loading Coil	Quantity of Loading Coils	Dim. A Inches
167A	101 619 765	652	6	4-7/8
	101 619 690	658		
	101 494 086	659		
167B	101 619 708	652	11	8-7/8
	101 619 773	658		
	101 619 716	659		
167C	101 619 724	652	16	12-3/4
	101 619 781	658		
	101 619 989	659		

## CASES

## Coil

171C, 171D, 172B, and 172C

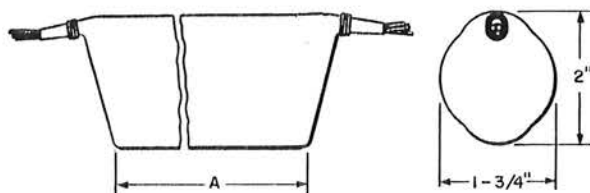


Fig. 1

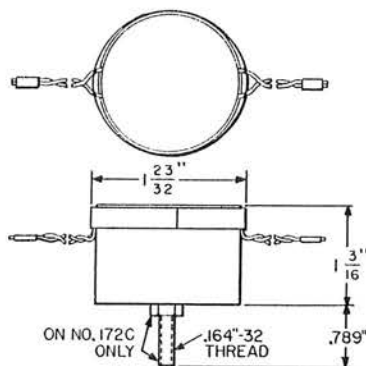


Fig. 2

Each case is designed to contain number 652, 658, or 659 Loading Coils or 1574A or B Inductors as specified in the table. The code number and quantity of loading coils or inductors required must be specified in the order. All loading coils or inductors in a case must be of the same code number.

171C and D: Case is of sheet plastic and is equipped with number 24 AWG pair terminal leads approximately 21 inches long, having polyvinyl chloride insulation. All IN pairs are brought out at one end of the case and OUT pairs at the opposite end. Case is arranged so that each coil is insulated from all other coils to withstand 10,000 volts dc.

Intend for inclusion in splices of cables having conductors insulated with polyethylene.

172B: Plastic box equipped with number 24 AWG paired terminal leads approximately 31 inches long, having polyvinyl chloride insulation.

Intend for inclusion in splices of cables having conductors insulated with polyethylene where a dielectric strength of 20,000 volts dc between coils is desired.

172C: Same as 172B except equipped with a stud for mounting directly to the frame of a number 49 type cable terminal.

Code No.	Comcode	Loading Coil or Inductor	Fig. No.	Quantity of Loading Coils or Inductors	Dim. A Inches
171C	101 448 678	652	1	6	7-3/8
	101 494 094	658			
	101 448 686	659			
	100 094 952	1574A			
171D	100 094 960	1574B	1	11	13-3/8
	101 458 313	652			
	101 494 102	658			
	101 494 110	659			
172B	100 095 009	1574A	2	1	—
	100 095 017	1574B			
	101 448 710	652			
	101 619 799	658			
172C	101 448 728	659	2	1	—
	100 095 058	1574A			
	100 095 066	1574B			
	101 448 744	652			
	101 619 807	658	2	1	—
	101 620 003	659			
	100 095 108	1574A			
	101 619 815	1574B			

## CASES

## Coil

173B, 174C, and 174D

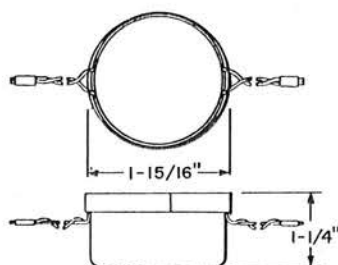


Fig. 1

Code No.	Comcode	Loading Coil	Fig. No.	Quantity of Loading Coils	Dim. A Inches
*173B	100 095 124	641	1	1	—
	100 095 132	642			
	100 095 140	643			
**174C	101 157 097	641	2	6	7-3/4
	100 095 165	642			
	100 095 173	643			
**174D	100 095 181	641	2	11	14
	100 095 199	642			
	100 095 207	643			

\*Plastic box equipped with number 24 AWG paired conductors, 31 inches long.

\*\*Sheet plastic equipped with number 24 AWG terminal leads, approximately 21 inches long.

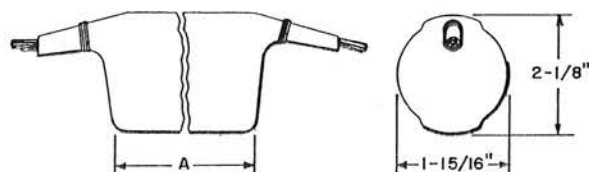


Fig. 2

Each case is designed to contain number 641, 642, or 643 Loading Coils as specified in the table. The code number and quantities of loading coils required must be specified in the order. All loading coils in a case must be of the same code number.

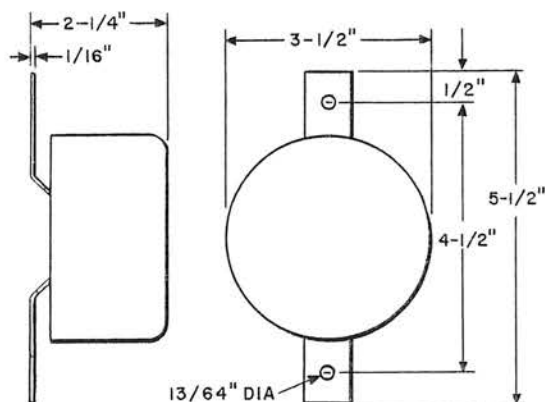
The 173B is used for inclusion in a splice of cables having conductors insulated with polyethylene where a dielectric strength of 20,000 volts dc between coils is desired.

The 174C and D are used for inclusion in splices of cables having conductors insulated with polyethylene where a dielectric strength of 10,000 volts dc between coils is desired.

## CASES

## Coil

178A1



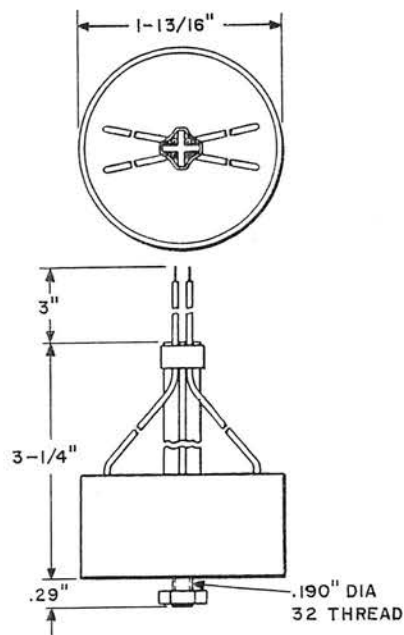
Cylindrical plastic case with black semiflexible insulated snap-on cover for potting one 652, 658, 659, 641, 642, 643, or 644 Loading Coil or a 1574A or B Inductor. Equipped with four 2A1B Protector Units for protection against lightning or heavy surge currents. Mounting screws are provided for pole mounting.

The code number of the coil or inductor required must be specified in the order.

When equipped with a loading coil, is intended for loading C Rural Wire. When equipped with an inductor, is intended for use in bridged subscriber loops to reduce transmission loss when one branch is idle.

<b>Comcode:</b>	100 095 280	E/W 641	Loading Coil
	100 095 298	E/W 642	Loading Coil
	100 095 306	E/W 643	Loading Coil
	101 745 875	E/W 644	Loading Coil
	101 619 849	E/W 652	Loading Coil
	101 493 989	E/W 658	Loading Coil
	101 620 011	E/W 659	Loading Coil
	100 095 314	E/W 1574A	Inductor
	100 095 322	E/W 1574B	Inductor

179A1



Plastic case arranged for potting one 642 Loading Coil or one 1574A or B Inductor. The code number of the loading coil or inductor required must be specified in the order. Case is equipped with number 19 AWG terminal leads.

Used in connection with loading underground wire for rural distribution.

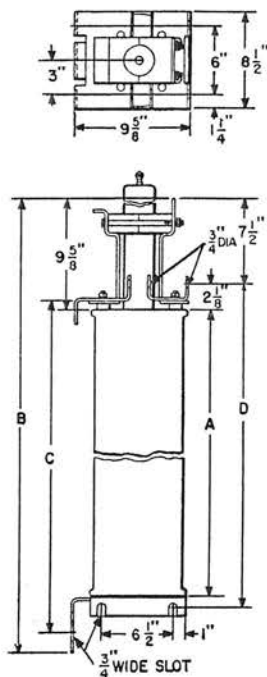
Comcode: 100 095 330	E/W 642 Loading Coil
100 095 348	E/W 1574A Inductor
100 095 355	E/W 1574B Inductor



CASES

Coil

226 Type



Welded steel cases having an asphalt coating and aluminum paint finish. For use in either aerial or underground locations. Provided with an additional bracket for mounting in aerial locations. Designed to contain the quantities of individual codes of number 652, 658, or 659 Loading Coils as specified in the table. The code number and quantity of loading coils required must be specified in the order. All loading coils in a case must be of the same code number.

Shipped filled with dry air at approximately 9 pounds pressure and provided with an air valve in the stub cable. Equipped with a 10-foot number 24 AWG stub cable. Can also be obtained equipped with stub cable 15 or 20 feet long when specified in the order. The IN and OUT pairs to each coil are quadded.

The top and bottom mounting brackets may be rotated to any one of four 90 degree positions.

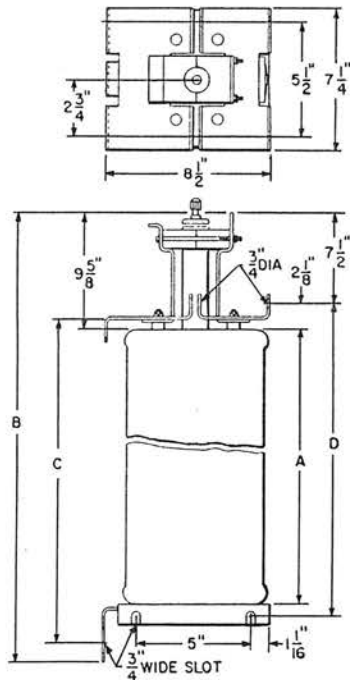
Used in connection with loading exchange area cables.

Code No.	Comcode	Stub Cable Length (ft)	Loading Coil	Quantity of Loading Coils	Dimensions (Inches)			
					A	B	C	D
226A	101 745 883	10	652	304	27-3/16	41-3/4	31	30-1/4
	101 745 891	15						
	101 745 909	20						
	101 745 917	10	658					
	101 745 925	15						
	101 745 933	20						
	101 745 941	10	659					
	101 745 958	15						
	101 745 966	20						
226B	101 745 974	10	652	455	39-1/16	53-5/8	42-7/8	42-1/8
	101 745 982	15						
	101 745 990	20						
	101 746 006	10	658					
	101 746 014	15						
	101 746 022	20						
	101 746 030	10	659					
	101 746 048	15						
	101 746 055	20						

## CASES

## Coil

## 235 Type



Welded steel cases having an asphalt coating and aluminum paint finish. For use in either aerial or underground locations. Provided with an additional bracket for mounting in aerial locations. Intended to contain the quantities of individual codes of number 652, 658, or 659 Loading Coils as specified in the table.

The code number and quantity of loading coils required must be specified in the order. All loading coils in a case must be of the same code number.

Shipped filled with dry air at approximately 9 pounds pressure and provided with an air valve in the stub cable. Equipped with a 10-foot number 24 AWG stub cable. Can also be obtained equipped with stub cable 15 or 20 feet long when specified in the order. The IN and OUT pairs to each coil are quadded.

The top and bottom mounting brackets may be rotated to any one of four 90 degree positions.

Used in loading exchange area cable and nonphantom circuits in toll cables.

Code No.	Comcode	Stub Cable Length (ft)	Loading Coil	Quantity of Loading Coils	Dimensions (Inches)			
					A	B	C	D
235A	101 746 063	10	652	100	20-9/16	35-1/8	24-3/8	23-5/8
	101 441 822	15						
	101 444 651	20						
	101 746 071	10	658					
	101 746 089	15						
	101 746 097	20						
	101 746 105	10	659					
	101 746 113	15						
	101 746 121	20						
235B	101 746 139	10	652	150	25-5/16	39-7/8	29-1/8	28-3/8
	101 441 871	15						
	101 444 776	20						
	101 746 147	10	658					
	101 746 154	15						
	101 746 162	20						
	101 746 571	10	659					
	101 746 170	15						
	101 746 188	20						
235C	101 746 196	10	652	75	16-7/8	31-7/16	20-11/16	19-15/16
	101 441 905	15						
	101 746 204	20						
	101 746 212	10	658					
	101 746 220	15						
	101 746 238	20						
	101 746 246	10	659					
	101 746 253	15						
	101 746 261	20						

## CASES

## Coil

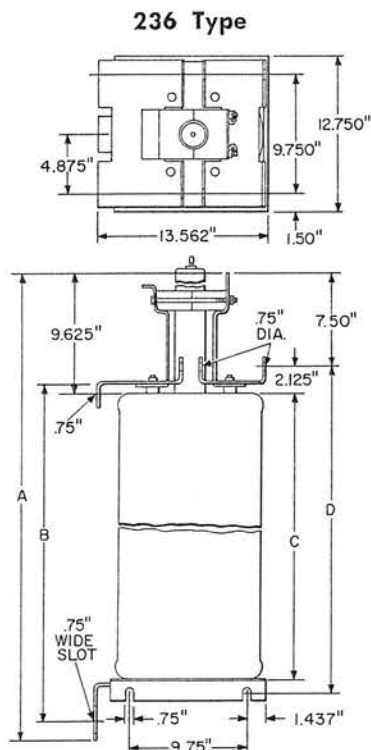


FIG. 1

Welded steel cases having an asphalt coating and aluminum paint finish. For use in either aerial or underground locations. Provided with an additional bracket for mounting in aerial locations. Intended to contain the quantities of individual codes of number 652, 658, or 659 Loading Coils as specified in the table.

The code number and quantity of loading coils must be specified in the order. All loading coils in a case must be of the same code number.

Shipped filled with dry air at approximately 9 pounds pressure and provided with an air valve in the stub cable. The 236A, B, and C Coil Cases are equipped with a 10-foot number 24 AWG stub cable. The 236F and G Coil Cases are equipped with a 10-foot number 26 AWG stub cable. Can also be obtained equipped with a stub cable 15 or 20 feet long when specified in the order.

The IN and OUT pairs of each coil are quadded and color coded to identify quads in each quint of the cable core.








The top and bottom mounting brackets may be rotated to any one of four 90 degree positions.

Used in loading exchange area cable and non-phantom circuits in toll cables.

Code No.	Comcode	Stub Cable Length (ft)	Loading Coil	Quantity of Loading Coils	Dimensions (Inches)			
					A	B	C	D
236A	101 746 279	10	652	200	32.12	21.37	17.56	20.62
	101 441 954	15						
	101 444 842	20						
	101 746 287	10						
	101 441 962	15	658					
	101 746 295	20						
	101 746 303	10						
	101 746 311	15						
101 746 329	20	659						
236B	101 746 337		10					
	101 442 010		15					
	101 444 891		20					
	101 746 345	10						
	101 442 028	15	658					
	101 746 352	20						
	101 746 360	10						
	101 442 036	15						
101 746 378	20	659						
236C	101 746 386		10					
	101 442 085		15					
	101 444 941		20					
	101 746 394	10						
	101 442 093	15	658					
	101 489 888	20						

## CASES

## Coil

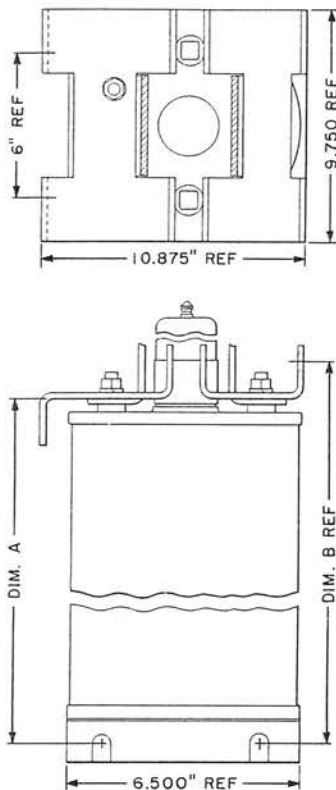
Code No.	Comcode	Stub Cable Length (ft)	Loading Coil	Quantity of Loading Coils	Dimensions (Inches)								
					A	B	C	D					
236C	101 746 402	10		659	450	44.12	33.37	29.56	32.62				
	101 746 410	15											
	101 746 428	20											
236F	101 746 436	10		652	600	30.12	29.37	28.62	28.62				
	101 442 127	15											
	101 444 966	20											
	101 746 444	10		658									
	101 746 451	15											
	101 489 896	20											
	101 746 469	10		659									
	101 746 477	15											
	101 746 485	20											
236G	101 746 493	10		652	750	35.62	35.00	34.25	34.25				
	101 442 143	15											
	101 444 982	20											
	101 746 501	10		658									
	101 746 519	15											
	101 746 527	20											
	101 746 535	10		659									
	101 746 543	15											
	101 746 550	20											



CASES

Coil

237 Type



Steel case, double wall construction with potting compound between walls, and an asphalt coating and aluminum paint finish. For use in underground locations where severe corrosion conditions exist. Intended to contain the quantities of individual codes of number 652, 658, or 659 Loading Coils as specified in the table. The code number and quantity of loading coils required must be specified in the order. All loading coils in a case must be of the same code number.

Shipped filled with dry air at approximately 9 pounds pressure and provided with an air valve in the stub cable. Equipped with a 10-foot number 24 AWG stub cable. Can also be obtained equipped with stub cable 15 or 20 feet long when specified in the order. The IN and OUT pairs to each coil are quadded.

For use in connection with loading exchange area cable.

Code No.	Comcode	Stub Cable Length (ft)	Loading Coil	Quantity of Loading Coils	Dimensions (Inches)	
					A	B
237B	101 746 568	10	652	300	31.500	33.00
	101 746 576	15				
	101 746 584	20				
	101 746 592	10	658			
	101 746 600	15				
	101 746 618	20				
	101 746 626	10	659			
	101 746 634	15				
	101 746 642	20				
237C	101 746 659	10	652	450	43.375	44.87
	101 746 667	15				
	101 746 675	20				
	101 746 683	10	658			
	101 746 691	15				
	101 746 709	20				
	101 746 717	10	659			
	101 746 725	15				
	101 746 733	20				

## CASES

## Coil

## 274 Type

The 274B and C Coil Cases are the same as 124B and C Coil Cases, respectively, except they are equipped with 10-foot tape armored number 24 AWG stub cable and can be buried directly in the soil.

Code No.	Comcode	Stub Cable Length (ft)	Loading Coil	Quantity of Loading Coils
274B	101 746 741	5	652	25
	101 746 758	10		
	101 746 766	15		
	101 746 774	20		
	101 746 783	5	658	25
	101 621 092	10		
	101 746 790	15		
	101 746 808	20		
	101 746 816	5	659	25
	101 621 183	10		
	101 746 824	15		
	101 746 832	20		
274C	101 746 840	5	652	50
	101 746 857	10		
	101 746 865	15		
	101 746 873	20		
	101 746 881	5	658	50
	101 621 191	10		
	101 746 899	15		
	101 746 907	20		
	101 746 915	5	659	50
	101 746 923	10		
	101 746 931	15		
	101 746 949	20		

## 285 Type

The 285A, B, and C Coil Cases are the same as 235A, B, and C Coil Cases, respectively, except they are equipped with a 10-foot tape armored number 24 AWG stub cable and can be buried directly in the soil in addition to aerial or underground locations.

Code No.	Comcode	Stub Cable Length (ft)	Loading Coil	Quantity of Loading Coils
285A	101 746 956	10	652	100
	101 746 964	15		
	101 746 972	20		
	101 621 100	10		
	101 746 980	15	658	100
	101 746 998	20		
	101 621 209	10		
	101 747 004	15	659	100
	101 747 012	20		

Code No.	Comcode	Stub Cable Length (ft)	Loading Coil	Quantity of Loading Coils
285B	101 747 020	10	652	150
	101 747 038	15		
	101 747 046	20		
	101 621 217	10		
	101 747 053	15	658	150
	101 747 061	20		
	101 747 079	10		
	101 747 087	15	659	150
	101 747 095	20		
285C	101 747 103	10	652	75
	101 747 111	15		
	101 747 129	20		
	101 621 118	10		
	101 747 137	15	658	75
	101 747 145	20		
	101 747 152	10		
	101 747 160	15	659	75
	101 747 178	20		

## 286 Type

The 286A and B Coil Cases are the same as 236A and B Coil Cases, respectively, except they are equipped with a 10-foot tape armored number 24 AWG stub cable and can be buried directly in the soil in addition to aerial and underground locations.

Code No.	Comcode	Stub Cable Length (ft)	Loading Coil	Quantity of Loading Coils
286A	101 747 186	10	652	200
	101 442 382	15		
	101 445 179	20		
	101 621 126	10		
	101 747 194	15	658	200
	101 747 202	20		
	101 747 210	10		
	101 747 228	15	659	200
	101 747 236	20		
286B	101 747 244	10	652	300
	101 442 416	15		
	101 747 251	20		
	101 621 134	10		
	101 747 269	15	658	300
	101 747 277	20		
	101 747 285	10		
	101 747 293	15	659	300
	101 747 301	20		

## CASES

## Coil

## 287 Type

Same as number 235 type, except for differences noted in the following.

These cases are equipped with a 10-foot tape armored number 24 AWG stub cable having polyethylene insula-

tion. Cases are arranged so that each coil is insulated from all other coils and case to withstand 20,000 volts dc.

For use in aerial or underground locations and can be buried directly in the soil in loading exchange area cables and nonphantom circuits using lepeeth toll cables.

Code No.	Comcode	Stub Cable Length (ft)	Loading Coil	Quantity of Loading Coils	Dimensions (Inches)			
					A	B	C	D
287A	101 747 319	10	652	50	20.563	35.125	24.375	23.625
	101 747 327	15						
	101 747 335	20						
	101 621 225	10	658					
	101 747 343	15						
	101 747 350	20						
	101 747 368	10	659					
	101 747 376	15						
	101 747 384	20						
287B	101 747 392	10	652	100	25.313	39.875	29.125	28.375
	101 747 400	15						
	101 747 418	20						
	101 621 142	10	658					
	101 747 426	15						
	101 747 434	20						
	101 747 442	10	659					
	101 747 459	15						
	101 747 467	20						
287C	101 747 475	10	652	25	12.063	26.625	15.875	15.125
	101 747 483	15						
	101 747 491	20						
	101 747 509	10	658					
	101 747 517	15						
	101 747 525	20						
	101 747 533	10	659					
	101 747 541	15						
	101 747 558	20						
287D	101 747 566	10	652	75	23.938	38.500	27.750	27.000
	101 747 574	15						
	101 747 582	20						
	101 747 590	10	658					
	101 747 608	15						
	101 747 616	20						
	101 747 624	10	659					
	101 747 632	15						
	101 747 640	20						

## CASES

## Coil

## 288 Type

Same as number 236 type except for differences noted in the following.

These cases are equipped with a 10-foot tape armored number 24 AWG stub cable having polyethylene insulation. Cases are arranged so that each coil is insulated

from all other coils to withstand 500 volts dc and insulated from the case to withstand 20,000 volts dc.

For use in aerial or underground locations and can be buried directly in the soil in loading exchange area cables and nonphantom circuits using lepeeth toll cables.

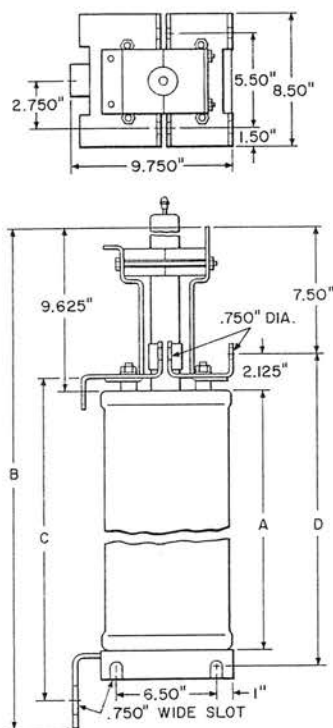
Code No.	Comcode	Stub Cable Length (ft)	Loading Coil	Quantity of Loading Coils	Dimensions (Inches)			
					A	B	C	D
288A	101 621 159	10	652	150	21.563	36.125	25.375	24.625
	101 747 657	15						
	101 747 665	20						
	101 747 673	10	658					
	101 747 681	15						
	101 747 699	20						
	101 747 707	10	659					
	101 747 715	15						
	101 747 723	20						
288B	101 747 731	10	652	200	25.563	40.125	29.375	28.625
	101 458 263	15						
	101 445 211	20						
	101 747 749	10	658					
	101 747 756	15						
	101 747 764	20						
	101 747 772	10	659					
	101 747 780	15						
	101 747 798	20						
288C	101 747 806	10	652	300	30.563	45.125	34.375	33.625
	101 494 011	15						
	101 747 814	20						
	101 621 233	10	658					
	101 747 822	15						
	101 747 830	20						
	101 747 848	10	659					
	101 747 855	15						
	101 747 863	20						
288D	101 747 871	10	652	450	36.563	51.125	40.375	39.625
	101 442 481	15						
	101 490 217	20						
	101 747 889	10	658					
	101 747 897	15						
	101 747 905	20						
	101 747 913	10	659					
	101 747 921	15						
	101 747 939	20						



## CASES

## Coil

## 500 Type



Welded steel cases having an asphalt coating and aluminum paint finish. For use in either aerial or underground locations. Intended to contain the quantities of individual codes of number 652, 658, or 659 Loading Coils or 1574A or B Inductors as specified in the table. The code number and quantity of loading coils or inductors required must be specified in the order. All loading coils or inductors in a case must be of the same code number.

Shipped filled with dry air at approximately 9 pounds pressure and provided with an air valve in the stub cable. Equipped with a 10-foot number 24 AWG stub cable having polyvinyl chloride insulation. Can also be obtained equipped with stub cable 15 or 20 feet long when specified in the order. The IN and OUT pairs to each coil or inductor are quadded.

Arranged so that each coil or inductor is insulated from all other coils or inductors to withstand 10,000 volts dc and insulated from the case to withstand 20,000 volts dc.

The top and bottom mounting brackets may be rotated to any one of four 90 degree positions.

When the cases contain loading coils, they are intended for use in loading exchange area polyethylene insulated conductor cables. When the cases contain inductors, they are intended for use in bridged subscriber loops to reduce transmission loss when one branch is idle.

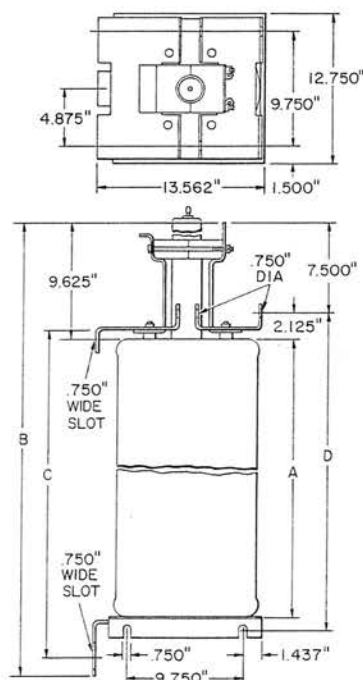
Code No.	Comcode	Stub Cable Length (ft)	Loading Coil or Inductor	Quantity of Loading Coils or Inductors	A	Dimensions (Inches)			D
						B	C		
500A	101 747 947	10	652	50	19.250	33.938	23.188	22.438	
	101 443 430	15							
	101 447 670	20							
	101 747 970	10	658						
	101 747 988	15							
	101 747 996	20							
	101 748 002	10	659						
	101 748 010	15							
	101 748 028	20							
	101 747 954	10	1574A						
	101 443 380	15							
	101 447 639	20							
	101 747 962	10	1574B						
	101 443 398	15							
	101 447 647	20							
500B	101 748 036	10	652	25	15.250	29.938	19.188	18.438	
	101 443 489	15							
	101 748 044	20							
	101 748 051	10	658						
	101 748 069	15							
	101 748 077	20							
	101 621 258	10	659						
	101 748 085	15							
	101 748 093	20							
	101 748 101	10	1574A						
	101 443 448	15							
	101 447 688	20							

## CASES

## Coil

Code No.	Comcode	Stub Cable Length (ft)	Loading Coil or Inductor	Quantity of Loading Coils or Inductors	Dimensions (Inches)			
					A	B	C	D
500B	101 748 119	10	1574D	25	15.250	29.938	19.188	18.438
	101 748 127	15						
	101 447 696	20						
500C	101 748 135	10	652	75	25.750	40.438	29.688	28.938
	101 443 521	15						
	101 748 143	20						
	101 748 150	10						
	101 748 168	15						
	101 748 176	20						
	101 621 266	10						
	101 748 184	15						
	101 748 192	20						
	101 748 200	10						
	101 748 218	15						
	101 447 738	20						
	101 748 226	10						
	101 443 497	15						
	101 447 746	20						

## 501 Type



Welded steel cases having an asphalt coating and aluminum paint finish. For use in either aerial or underground locations. Intended to contain the quantities of individual codes of number 652, 658, or 659 Loading Coils or 1574A or B Inductors as specified in the table. The loading coils or inductors required must be specified in the order. All loading coils or inductors in a case must be of the same code number.

Shipped filled with dry air at approximately 9 pounds pressure and provided with an air valve in the stub cable. Equipped with a 10-foot number 24 AWG stub cable having polyvinyl chloride insulation. Can also be obtained equipped with stub cable 15 or 20 feet long when specified in the order. The IN and OUT pairs to each coil or inductor are quadded.

Arranged so that each coil or inductor is insulated from all other coils or inductors to withstand 10,000 volts dc, and insulated from the case to withstand 20,000 volts dc.

The top and bottom mounting brackets may be rotated to any one of four 90 degree positions. A pole mounting bracket is furnished with each case.

When the cases contain loading coils, they are intended for use in loading exchange area polyethylene insulated conductor cables. When the cases contain inductors, they are intended for use in bridged subscriber loops to reduce transmission loss when one branch is idle.

## CASES

## Coil

## 501 Type (Continued)

Code No.	Comcode	Stub Cable Length (ft)	Loading Coil or Inductor	Quantity of Loading Coils or Inductors	Dimensions (Inches)			
					A	B	C	D
501A	101 748 234	10	652	100	19.563	34.125	23.375	22.625
	101 443 588	15						
	101 447 837	20						
	101 748 242	10	658					
	101 748 259	15						
	101 748 267	20						
	101 621 274	10	659					
	101 748 275	15						
	101 748 283	20						
	101 748 291	10	1574A					
	101 443 539	15						
	101 447 787	20						
	101 748 309	10	1574B					
	101 443 547	15						
101 447 795	20							
501B	101 748 317	10	652	150	21.563	36.125	25.375	24.625
	101 443 646	15						
	101 447 886	20						
	101 748 325	10	658					
	101 748 333	15						
	101 748 341	20						
	101 621 282	10	659					
	101 748 358	15						
	101 748 366	20						
	101 748 374	10	1574A					
	101 443 596	15						
	101 447 845	20						
	101 748 382	10	1574B					
	101 443 604	15						
101 447 852	20							
501C	101 748 390	10	652	200	25.563	40.125	29.375	28.625
	101 443 703	15						
	101 447 944	20						
	101 748 408	10	658					
	101 748 416	15						
	101 748 424	20						
	101 748 432	10	659					
	101 748 440	15						
	101 748 457	20						
	101 748 465	10	1574A					
	101 443 653	15						
	101 447 894	20						
	101 748 473	10	1574B					
	101 443 661	15						
101 447 902	20							
501D	101 748 481	10	652	300	36.563	51.125	40.375	39.625
	101 443 778	15						
	101 448 017	20						
	101 748 499	10	658					
	101 443 786	15						
	101 448 025	20						

## CASES

## Coil

Code No.	Comcode	Stub Cable Length (ft)	Loading Coil or Inductor	Quantity of Loading Coils or Inductors	A	Dimensions (Inches)			D
501D	101 621 647	10	659	300	36.563	51.125	40.375	39.625	
	101 748 507	15							
	101 748 515	20							
	101 748 523	10	1574A						
	101 443 711	15							
	101 447 951	20							
	101 748 531	10	1574B						
	101 443 729	15							
	101 447 969	20							

## 550A, B, and C

Same as 500A, B, and C Coil Cases, respectively, except they are equipped with a 10-foot tape armored number 24 AWG stub cable and can be buried directly in the soil.

Code No.	Comcode	Stub Cable Length (ft)	Loading Coil or Inductor	Quantity of Loading Coils or Inductors
550A	101 748 549	10	652	50
	101 443 828	15		
	101 448 066	20		
	101 748 556	10	658	
	101 748 564	15		
	101 748 572	20		
	101 748 580	10	659	
	101 748 598	15		
	101 748 606	20		
	101 748 614	10	1574A	
	101 443 794	15		
	101 748 622	20		
	101 748 630	10	1574B	
	101 748 648	15		
	101 448 033	20		
550B	101 748 655	10	652	25
	101 443 869	15		
	101 748 663	20		
	101 748 671	10	658	
	101 748 689	15		
	101 748 697	20		
	101 748 705	10	659	
	101 748 713	15		
	101 748 721	20		
	101 748 739	10	1574A	
	101 748 747	15		
	101 448 074	20		
	101 748 754	10	1574B	
	101 443 836	15		
	101 748 762	20		

Code No.	Comcode	Stub Cable Length (ft)	Loading Coil or Inductor	Quantity of Loading Coils or Inductors
550C	101 748 770	10	652	75
	101 443 901	15		
	101 748 788	20		
	101 748 796	10	658	
	101 748 804	15		
	101 748 812	20		
	101 748 820	10	659	
	101 748 838	15		
	101 748 846	20		
	101 748 853	10	1574A	
	101 748 861	15		
	101 748 879	20		
	101 748 887	10	1574B	
	101 748 895	15		
	101 748 903	20		



## CASES

## Coil

## 551A, B, and C

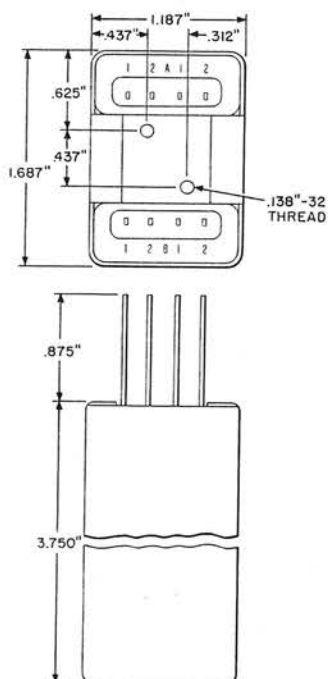
Same as 501A, B, and C Coil Cases, respectively, except they are equipped with a 10-foot tape armored number 24 AWG stub cable and can be buried directly in the soil.

Code No.	Comcode	Stub Cable Length (ft)	Loading Coil or Inductor	Quantity of Loading Coils or Inductors
551A	101 748 911	10	652	100
	101 443 943	15		
	101 593 911	20		
	101 748 929	10	658	
	101 748 937	15		
	101 748 945	20		
	101 748 952	10	659	
	101 748 960	15		
	101 748 978	20		
	101 748 986	10	1574A	
	101 748 994	15		
	101 749 000	20		
	101 749 018	10	1574B	
	101 749 026	15		
	101 749 034	20		
551B	101 749 042	10	652	150
	101 749 059	15		
	101 749 067	20		
	101 749 075	10	658	
	101 749 083	15		
	101 749 091	20		
	101 749 109	10	659	
	101 749 117	15		
	101 749 125	20		
	101 749 133	10	1574A	
	101 749 141	15		
	101 749 158	20		
	101 749 166	10	1574B	
	101 749 174	15		
	101 749 182	20		
551C	101 749 190	10	652	200
	101 444 016	15		
	101 448 181	20		
	101 749 208	10	658	
	101 749 216	15		
	101 749 224	20		
	101 749 232	10	659	
	101 749 240	15		
	101 749 257	20		
	101 749 265	10	1574A	
	101 443 984	15		
	101 448 157	20		
	101 749 273	10	1574B	
	101 749 281	15		
	101 749 299	20		

## CASES

## Coil

## 601A1



A metal container arranged to contain two 652, 658, 659, 641, 642, or 643 Loading Coils or 1574A, 1574B, or 1613A Inductors. The quantity and code numbers of the coils or inductors must be specified in the order. Individual cases cannot contain mixed codes.

Mounts on a .2188-inch thick, or less, mounting plate. Mounting centers are 1.250 inches horizontal and 1.750 inches vertical. Cases are provided with mounting screws and washers.

When equipped with loading coils, is intended for use in central offices and PBX systems for loading exchange area and toll lines. When equipped with inductors, is intended for use in bridged subscriber loops to reduce transmission loss when one branch is idle.

Comcode: 101 749 307	E/W 652 Loading Coils
101 749 315	E/W 658 Loading Coils
101 749 323	E/W 659 Loading Coils
100 105 287	E/W 641 Loading Coils
100 105 295	E/W 642 Loading Coils
100 105 303	E/W 643 Loading Coils
100 105 311	E/W 1574A Inductors
100 105 329	E/W 1574B Inductors
100 105 337	E/W 1613A Inductors

## CASES

## Splice

9A, 10A, 11A, and 12A

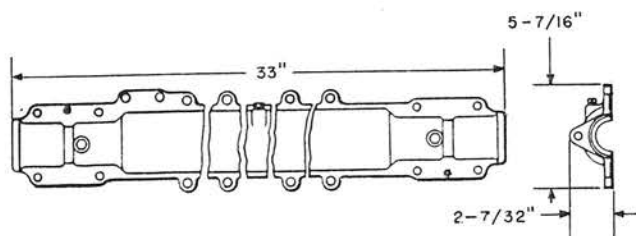


Fig. 1

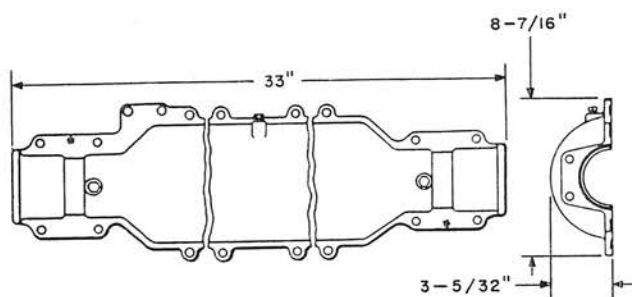


Fig. 2

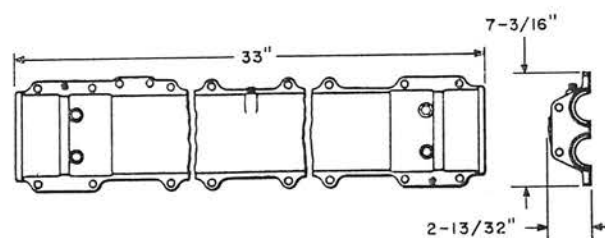


Fig. 3

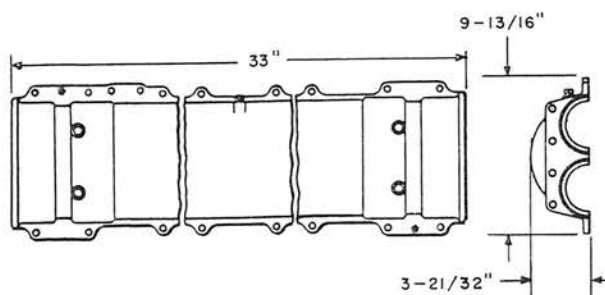


Fig. 4

These types consist of a cast metal housing with a semi-cylindrical cavity and are provided with pipe plugs for pressure testings. They are used as gas and moisture tight splice closures on multiple sheath cables having an inner layer of polyethylene of diameter indicated below. They may be used aerially, buried, or underground.

9A is for a straight splice. It is provided with one 129A Adapter for cables less than 1 inch in diameter.

10A is for a straight splice. It is provided with one 133C Adapter for cables 1.6 to 2.2 inches in diameter.

11A is for a branch splice. It is provided with two 129A Adapters for cables less than 1 inch in diameter.

12A is for a branch splice. It is provided with two 133C Adapters for cables 1.6 to 2.2 inches in diameter.

10A and 12A can be arranged for cables less than 1 inch in diameter by using 133A Adapter, and for cables from 1.0 to 1.6 inches in diameter by using 133B Adapters.

The 133A and 133B Adapters are not furnished and must be ordered separately.

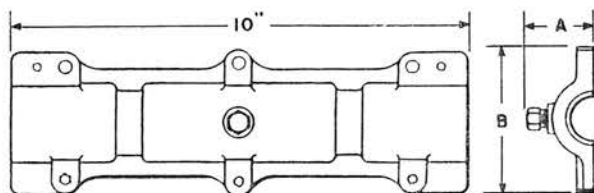
Two splice cases of the same number are required for a complete splice closure. Half of the hardware for a complete splice is furnished with each case. In addition, B Sealing Tape and Cord, and B, C, D, and E Sealing Washers are required and must be ordered separately. See information following description of splice cases for quantities and types required. In cases where only one cable hole is used, the unused hole must be plugged.

Code No.	Comcode	Fig. No.	Diameter of Cable Arranged for (Inches)
9A	100 105 352	1	Less than 1.6
10A	100 105 360	2	1.6 to 2.9
11A	100 105 378	3	Less than 1.6
12A	100 105 386	4	1.6 to 2.9

## CASES

## Splice

13A and 14A



These types consist of a cast metal housing with a semi-cylindrical cavity. Provided with a pipe plug for pressure testing. Used as gas and moisture tight splice closures for multiple sheath cables and lead covered cables. They accommodate cables of diameters listed in the table.

Also used for establishing pressure points, for plugging at locations where pulp insulated cables are spliced to plastic insulated cables, for sheath repair, for repairing of cable conductors, for sheath insulating joints, and for electrically bonding plastic sheath cable to the strand.

Two splice cases of the same number are required for a complete splice closure. Half of the required hardware is supplied with each case. In addition, sealing compound and sealing washers are required and must be ordered separately. See information following description of splice cases for quantities and types required.

Code No.	Comcode	Diameter of Cable Arranged for (Inches)	Dimensions (Inches)	
			A	B
13A	100 105 394	1 and less	1-1/2	3-1/4
14A	100 105 402	Over 1 to 1.6	1-3/4	3-7/8

Pipe Stik type commercial pipe joint compound or equivalent (in cylindrical form) may be used as a sealing compound and should be procured locally.



## CASES

## Splice

## 20 Type

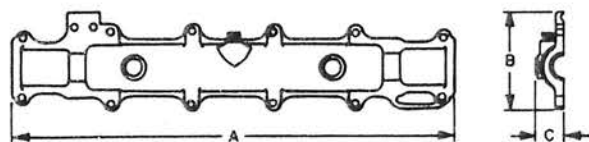


Fig. 1

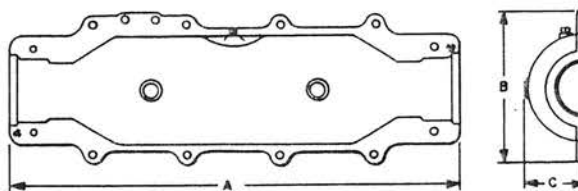


Fig. 2

Each consists of a cast metal housing with a semi-cylindrical cavity. Provided with a pipe plug for pressure testing. Used as part of a gas and moisture tight splice closure for multiple sheath cable and lead covered cable of diameter indicated in table.

Two splice cases of the same code number are required for a complete splice closure. The 20A type is used with a 61A type cable terminal to complete the splice closure; 20B type is also used with a 61B type cable terminal to complete the splice closure.

One half of the quantity of screws, nuts, clamps, lugs, etc. required for a complete splice installation is furnished with a splice case. The other half of the parts required is furnished with the mating splice case or cable terminal. Sealing tape and cord, and sealing washers are required and must be ordered separately. See information following descriptions of splice cases for quantities and types required.

20A1 and 20B1: For aerial use and arranged for suspension from stand.

20A2, 20B2, 20C2, and 20D2: Used in manholes and for buried cable plant when protected from corrosion in accordance with standard practices. Can also be used in aerial installations by suspension from strand, using two 50A Hangers which must be ordered separately. Ground lugs are provided.

20C1 and 20D1: For aerial use. Provided with a 50A Hanger to permit suspension from strand and a ground lug.

B Sealing Kit may be ordered for maintenance purposes for resealing 20A2 and 20B1 Splice Cases and associated cable terminal. See information following descriptions of splice cases for quantities and types required.

Code No.	Comcode	Fig. No.	Diameter of Cable Arranged for (Inches)	Dimensions (Inches)		
				A	B	C
20A1	100 105 410	1	1 and less	21	4-11/16	1-5/16
20A2	100 105 428	2	1 and less	20-3/8	4-15/16	1-5/32
*20B1	100 105 436	1	Over 1 to 1.6	24	5-9/16	1-13/16
*20B2	100 105 444	2	Over 1 to 1.6	23-3/8	5-13/16	1-21/32
†20C1	100 105 451	2	Over 1.6 to 2.2	25-7/8	6-15/16	2-9/16
†20C2	100 105 469	2	Over 1.6 to 2.2	25-7/8	7-7/32	2-13/32
‡20D1	100 105 477	2	Over 2.2 to 3.0	25-7/8	8-21/32	3-5/16
‡20D2	100 105 485	2	Over 2.2 to 3.0	25-7/8	8-25/32	3-5/32

\*Can be arranged for cables of less than 1-inch diameter by using 129A Adapter. This adapter must be ordered separately.

†Can be arranged for cables of less than 1-inch diameter by using 133D Adapter and for cables from 1.0 to 1.6 inches in diameter by using 133E Adapter. These adapters must be ordered separately.

‡Can be arranged for cables of less than 1-inch diameter by using 133A Adapter; for cables from 1.0 to 1.6 inches in diameter by using 133B Adapter; and for cables from 1.6 to 2.2 inches in diameter by using 133C Adapter. These adapters must be ordered separately.

## CASES

## Splice

## 21 Type

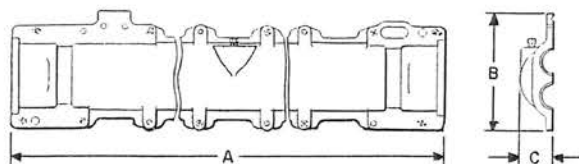


Fig. 1

Each consists essentially of a cast metal housing with a semicylindrical cavity. Provided with a pipe plug for pressure testing.

Intended for use as part of a gas and moisture tight branch splice closure for multiple sheath cable and lead covered cable of diameter indicated in table, except 21D4 is not intended as a gas tight closure.

Two splice cases of the same code number are required for a complete splice closure. In cases where only one cable hole is used at either end of a splice closure, the unused holes must be plugged.

One half of the quantity of screws, nuts, clamps, lugs, etc. required for a complete splice installation is furnished with a splice case. The other half of the parts required is furnished with the mating splice case.

Sealing tape and cord, and sealing washers are required and must be ordered separately. See information following description of splice cases for quantities and types required. Sealing washers are not required for 21D4.

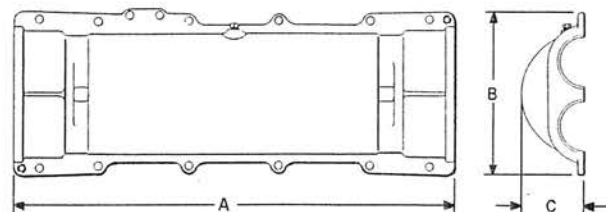


Fig. 2

21A1 and 21B1: For aerial use and arranged for suspension from strand.

21A2, 21B2, 21C2, and 21D2: Used in manholes and for buried cable plant when protected from corrosion in accordance with standard practices. Can also be used in aerial installations by suspension from strand, using two 50A Hangers which must be ordered separately. Provided with a ground lug.

21C1 and 21D1: For aerial use. Provided with a 50A Hanger to permit suspension from strand, and a ground lug.

21D4: Used in central offices as a moisture tight closure for splices between a 2424 pair feeder cable and the stub cables of twenty-four 300 type connectors.

Code No.	Comcode	Fig. No.	Diameter of Cable Arranged for (Inches)	Dimensions (Inches)		
				A	B	C
21A1	100 105 493	1	1 and less	23	5-19/32	1-5/8
21A2	100 105 501	2	1 and less	23	5-3/4	1-21/32
*21B1	100 105 519	1	Over 1 to 1.6	25	7-9/16	2-5/8
*21B2	100 105 527	2	Over 1 to 1.6	25	7-13/16	2-21/32
†21C1	100 105 535	2	Over 1.6 to 2.2	25-7/8	8-1/16	2-7/8
†21C2	100 105 543	2	Over 1.6 to 2.2	25-7/8	8-13/32	2-29/32
†21D1	100 105 550	2	Over 2.2 to 3.0	25-7/8	9-19/32	3-5/8
†21D2	100 105 568	2	Over 2.2 to 3.0	25-7/8	9-15/16	3-21/32
21D4	100 105 576	2	(a)	25-7/8	9-19/32	3-5/8

\*Can be arranged for cables of less than 1-inch diameter by using 129A Adapter. This adapter must be ordered separately.

†Can be arranged for cables of less than 1-inch in diameter by using 133D Adapter, and for cables from 1.0 to 1.6 inches in diameter by using 133E Adapter. These adapters must be ordered separately.

‡Can be arranged for cables of less than 1 inch in diameter by using 133A Adapter; for cables from 1.0 to 1.6 inches in diameter by using 133B Adapter; and for cables from 1.6 to 2.2 inches in diameter by using 133C Adapter. These adapters must be ordered separately.

(a) To accommodate a group of (8) stub cables bound together in each of three entrance holes and a 2424 pair feeder cable in the fourth entrance hole. All (4) entrance holes will accommodate cables over 2.2 to 3.0 inches in diameter.





## CASES

## Splice

## 30D2 and 31D2

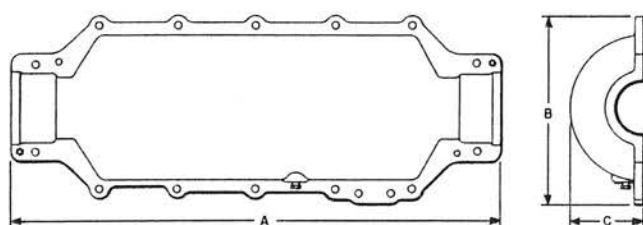


Fig. 1

Each consists of a cast metal housing with a semi-cylindrical cavity. Provided with a pipe plug for pressure testing and a ground lug.

Two splice cases of the same code number are required for a complete splice closure. In cases where only one cable hole is used at either end of a splice closure, the unused holes must be plugged.

One half of the quantity of screws, nuts, and clamps required for a complete splice installation is furnished with a splice case. The other half of the parts required is furnished with the mating splice case. In addition, sealing tape and cord, and sealing washers are required and must be ordered separately. See information following descriptions of splice cases for quantities and types required.

Code No.	Comcode	Fig. No.
30D2	100 105 584	1
31D2	100 105 592	2

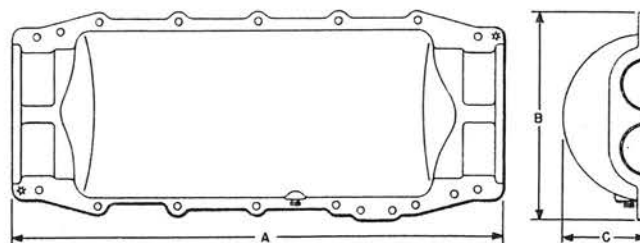


Fig. 2

Used as part of a gas and moisture tight splice closure for multiple sheath cable and lead covered cable of diameter indicated in table. For use in manholes and for buried cable plant when protected from corrosion in accordance with standard practices. Can also be used in aerial installations by suspension from strand using two 50A Hangers which must be ordered separately.

Can be arranged for cables less than 1 inch in diameter by using 133A Adapter, for cables from 1.0 to 1.6 inches in diameter by using 133B Adapter, and for cables from 1.6 to 2.2 inches in diameter by using 133C Adapter. These adapters must be ordered separately.

Used in dedicated plant on 2424 pair cable with fold back method of splicing.

Diameter of Cable Arranged for (Inches)	Dimensions (Inches)		
	A	B	C
Over 2.2 to 3.0	27.87	10.781	4.28
Over 2.2 to 3.0	27.87	11.81	4.78

## Splicing Material

Polyethylene sealing washers are required for use in the end seals surrounding the cable sheath on splice cases and cable terminals. These sealing washers are identified as B and D Sealing Washers. The B Washers have a center hole and a radial slit. The D washers are concentrically grooved sealing washers of polyethylene with grooves in 1/10 inch steps from .3 inch to 1.0 inch for size 100 and from .3 inch to 1.6 inches for size 200. The D washers are used at the end of the cable to seal the vacant end of the splice or terminal case. They are also used when the correct size of B washer is not available. In the latter case, the D washer is cut along the circular groove and fitted to the cable by means of the washer cutter.

The 20A1 Splice Cases and the 61A type cable terminals require four washers of the 100 series per installation. As the diameter of the hole in the B Sealing Washer must be of the same size as the cable, these washers are available in the sizes listed and must be ordered separately.

The B Sealing Washers are packed in small quantities of four washers of the same size per package sufficient for one installation, and in large quantities of 25 packages (four washers per package) to a box.

Size	Diameter Center Hole (Inch)	Size	Diameter Center Hole (Inch)
103	.3	107	.7
104	.4	108	.8
105	.5	109	.9
106	.6	110	1.0

With the 20A1 Splice Case and 61A type cable terminals half of the total quantity of sealing tape and sealing cord needed for installation is packaged in each splice case or terminal carton.



## CASES

## Splice

## Splicing Material (Continued)

The AT-7601 B Sealing Kit may be ordered for maintenance purposes for resealing the 20A1 Splice Cases and associated cable terminals. This kit is a package containing double the amount of sealing cord and sealing tape furnished with each splice case or cable terminal.

For cables less than 1.0 inch, a 129A Adapter is required.

The 20B1 Splice Case and the 61B type cable terminals require four washers of the 200 series per installation for use in the end seals as described previously. As the diameter of the hole in the B Sealing Washer must be of the same size as the cable, these washers are available in the sizes listed and must be ordered separately.

Size	Diameter Center Hole (Inches)	Size	Diameter Center Hole (Inches)
210	1.0	214	1.4
211	1.1	215	1.5
212	1.2	216	1.6
213	1.3	—	—

With the 21B1 Splice Case and the 61B type cable terminals, the SEALING CORD and SEALING TAPE must be ordered separately. For a single installation, ONE PACKAGE OF B SEALING CORD consisting of two 26-1/2 inch lengths and TWO PACKAGES OF B SEALING TAPE each consisting of three 10-inch lengths are required. This combination is used on new installations and for maintenance purposes.

B Sealing Tape, B Sealing Cord and Sealing Washers must be ordered separately for use in conjunction with the large mechanical splice cases for use on aerial, buried, and underground cables up to 2.9 inches in diameter. C and E Sealing Washers are made of lead and are used in the end seals of large mechanical splice cases. The C and E Sealing Washers are furnished in packages each containing two washers. Each package is marked with the name, size, and diameter of the cable with which it is used.

The 300 series C Sealing Washers are intended for use in 20C1 Splice Cases on cables 1.6 to 2.2 inches in diameter. The 400 series C Sealing Washers are available for use in number 10 and 12 type and 20D1 Splice Cases on cables 1.6 to 2.9 inches in diameter. Orders for all sizes must be in multiples of 25 packages.

E Sealing Washers are available for use on cables smaller than 1.6 inches in diameter. They provide a recess for inserting B and D Sealing Washers of the proper size for the cable with which they are used. E Sealing Washers series 3100 and 3200 are used in the 20C1 Splice Case. The 4100 and 4200 series are used in the number 10 and 12 type and 20D1 Splice Case. Orders for all sizes must be in multiples of 12 packages.

The tables give the sealing washers, or combinations of sealing washers used with the full range cable sizes in all of the large mechanical splice cases.

Only C Sealing Tape and C Sealing Cord shall be used in number 20 and 21 type splice cases on all alpeth sheath buried PIC cables.

## Sealing Washers For 9A, 10A, 11A, and 12A Splice Cases

Cable Diameter (Inches) (Over Sheath)	10A and 12A Washer Size**	9A and 11A Washer Size**
.0	400	200*
.3	4100 and 103	200*
.4	4100 and 104	200*
.5	4100 and 105	200*
.6	4100 and 106	200*
.7	4100 and 107	200*
.8	4100 and 108	200*
.9	4100 and 109	200*
1.0	4100 and 110	210
1.1	4200 and 211	211
1.2	4200 and 212	212
1.3	4200 and 213	213
1.4	4200 and 214	214
1.5	4200 and 215	215
1.6	416	216
1.7	417	—
1.8	418	—
1.9	419	—
2.0	420	—
2.1	421	—
2.2	422	—
2.3	423	—
2.4	424	—
2.5	425	—
2.6	426	—
2.7	427	—
2.8	428	—
2.9	429	—

\*Cut to size with washer cutting tool.

\*\*Washer Codes: Series 100 and 200,

Series 400

Series 4100

B Sealing  
Washers  
C Sealing  
Washers  
E Sealing  
Washers

## CASES

## Splice

Sealing Washers For 13A, 14A, 20A, 20B,  
21A, and 21B Splice Cases

Cable Diameter (Inches) (Over Sheath)	13A, 20A, and 21A Washer Code and Size	14A, 20B, and 21B Washer Code and Size
.0	D 100	D 200(a)
.3	B 103	D 200*(a)
.4	B 104	D 200*(a)
.5	B 105	D 200*(a)
.6	B 106	D 200*(a)
.7	B 107	D 200*(a)
.8	B 108	D 200*(a)
.9	B 109	D 200*(a)
1.0	B 110	B 210
1.1	—	B 211
1.2	—	B 212
1.3	—	B 213
1.4	—	B 214
1.5	—	B 215
1.6	—	B 216

\* Cut opening to size with washer cutting tool.

(a) Does not apply to 14A.

Sealing Washers For 20C, 20D, 21C,  
and 21D Splice Cases

Cable Diameter (Inches) (Over Sheath)	20C and 21C Washer Size*	20D and 21D Washer Size*
.0	300	400
.3	3100 and 103	4100 and 103
.4	3100 and 104	4100 and 104
.5	3100 and 105	4100 and 105
.6	3100 and 106	4100 and 106
.7	3100 and 107	4100 and 107
.8	3100 and 108	4100 and 108
.9	3100 and 109	4100 and 109
1.0	3100 and 110	4100 and 110
1.1	311	4200 and 211
1.2	312	4200 and 212
1.3	313	4200 and 213
1.4	314	4200 and 214
1.5	315	4200 and 215
1.6	316	416
1.7	317	417
1.8	318	418
1.9	319	419
2.0	320	420
2.1	321	421
2.2	322	422
2.3	—	423
2.4	—	424
2.5	—	425
2.6	—	426
2.7	—	427
2.8	—	428
2.9	—	429

\*Washer Codes:

Series 100 and 200, B Sealing Washers

Series 300 and 400, C Sealing Washers

Series 200 D Sealing Washers

Series 3000 and 4000, E Sealing Washers

Sealing Tapes and Cords for 9A, 10A,  
11A, and 12A Splice Cases

Item	Use	Amount Required
AT-7601 B Seal- ing Tape (3-10 in. strips per package unit)	Sealing ends of splice cases	1 or 2 packages per seal
AT-7601 B Seal- ing Cord (2-32 in. lengths per package unit)	Sealing sides of splice cases	1 package per installation
Sealing Washers	Sealing ends of splice cases	5 per cable end. See table for size.
P-18A678 Ground Lug	Bonding as re- quired	1 per installation

Sealing Tapes and Cords For  
13A and 14A Splice Cases

Item	Use	Amount Required
AT-7601 B Seal- ing Tape (3-10 in. strips per package unit)	Sealing ends of splice cases	2 packages per seal
AT-7601 B Seal- ing Cord (2-26 1/2 in. lengths per package unit)	Sealing sides of splice cases	1 package per installation
Sealing Washers	Sealing ends of splice cases	4 per installation See table for size

Sealing Tapes and Cords for Number 20 and 21  
Type Splice Cases

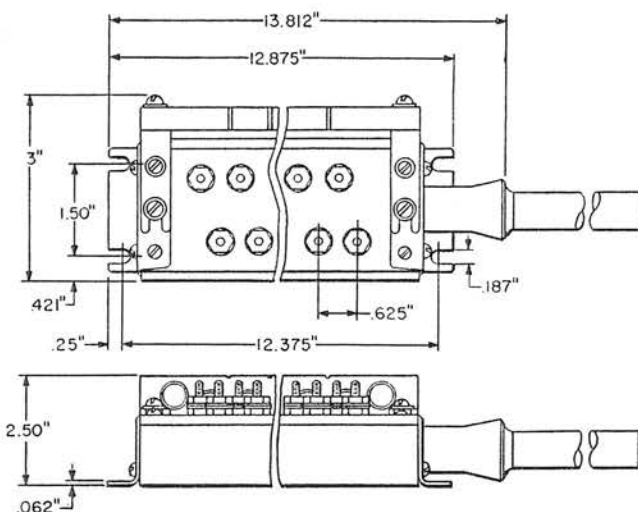
Item	Use	Amount Required
AT-7601 B Seal- ing Tape (3-10 in. strips per package unit)	Sealing ends of splice cases	1 or 2 packages per seal
AT-7601 B Seal- ing Cord (2-32 in. lengths per package unit)	Sealing sides of splice cases	1 package per installation



## CHAMBERS

## Binding Post

G16B

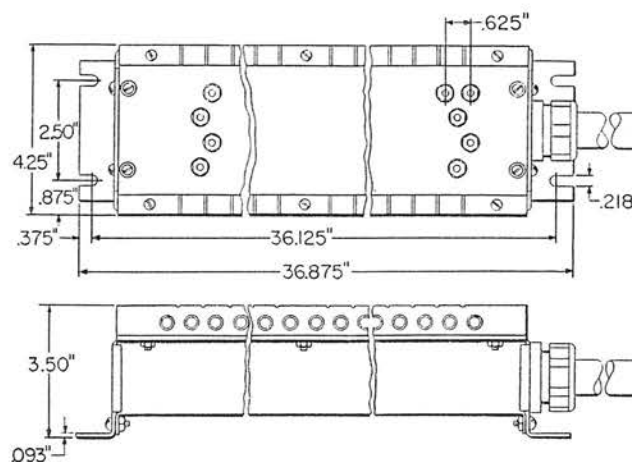


Consists of an olive green enamel finished sheet metal sealing chamber having an insulating panel equipped with 16 pairs of binding posts with associated nuts and washers. Furnished with a 12-foot number 19 AWG quadded stub cable.

Forms a part of the 48B and C Cable Terminals.

Comcode: 100 105 998

H100A



Consists of a light olive gray enamel finished sheet metal sealing chamber having an insulating panel equipped with 100 pairs of binding posts with associated nuts and washers. Furnished with a 12-foot, 25-foot, or 40-foot long, beige, number 24 AWG copper-tin color coded 100 pair stub cable with a polyvinyl chloride jacket. The required length of the stub cable must be specified in the order.

For indoor use with small PBX's, such as the 740E, to provide connection from the binding post stub to the PBX terminal strip.

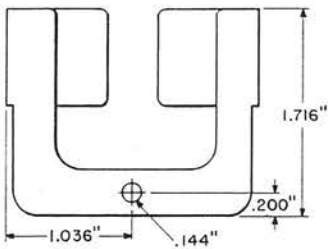
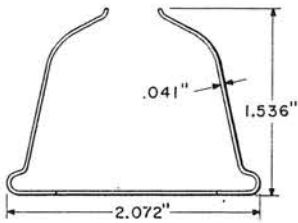
Comcode: 100 106 038 E/W 12 Ft Stub  
 100 106 046 E/W 25 Ft Stub  
 100 106 053 E/W 40 Ft Stub





CLAMPS

2A-49 and 2A-50



Each consists of a metal spring clamp equipped with a mounting screw.

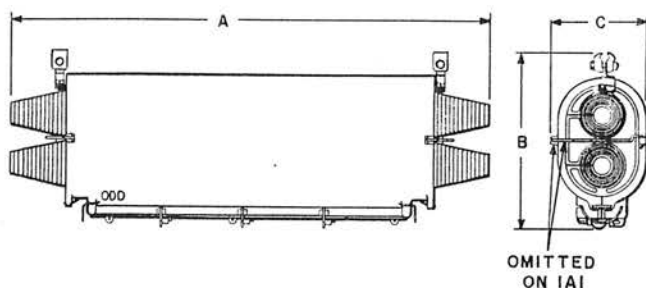
Used to provide a clamping arrangement to prevent accidental dislodgement of a number 2012 type transformer from an electrical outlet.

Code No.	Comcode	Color
2A-49	100 106 103	Light olive gray
2A-50	100 106 111	Ivory



## CLOSURES

## 1A1, 1B1, and 1C1



Each consists of a base of molded insulating material, reinforced with metal and equipped with cable sheath clamps and brackets for strand mounting. A cover of molded insulating material is assembled to the base by means of wire clips.

Clamps are furnished for clamping the cable sheath tabs. Closures are arranged for suspension from strand by means of strand brackets. For cases where only one cable hole is used at either end, plugs are provided for plugging the unused holes.

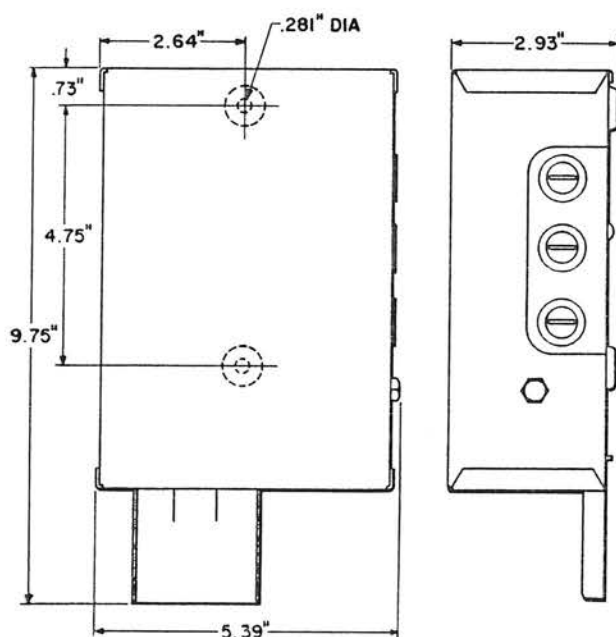
Intended for enclosing branch splices of aerial polyethylene insulated conductor cables of diameter indicated in table.

Code No.	Comcode	Diameter of Cable Arranged for (Inches)	Dimensions (Inches)		
			A	B	C
1A1	100 106 186	1.0 and less	24-5/8	7-3/4	3-3/16
1B1	100 106 194	(a) 1.0 to 2.2	28-1/4	10-13/32	5-1/2
1C1	100 106 202	(b) 2.2 to 3.0	26-1/4	10-7/64	6-5/16

(a) Provided with four 138A Adapters for use with cables less than 1-inch diameter.

(b) Arranged for cables having an alpeh sheath. 133A, B, and C Adapters may be used to clamp cables less than 2.2 inches in diameter. Adapters are not furnished and must be ordered separately.

## 3A1



Consists of a sheet metal base having a snap on metal cover and equipped with 3 grommets for entrance of station and ground wires. An opening in the bottom accommodates a polyethylene insulated conductor cable up to 1-inch diameter.

Provided are B Cable Tie for anchoring the cable, a hose clamp for grounding the metallic shield of the cable, and a hose clamp for securing a number 2 U Cable Guard.

Arranged to mount two 123A1A or 128A1A-2 Protectors which are not furnished and must be ordered separately.

Used in buried distribution cable systems.

Comcode: 100 106 228



## CLOSURES

## 4A1 and 4B1

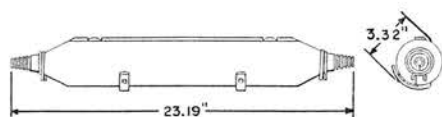


Fig. 1

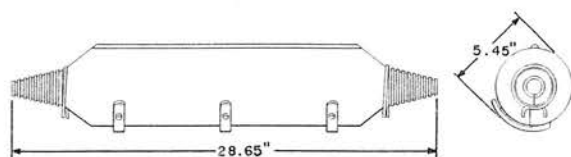


Fig. 2

Each consists of two metal tie rods equipped with cable sheath clamps at each end and enclosed in a cover of molded insulating material. Provision is made for electrical continuity of the metallic portion of the cable sheath across the splice opening.

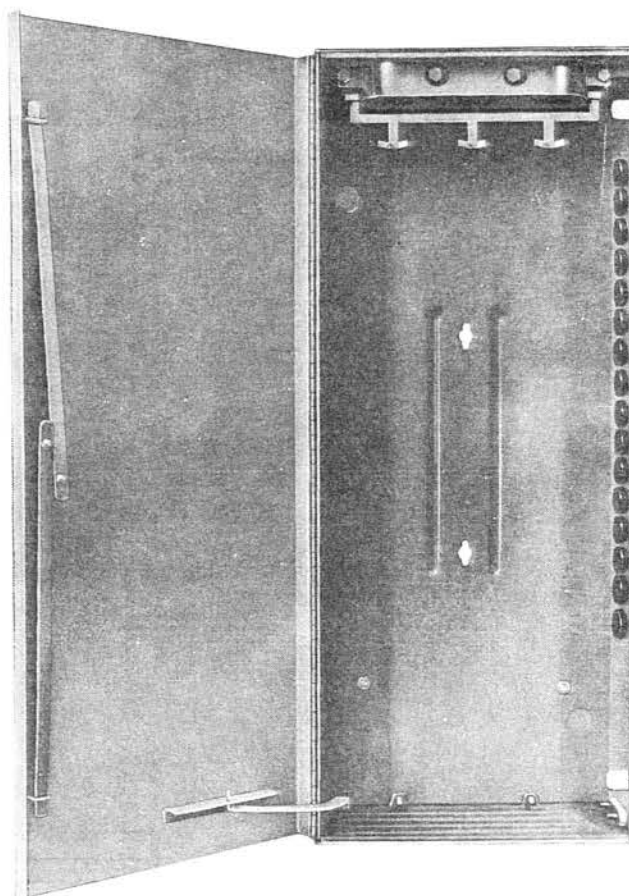
**4A1:** Used for enclosing straight splices of aerial polyethylene insulated conductor cable of 1-inch diameter and less. On cables 0.6 inch diameter and less, two inner sheath clamps (P-18E113), and a 138C Adapter are required and must be ordered separately. See Fig. 1.

Comcode: 100 106 236

**4B1:** Used for enclosing straight splices of aerial polyethylene insulated conductor cable of 2.2 inches and less. On cables 1.1 inches to 1.5 inches diameter, two inner sheath clamps (P-18E117), and a 138A Adapter are required and must be ordered separately. See Fig. 2.

Comcode: 100 106 244

## 5A3 and 5B3



## 5B3 Also General Design of 5A3

Each consists of an aluminum housing having a hinged cover and arranged for pole or wall mounting. Double keyhole slots in the back permit mounting for right or left hand door opening. A sealing gland on the top provides a weather-proof entry for up to three cables having a maximum diameter of 1.6 inches. The top and bottom end pieces are interchangeable and the blank bottom end piece can be replaced by another sealing gland end piece which

## CLOSURES

must be ordered separately as a 196A adapter, thus permitting top or bottom cable entry, or both, as required.

Clamps for external grounding, and screws for mounting number 57 type connecting blocks are furnished. B Sealing Tape and Cord are furnished with each closure. B and D Sealing Washers are required but must be ordered separately. A 216B Tool, required to open or close the door, must also be ordered separately.

**5A3:** Equipped with 10 grommets on each side of the closure to permit entrance of drop wires or multiple line wires. Two 1.0 inch diameter knockouts are located in the upper left and lower right of the back for direct entry of wires and cables through walls upon which mounted. Arranged to mount one 57A2-10 and one 57A2B-10 connecting block.

Overall dimensions are approximately 22.250 inches high by 11.00 inches wide by 4.250 inches deep.

Comcode: 101 548 626

**5B3:** Same as 5A3 except equipped with 16 grommets on each side and 1.25 inch diameter knockouts. Arranged to mount one 57A2-16 and one 57A2B-16 connecting block.

Overall dimensions are approximately 27.250 inches high by 11.00 inches wide by 4.250 inches deep.

Comcode: 101 548 642

Used as a ready access cable terminal housing, cable to wire junction point or a distribution terminal housing for subscribers in high density areas.

Replace 5A1 and 5B1 closures, respectively.

6A1 and 6B1

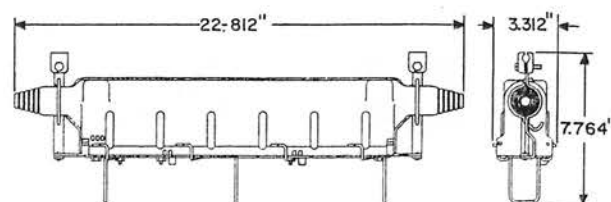


Fig. 1

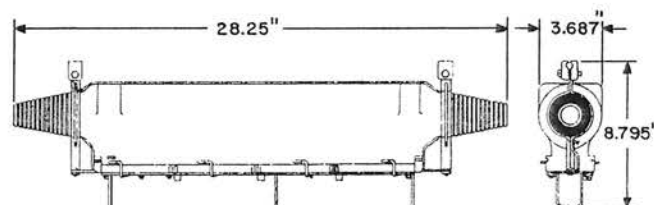


Fig. 2

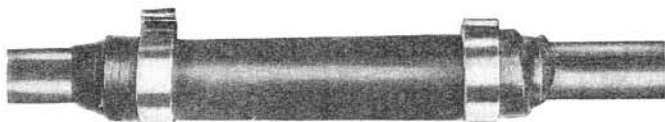
Each consists of a base of molded insulating material, reinforced with metal. A cover of molded insulating material is assembled to the base by means of wire clips. Three distributing rings are furnished for support of drop wires. Closures are arranged for suspension from strand by means of clamps that are part of the base.

Code No.	Comcode	Fig. No.	Diameter of Cable Arranged for (Inches)
6A1	100 106 293	1	1.0 and less
6B1	100 106 301	2	From 1.0 to 2.2

Suitable for enclosing sheath openings at straight splices of polyethylene insulated cables at access points in dedicated plant installations.

## CLOSURES

7A1

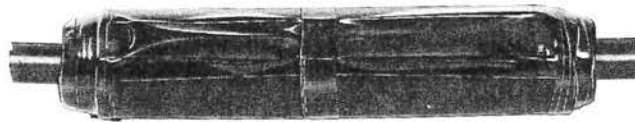


Consists of a 10.0 inch long polyethylene cover, a bonding strap for connecting the metal shield of the cable to the strand member, B Sealing tape for building a moisture seal at the ends of sheath opening, and straps for securing the cover in place. Four 10.0 inch long fusible links made of 24 gauge twisted pairs of polyethylene insulated conductors are furnished for use as a fusible link between cable pairs and drop wire. Each conductor has a press sleeve installed on the end for connecting to the skinned drop wire.

Used with self supporting cable for connecting drop wires to cable conductors. A maximum of four drop wires can be accommodated in one closure.

Comcode: 101 199 099

9 Type



9A1, 9A2, 9B1, 9B2, 9C1, and 9D1: Each consists of two metal tie rods equipped with cable sheath clamps at each end and enclosed in a cover of polyethylene material. Provision is made for mechanical strength and electrical continuity of the metallic portion of the cable sheath across the plug or splice opening.

9A3, 9B3, 9C3, and 9D3: Same as 9A1 except equipped with insulating tie bars and provisions are made for capacitor connection, testing and strapping across the opening. A combination gas pressure plug and insulating joint.

The following materials are required for installation but are not furnished and must be ordered separately: 3/4 inch and 1-1/2 inch wide B Sealing Tape, B Paper Tape, F Vinyl Tape and 3/4 inch wide DR Tape.

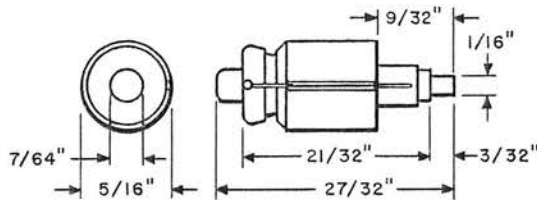
Code No.	Comcode	Diameter of Cable Arranged for (Inches)	Overall dimensions (Inches)	
			Length	Dia.
9A1	101 334 456	1.0 and less	16.00	2.50
9A2	101 334 498	1.0 and less	19.00	2.50
9A3	101 334 514	1.0 and less	16.00	2.50
9B1	101 334 464	1.1 to 1.6	19.00	3.25
9B2	101 334 506	1.1 to 1.6	19.00	3.25
9B3	101 334 522	1.1 to 1.6	19.00	3.25
9C1	101 334 472	1.7 to 2.2	22.00	3.75
9C3	101 334 530	1.7 to 2.2	22.00	3.75
9D1	101 334 480	2.3 to 3.0	22.00	4.25
9D3	101 334 548	2.3 to 3.0	22.00	4.25



## COILS

## Heat

75A and 76A



Each has a shell of insulating material colored as shown in table.

Code No.	Color	Approx. Res. at 68° F (Ohms)	Will Carry For 3 Hrs. at 68° F (Ampere)	Operates at 68° F on (Ampere)	Within
75A	Yellow	.225	1.2	1.875	210 Sec.
76A	Black	3.45	.35	.54	210 Sec.

75A: Intended for use in common battery exchanges on battery supply conductors.

Comcode: 100 106 780

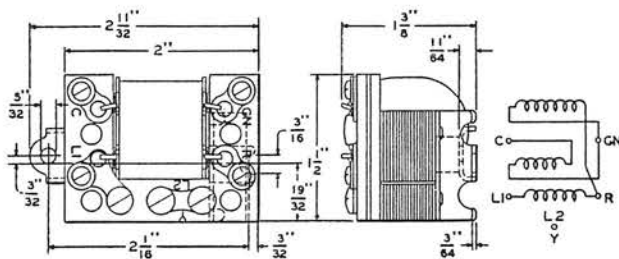
76A: Intended for use in common and local battery exchanges.

Comcode: 100 106 798

Used with number 68A, 68B, 69A, C50, C52, and similar type protector mountings.

## Induction

101A

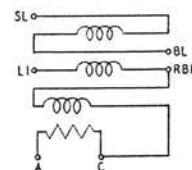
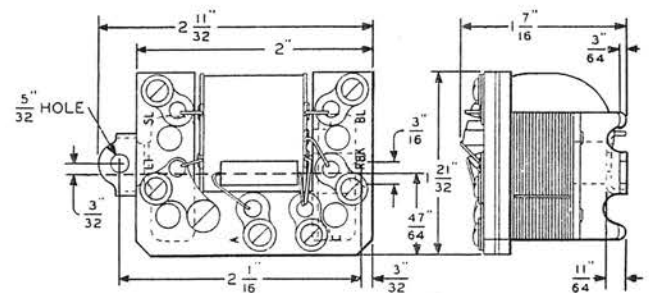


## Resistance

Winding	Ohms
(L1-R)	22.0
(GN-R)	75.0
(GN-C)	19.0

Used in common battery anti-sidetone subscriber sets.  
Comcode: 100 106 939

104A



## Resistance

Winding	Ohms
(BL-SL)	2.3
(L1-RBK)	9.4
(RBK-C)	200.0
(C-A)	300.0

Used in telephone set mountings and subscriber sets in connection with local battery talking, common battery signaling, and magneto anti-sidetone service.

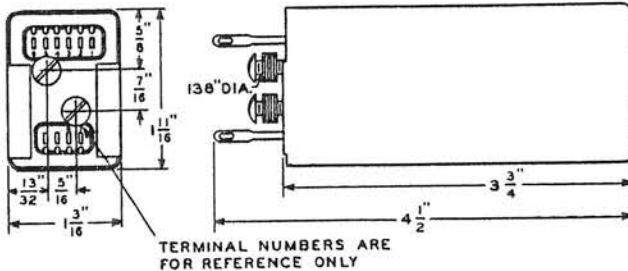
Comcode: 100 106 954



## COILS

## Induction

## 181A, B, and C



Each consists of windings on a silicon steel core and assembled in a metal can. Mounts on a 1-1/4 inch horizontal center; however, where space above or below the coil is required, it can be rotated 90 degrees clockwise

when viewed from the terminal end. Also can be mounted on a 7/32 inch thick mounting plate or can be mounted on a thinner plate by use of washers which are provided.

181A: Intended for use in central offices and in station apparatus.

Comcode: 100 106 996

181B: With 3 volts 900 Hz applied to winding (1-2) and (5-6) in series aiding (terminal 2 connected to 5), the inductance is  $.267 \pm 25\%$  henry.

Intended for use in operators' or attendants' switchboards, desks, and PBXs.

Comcode: 100 107 002

181C: Same as 181B except inductance is  $.267 \pm 10\%$  henry.

Intended for use in the type L carrier telephone system.

Comcode: 100 107 010

Code	Frequency Range (KHz)	Impedance Ratio (Ohms)	Low Winding	High Winding	Approx. DCR (Ohms)	
					Low Winding	High Winding
(a) 181A	0.2-3.5	150:350+350	(1-2)	(3-7-4) + (5-8-6)	10.9	13.9 16.4
(b) 181B, C	0.2-3.5	50:900+600	(7-8)	(5-6) (1-2) + (2-3)	2.5	19.8 (1-2)
		50:730		(1-3)		28.8
		50:540		(1-2) (5-6)		(2-3)
		50:240		(2-3)		18.2
		50:135		(1-2) or (5-6)		(5-6) 600 (2-4)

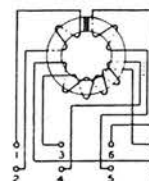
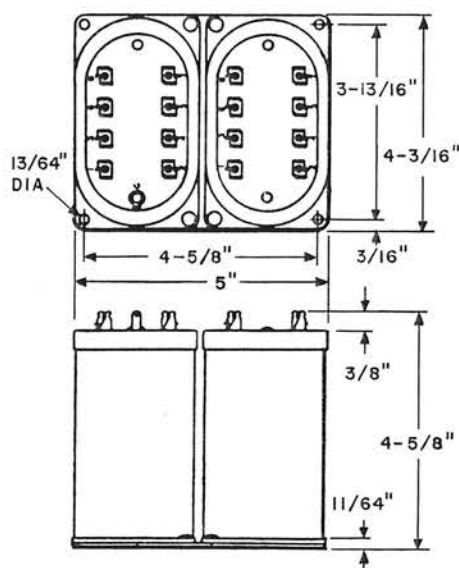
(a) Terminals 7 and 8 are taps on windings (3-4) and (5-6) respectively.

(b) Terminals 2 and 3 are taps on winding (1-4).

## COILS

## Repeating

## 93 Type



## Winding For Each Coil

Consists of two toroidal type coils, each enclosed in a metal case and assembled on a common metal base. Suitable for 20, 135, and 1000 Hz signaling. Arrangement and balance of line windings (4-3) (8-7) make them suitable for use in deriving phantom circuits.

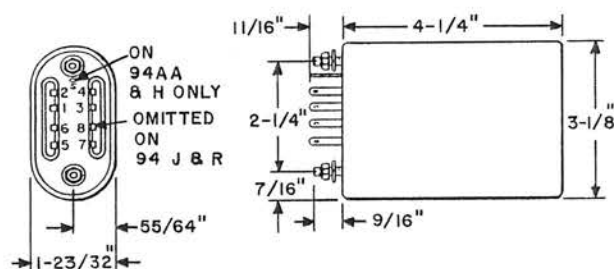
For use in toll circuits.

Code No.	Comcode	Impedance Ratio (Ohms)	Low Winding	High Winding	Approximate DC Resistance (Ohms)	
					Low Winding	High Winding
93A	100 107 754	600:600	(1-2) (5-6)	(3-4) (7-8)	44	46
93B	100 107 762	370:600	(3-4) (7-8)	(1-2) (5-6)	28	42
93F	100 107 770	980:600	(1-2) (5-6)	(3-4) (7-8)	42	88
93G	100 107 788	1600:600	(1-2) (5-6)	(3-4) (7-8)	38	128
93H	100 107 796	980:600	(1-2) (5-6)	(3-4) (7-8)	45	79
93J	100 107 804	1540:600	(1-2) (5-6)	(3-4) (7-8)	34	110

## COILS

## Repeating

## 94 Type



Consists of shell type coils enclosed in metal cases. Arranged to mount on mounting plates. Closest recommended mounting centers are 3-3/16 inches by 1-3/4 inches. Potted, unless otherwise specified.

Used as battery supply coils, nonring through type.

Code No.	Comcode	Frequency Range (KHz)	Impedance Ratio (Ohms)	Low Winding	High Winding	Approximate DC Resistance (Ohms)	
						Low Winding	High Winding
(a) (b) 94E	100 107 812	0.2-3.5	900:900	(2-1) (6-5)	(4-3) (8-7)	40	40
(a) (b) 94F	100 107 820	0.2-3.5	900:1350	(2-1) (6-5)	(4-3) (8-7)	40	60
(a) (b) (c) 94H	100 107 838	0.2-3.5	600:600	(2-1) (6-5)	(4-3) (8-7)	20	27
(g) 94J	100 107 846	0.2-3.5	30:1050 30:60	(1-2)	(3-4-5-6-7) (4-5-6)	1.4	17 (3-6) 356 (6-7)
(b) 94K	100 107 853	0.18-1	25:50	(1-2)	(3-4)	2.1	3
94L	100 107 861	0.02	600:600	(1-2)	(3-4)	650	650
(f) 94M	100 107 879	0.02	—	(1-2-3-4)	(5-6-7-8)	320	370
(a) 94N	100 107 887	0.2-3.5	900:900	(2-1) (6-5)	(4-3) (8-7)	11	14.8
94P	100 107 895	0.425-1.615	10:25	(1-2)	(7-8)	0.47	2.4
(e) 94R	100 107 903	1	10:150	(3-4-5-6-7)	(1-2)	1.5	47
94S	100 107 911	1	30:27,000	(3-4) (7-8)	(1-2) (5-6)	3.8	2700
(a) 94T	100 107 929	0.2-3.5	600:900	(4-3) (8-7)	(2-1) (6-5)	12.6	28
(e) 94U	100 107 937	0.270	20:600	(1-2) (3-4)	(5-6)	0.11	15.11
94W	100 107 945	0.425-1.615	0.5:900	(1-2)	(3-4) (5-6)	0.13	95
(d) 94Y	100 107 952	0.2-3.5	600:600	(1-2)	(3-4)	28	33
(d) 94AA	100 107 960	0.2-3.5	300:600	(2-1) (6-5)	(4-3) (8-7)	11	26

(a) Windings (3-4) and (7-8), and windings (1-2) and (5-6) are parallel wound.

(b) Unpotted.

(c) Provided with electrostatic shield which is connected to S-terminal.  
Provided with an electrostatic shield which is connected to the mounting studs.

(d) Windings (1-2) and (3-4) are parallel wound.

(e) Windings (3-7) has taps 4, 5 and 6. Approximate dc resistance of windings (3-4), (3-5), (3-6) and (3-7), is 0.065, 0.21, 0.60 and 1.42 ohms, respectively.

(f) Has a primary winding (1-4) with taps 2 and 3, so that windings (1-3) and (1-2) are suitable for use with the 20 Hz supplies normally used in panel and crossbar dial systems, and a secondary winding (5-8), nominally 120 volts open circuit with taps 7 and 6 at 2-1/2 and 5 volts, respectively, below terminal 8. Approximate dc resistance of winding (1-4) is 350 ohms.

(g) Winding (3-7) has a resistance of 370 ohms and taps 4, 5, and 6. Tap 5 is the mid-point of winding (4-6). Approximate DC resistance of winding (3-4), (4-5), (5-6) and (6-7) is 12, 1.7, 1.7 and 355 ohms respectively. Optimum terminating impedance of winding (1-2) is 30 ohms and of winding (4-6) is 60 ohms.

## COILS

## Repeating

111A, C, and D

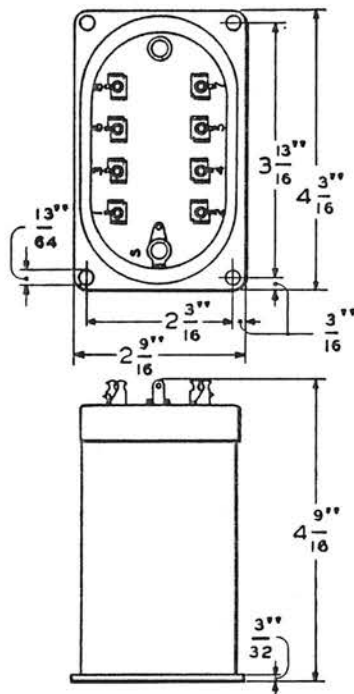


Fig. 1

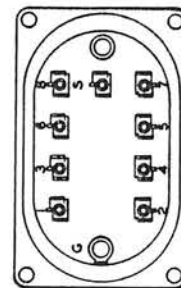


Fig. 2

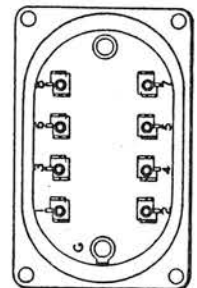


Fig. 3

Each consists of windings on a permalloy core, enclosed in a metal case. Closest recommended mounting centers are 2-5/8 inches by 4-1/4 inches.

Code No.	Comcode	Fig. No.	Frequency Range (KHz)	Impedance Ratio (Ohms)	Low Winding	High Winding	Approximate DC Resistance (Ohms)	
							Low Winding	High Winding
(a) 111A	100 108 141	1	0.035-8.5	40:600	(1-2) (5-6)	(3-4) (7-8)	1.7	25.5
(a)(b) 111C	100 108 166	2	0.035-8	600:600	(1-2) (5-6)	(3-4) (7-8)	35	35
(c) 111D	100 108 174	3	0.25-2.75	600:1200	(3-4) (7-8)	(1-2) (5-6)	5.2	10.4

(a) The 111A and 111C Repeat Coils; each has an electrostatic shield between windings (3-4) (7-8) and (1-2) (5-6) connected to S terminal. On 111A, the shield is also connected to the case. The 111A is used in the 1A Sending Panel.

(b) Operates directly from a 600 ohm cable into a 600 ohm line corrector. Used with the regulating and

nonregulating repeaters for program transmission over long number 16 AWG cable circuits equipped with B22 loading.

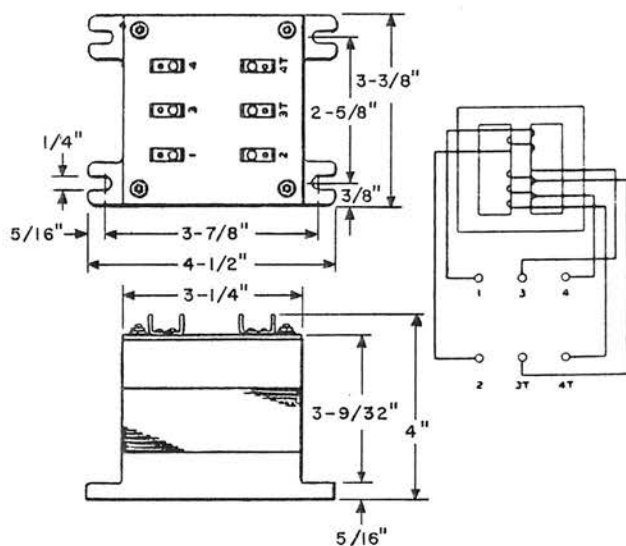
(c) Optimum terminating impedance of windings (1-2) (5-6) is 1200 ohms and of windings (7-8) (3-4) is 600 ohms. Used in automatic outgoing toll connecting trunk test circuits.



## COILS

## Repeating

115 Type

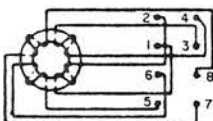
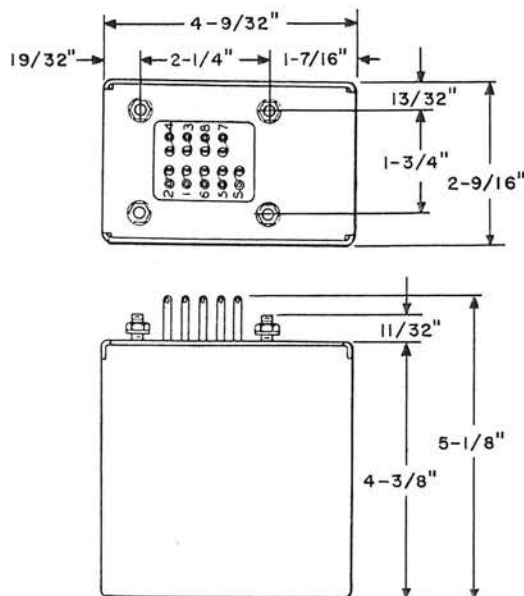


Shell type coils having a silicon steel core clamped between two cast iron end housings, one of which is provided with mounting lugs. Coils operate on a frequency range from 300 to 700 Hz.

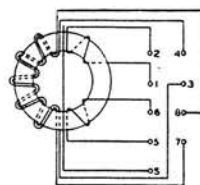
For use in power ringing circuits.

Code No.	Comcode	Ratio of Turns per Winding	Approximate DC Resistance per Winding (Ohm)
115A	100 108 208	(1-2) : (3-4) : : 1 : 1	
		(1-2) : (3-3T) : : 1 : .75	(1-2) .010
		(1-2) : (3-4T) : : 1 : 1.5	(3-4T) .020
115B	100 108 216	(1-2) : (3-4) : : 1 : 3	
		(1-2) : (3-3T) : : 1 : 2.25	(1-2) .010
		(1-2) : (3-4T) : : 1 : 4.5	(3-4T) .14
115C	100 108 224	(1-2) : (3-4) : : 1 : 10	
		(1-2) : (3-3T) : : 1 : 7.5	(1-2) .010
		(1-2) : (3-4T) : : 1 : 15	(3-4T) 1.34

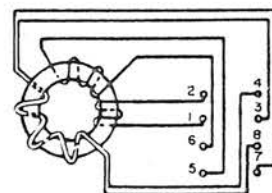
119B, C, D, E and F



119B



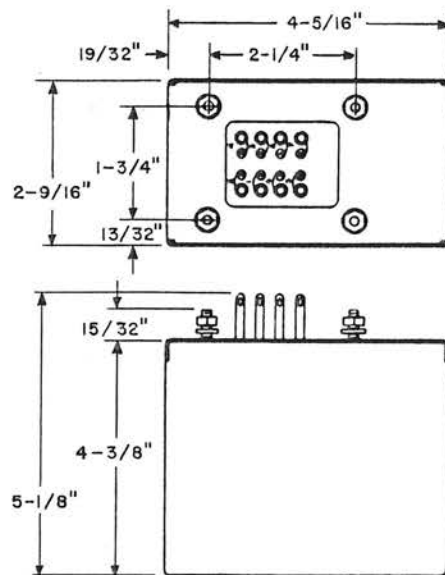
119C and E



119D

## COILS

## Repeating



119F

Torodial type coils having permalloy cores and enclosed in sheet metal cases.

Closest recommended mounting centers are 2-5/8 inches by 4-3/8 inches.

Code No.	Comcode	Frequency Range (KHz)	Impedance Ratio (Ohms)	Low Winding	High Winding	Approximate DC Resistance (Ohms)	
						Low Winding	High Winding
(a) 119B	100 108 232	0.035-8.5	37:600	(1-2) (5-6)	(3-4) (7-8)	2	32
(b) 119C	100 108 240	0.035-8	600:600	(3-4) (7-8)	(1-2) (5-6)	42	46
(c) 119D	100 108 257	0.035-8	204:600	(2-1) (6-5)	(3-4) (7-8)	8.5	20
(d) 119E	100 108 265	0.035-8	600:600	(1-2) (5-6)	(3-4) (7-8)	34	34
(e) 119F	100 108 273	0.035-20	600:1200	(4-3) (8-7)	(2-1) (6-5)	5.2	10.4

(a) For use at central switching stations on open-wire program transmission circuits for bridging repeaters.

(b) For use in repeater circuits to operate out of a 600 ohm line into a 600 ohm line corrector network.

(c) For use in repeater circuits to operate out of a loaded cable program circuit into a monitoring bridging network.

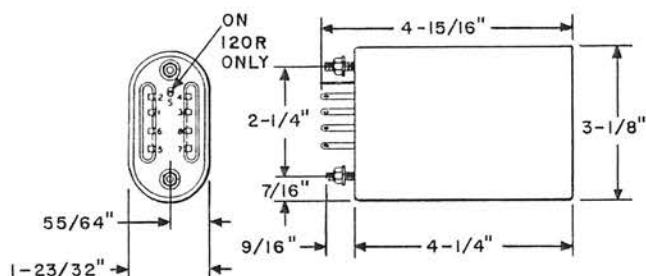
(d) For use in program channel terminal equipment for type K carrier telephone systems. Electrically equivalent to 111C.

(e) Series aiding connections may be obtained by strapping terminals 1 to 6 and 3 to 8. Winding (2-1) and (6-5) are wound as a twisted pair. The 119F is intended for use in transmission measuring equipment.

## COILS

## Repeating

## 120 Type



Shell type coils enclosed in metal cases. Operate over voice frequency range. Closest recommended mounting centers are 3-3/16 inches by 1-3/4 inches.

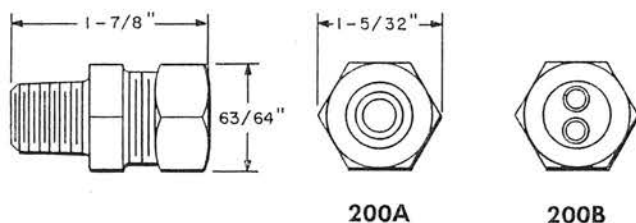
Used for terminating side circuits of phantom group trunks at subscriber offices and at toll offices when non-repeated and composite signaling is used. Serve also as battery supply repeating coils in side circuits.

Code No.	Comcode	Frequency Range (KHz)	Impedance Ratio (Ohms)	Low Winding	High Winding	Approximate DC Resistance (Ohms)	
						Low Winding	High Winding
(a) (b) 120C	100 108 281	0.2-3.5	900:900	(4-3) (8-7)	(2-1) (6-5)	11	15.6
(a) (b) 120D	100 108 299	0.2-3.5	900:1350	(4-3) (8-7)	(2-1) (6-5)	11	25.4
(a) (b) 120E	100 108 307	0.2-3.5	600:900	(2-1) (6-5)	(4-3) (8-7)	10	11
(a) (b) 120F	100 108 315	0.2-3.5	600:1500	(2-1) (6-5)	(4-3) (8-7)	5	16.2
(a) 120G	100 108 323	0.2-3.5	600:900 600:1500	(2-1) (6-5)	(4L-3) (8-7L) (4H-3) (8-7H)	5	16.2
(a) (b) 120H	100 108 331	0.2-3.5	900:900	(4-3) (8-7)	(2-1) (6-5)	11	15.6
(a) (b) 120J	100 108 349	0.2-3.5	900:1350	(4-3) (8-7)	(2-1) (6-5)	11	25.4
(a) (b) 120K	100 108 356	0.2-3.5	600:900	(2-1) (6-5)	(4-3) (8-7)	10	11
(a) (b) 120L	100 108 364	0.2-3.5	600:1500	(2-1) (6-5)	(4-3) (8-7)	5	16.2
(d) 120M	100 108 372	0.2-3.5	150+150:6500 150+150:100	(1-2)+(3-4)	(5-7) (5-6)	17	505
(c) 120N	100 108 380	0.2-3.5	600:600+600	(7-8) (9-10)	(1-2) (3-4)+(5-6)	11.3	12.2
(e) 120P	100 108 398	0.2-3.5	600:900+900 600:15000+15000	(7-9) (10-12) (8-9) (10-11)	(1-2) (3-4)+ (5-6)	13.8	23.2
(a) (b) 120R	100 108 406	0.2-3	600:900	(1-2) (6-5)	(4-3) (8-7)	10	11

- (a) Windings (1-2) and (5-6) are parallel wound.
- (b) Windings (3-4) and (7-8) are parallel wound.
- (c) Windings (1-2), (3-4) and (5-6) are parallel wound.
- (d) Windings (1-2) and (3-4) are parallel wound.
- (e) Windings (7-9) and (10-12) are parallel wound.

## CONNECTORS

## 200 Type



Each consists of a coupling, hexagon cap, rubber bushing, and compression washers.

**200A:** Used with a one or two pair service cable. Also usable with NP Drop Wire and one pair B Underground Wire or UG Wire with jacket and armor removed or C Underground Wire with jacket removed.

Comcode: 100 111 590

**200B:** Used with a U Bridle Wire pair.

Comcode: 100 111 608

**200C:** Same as 200A except bushing has a larger hole. Used with a two pair B Underground Wire or UG Wire with jacket and armor removed. Can also be used with a one pair B Underground Wire or UG Wire when its outer jacket and armor are not removed.

Comcode: 100 111 616

**200D:** Same as 200A except also contains an inner spacer, and bushing has an oval hole. Used with one pair D Underground Wire.

Comcode: 100 111 624

**200E:** Same as 200A except also contains an inner spacer, and bushing has a smaller hole. Used with two pair B Service Wire.

Comcode: 100 111 632

Intended for use in UG16 Cable Terminals to provide a water tight entrance.

## 219 Type

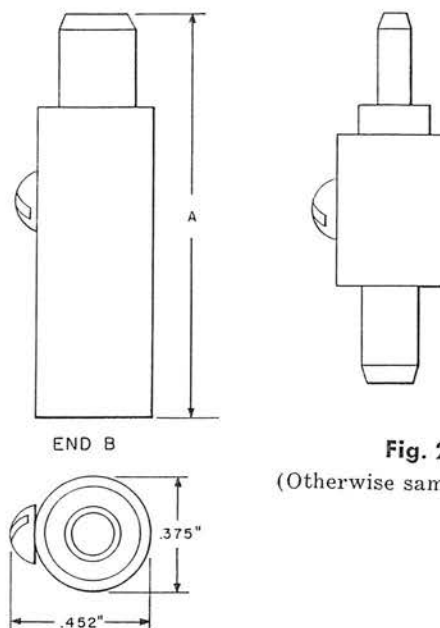


Fig. 1

Fig. 2

(Otherwise same as Fig. 1)

**219A:** A combination cable termination or cable connector. When used for cable termination, a 724A or 730A Cable is connected to the appropriate terminal and a resistor (not furnished) is soldered from the wire to the outer surface of the unused cable terminal. A sleeve is then positioned so its longer end will be over the resistor side of the connector.

When used for connecting 724A and 730A Cable, the longer end of the sleeve is positioned over the 730A Cable.

**219B:** Same as 219A Connector except used for connecting 730A Cable to KS-19224L2 Cable.

**219C:** Same as 219B Connector except used for connecting two 724A Cables.

**219D:** Same as 219B except used for connecting 724A Cable to KS-19224L1 Cable.

**219E:** Same as 219B except used for connecting two 730A Cables.

**219F:** Same as 219B except used for connecting two KS-19224L2 Cables.

**219G:** Same as 219B except used for connecting 724A Cable to KS-19906L1 Cable.

**219H:** Same as 219D except used for connecting 724A or 728-type cable to KS-19224L2 Cable.

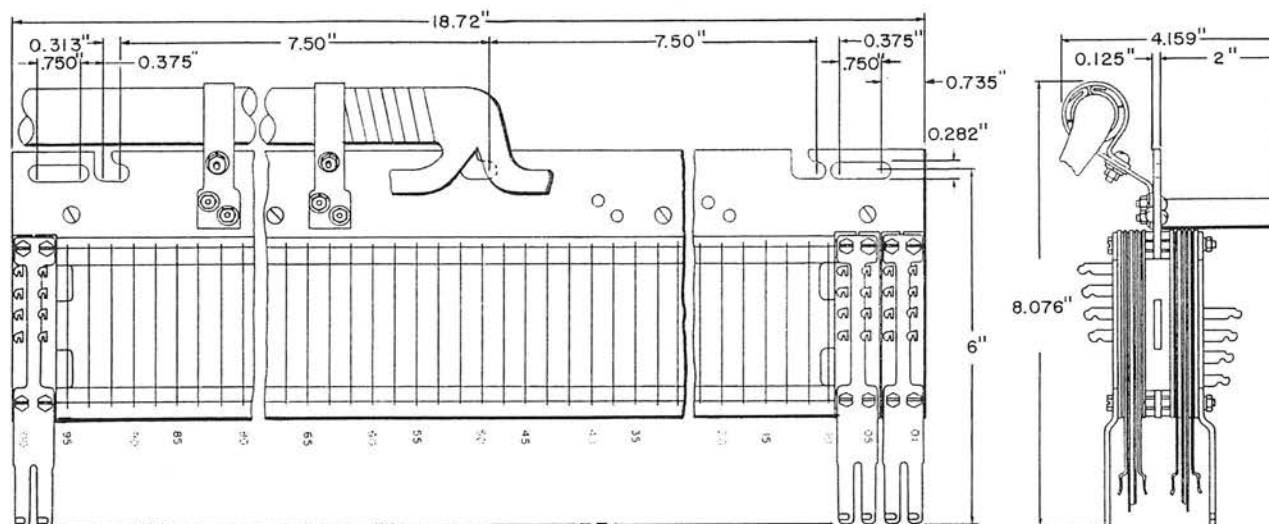


## CONNECTORS

## 219 Type (Continued)

Code No.	Comcode	Fig. No.	Dimension A (Inches)
219A	101 332 054	1	1.343
219B	101 331 866	2	1.218
219C	101 307 478	2	1.124
219D	101 307 486	2	1.218
219E	101 307 494	2	1.124
219F	101 307 502	2	1.312
219G	101 333 169	2	1.218
219H	101 385 318	2	1.218

## 301A1-100 and 301A2-100



**301A1-100:** Consists of a 444C Jack equipped with a universally mounted number 24 AWG color-coded plastic insulated stub cable with an aluminum shield, a polyvinyl chloride sheath, and a fanning strip. The stub cable is equipped with a gas plug. Connectors are arranged for 100 pairs of conductors and provide a ready means of opening lines and trunks for testing and other purposes. Mounting screws are furnished.

Comcode: 100 114 677 E/W 30 Ft Stub.  
 100 114 685 E/W 50 Ft Stub.  
 100 114 693 E/W 80 Ft Stub.  
 100 114 701 E/W 100 Ft Stub.

**301A2-100:** Same as 301A1-100 except stub cable and clamps are reversed for top mounting.

Used in central offices located in areas where incoming circuits are in underground cables and do not require heat coil or carbon block protection.

Comcode: 100 114 719 E/W 30 Ft Stub.  
 100 114 727 E/W 50 Ft Stub.  
 100 114 735 E/W 80 Ft Stub.  
 100 114 743 E/W 100 Ft Stub.

## CONNECTORS

## 906 Type

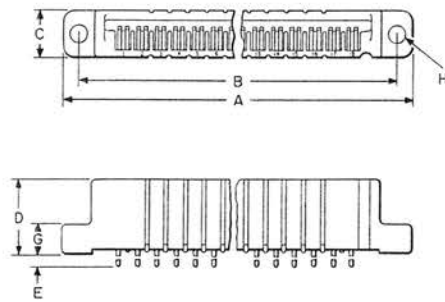


Fig. 1

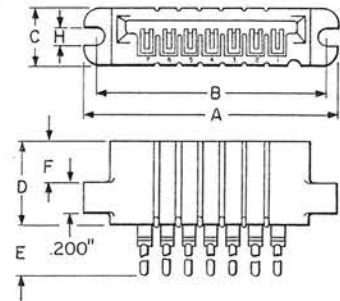


Fig. 4

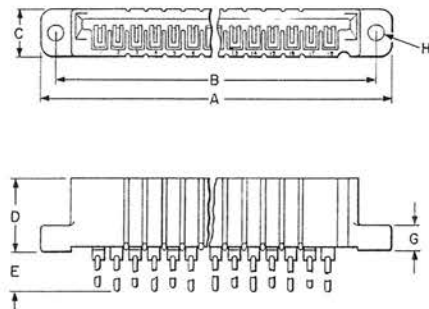


Fig. 2

Each consists of a molded block of insulating material containing spring terminals equipped with twin contacts of number 3 metal for connection to a printed wiring board. Wiring end of the terminals is arranged for mechanically wrapped connections unless otherwise indicated in text. Arranged with terminals in a single row or double row as indicated in table. Single rows of terminals are arranged to make contact with printed wiring terminals on one side of a printed wiring board. Double rows of terminals are arranged to make contact with printed wiring terminals on two sides of a printed board.

Provided with two index clips shipped loose unless otherwise indicated in text. Closest recommended mounting centers side by side are 1/2 inch.

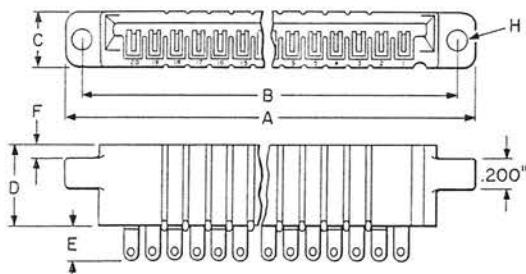


Fig. 3

## CONNECTORS

## 906 Type (Continued)

906A: Provided with two index clips in fixed positions. Used in 1A2 Key Telephone System.

906C: Equipped with an index clip in positions 5 and 12. Used in 1A2 Key Telephone System.

906D: Terminals are arranged for solder connections. One index clip (shipped loose) is provided. Arranged for rigid mounting by means of number 6 screws, with closest recommended mounting centers side-by-side of 1/2 inch, or for floating mounting by means of two P-12B953 screws with closest recommended mounting centers of 17/32 inch. The mounting screws are not furnished and must be ordered separately. Used in Data Set 401AW1.

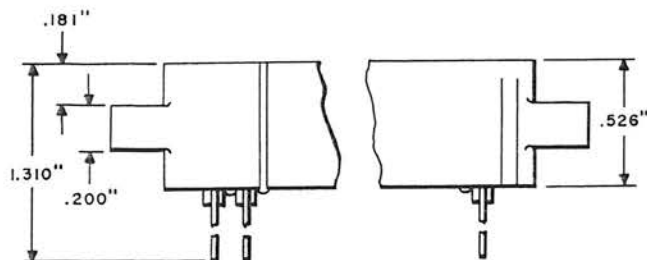
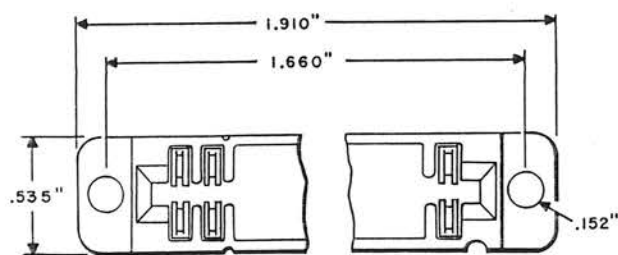
906G: Same as 906C except has lower insulation resistance between adjacent terminals and sturdier punched index clips. Used in 1A2 Key Telephone System.

906J: Terminals are arranged for mechanically wrapped connections. The number of P-49F596 clips must be specified on the order.

906K: Same as 906G except equipped with a double row of terminals.

Code No.	Comcode	Fig. No.	Total No.	Terminals Single or Double Row	Thickness of Printed Wiring Board Arranged for (Inch)	Dimensions (Inches)							
						A	B	C	D	E	F	G	H
906A	100 115 419	1	18	Single	.062	3.560	3.310	.375	.602	.130	—	.240	.125
906C	100 115 435	2	18	Single	.062	3.560	3.310	.375	.602	.710	—	.240	.125
906D	100 115 443	3	20	Single	.062	3.860	3.610	.375	.562	.213	.095	—	.152
906G	100 115 476	2	18	Single	.062	3.560	3.310	.375	.602	.710	—	.240	.125
906J	100 990 779	4	7	Single	.062	1.730	1.550	.375	.562	.750	2.84	—	.125
906K	101 549 871	2	18	Double	.062	3.560	3.310	.375	.602	.600	—	.240	.125

## 907B



Consists of a molded block of insulating material containing 14 spring terminals in two rows of seven each. Equipped with twin contacts of No. 3 metal for connection to a printed wiring terminal.

Arranged to make contact with printed wiring terminals on two sides of a 3/32 inch thick printed wiring board when inserted into the connector.

The other end of each terminal protrudes through the wall of the housing and is arranged for mechanically wrapped connections.

Closest recommended mounting centers are 21/32 inch for rigid mounting or 45/64 for floating mounting. Mounting screws are furnished.

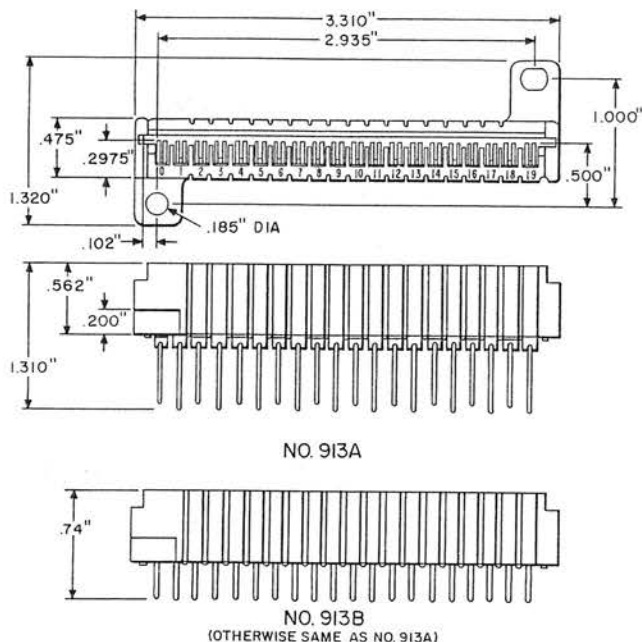
Used in 1A2 Key Telephone System.

Comcode: 101 137 180



## CONNECTORS

913A &amp; B



913A: Consists of a molded housing of insulating material equipped with 20 contacts.

On the mating end, a single row of contact springs having contacts of No. 3 metal connects with circuit terminations on one side of a 1/16 inch thick printed wiring board when inserted into the connector.

On the wiring end, the contact springs are provided in two equal rows and arranged for mechanically wrapped connections.

Closest recommended mounting centers are 1.0 inch. Shoulder screws are furnished for floating mounting. Index clips are furnished only when specified on the order.

Used in 1A2 Key Telephone System.

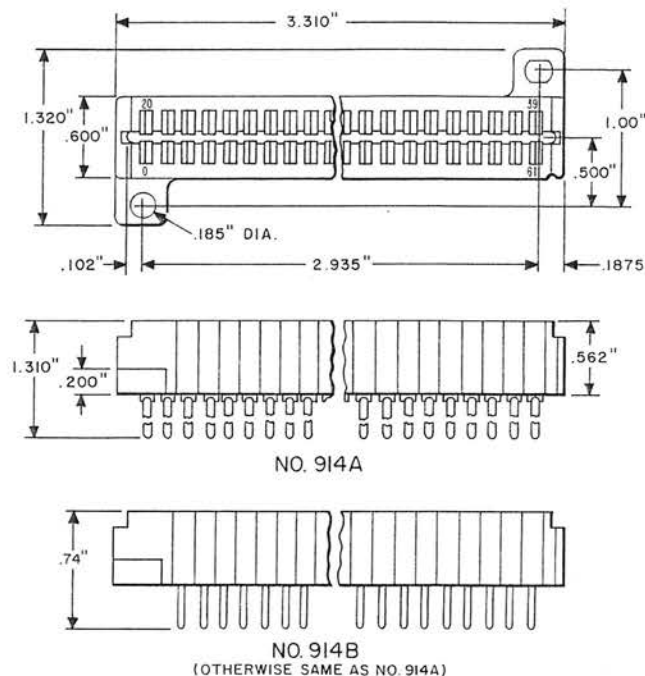
Comcode: 100 115 575

913B: Same as 913A except the contact springs on the wiring end are arranged for mounting on printed wiring boards.

Used in 400 Type Key Telephone Units.

Comcode: 101 567 741

914A &amp; B



914A: Consists of a molded housing of insulating material equipped with forty contacts.

On the mating end, two equal rows of contact springs having contacts of No. 3 metal connects with circuit terminations on both sides of a 1/16 inch thick printed wiring board when inserted into the connector.

On the wiring end, the contact springs are provided in four equal rows and arranged for mechanically wrapped connections.

Closest recommended mounting centers are 1.0 inch. Shoulder screws are furnished for floating mounting. Index clips are furnished only when specified on the order.

Used in 1A2 Key Telephone System.

Comcode: 100 115 583

914B: Same as 914A except the contacts on the wiring end are arranged for mounting on printed wiring boards.

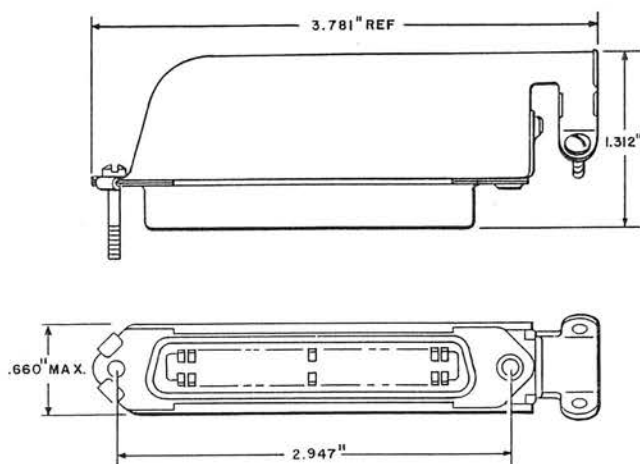
Used in 400 Type Key Telephone Units.

Comcode: 101 567 785



## CONNECTORS

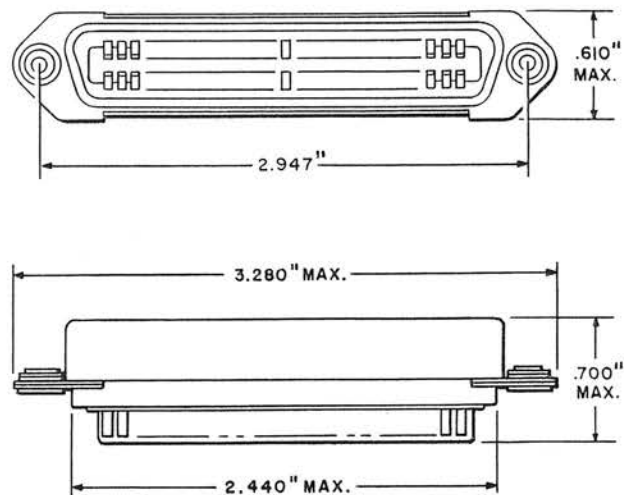
KS-16690L1



This connector consists of a molded rectangular block of insulating material equipped to handle up to 50 gold plated contacts and is assembled in a metal shell. The connector is polarized to insure proper mating with the corresponding plug.

Comcode: 997 200 076

KS-16672L3



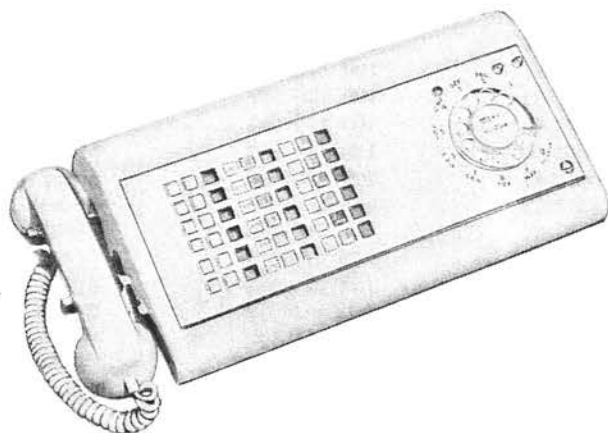
This connector consists of a molded rectangular block of insulating material equipped with gold plated contacts and is assembled in a metal shell. The connector is polarized to insure proper mating with the corresponding plug.

Comcode: 400 127 346

## CONSOLES

## Telephone

## 3C Type



Key telephone consoles are provided with five face mats colored silver, gold, blue, green, and white to provide a choice of color contrasts, with a clear plastic face plate, and with a snap on bezel to retain the face plate and mat. Overall dimensions are 18.64 inches long by 9 inches wide by 4.375 inches high.

Each is equipped with a NITE key which permits an attendant to establish night connections, and a red alarm lamp above the dial which indicates malfunction within the PBX or a power failure.

3CW1: Has a rotary dial and is equipped with one 105 Apparatus Blank, one 598A Key, and one 598B Key. The 598A Key accommodates six central office trunks and the 598B Key accommodates three attendant trunks plus a dial back, hold, and release function.

3CW2: Has a rotary dial and is equipped with two 598A Keys and one 598B Key, each having the same functions as indicated for 3CW1.

3CW3 and 3CW4: Same as 3CW1 and 3CW2 types, respectively, except each contains a TOUCH-TONE dial.

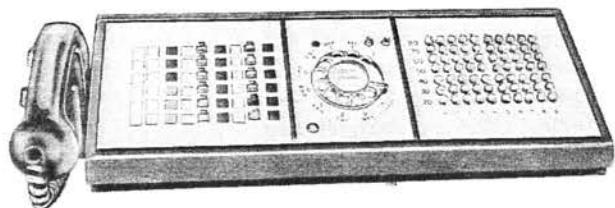
3CW5 and 3CW6: Same as 3CW3 and 3CW4 types, respectively, except equipped with a new face plate to accommodate a 35A3A TOUCH-TONE dial.

Code No.	Comcode	Color
3CW1-51	100 120 070	Green
3CW1-58	100 120 088	White
3CW1-60	100 120 096	Light beige
3CW1-61	100 120 104	Light gray
3CW2-51	100 120 112	Green
3CW2-58	100 120 120	White
3CW2-60	100 120 138	Light beige
3CW2-61	100 120 146	Light gray
3CW3-51	100 120 153	Green
3CW3-58	100 120 161	White
3CW3-60	100 120 179	Light beige
3CW3-61	100 120 187	Light gray
3CW4-51	100 120 195	Green
3CW4-58	100 120 203	White
3CW4-60	100 120 211	Light beige
3CW4-61	100 120 229	Light gray
3CW5-51	101 463 032	Green
3CW5-58	101 463 040	White
3CW5-60	101 463 057	Light beige
3CW5-61	101 463 065	Light gray
3CW6-51	101 463 115	Green
3CW6-58	101 463 123	White
3CW6-60	101 463 131	Light beige
3CW6-61	101 463 149	Light gray

## CONSOLES

## Telephone

## 4BW1, 4BW2, 4BW3, and 4BW4



Key and direct station selection telephone consoles are provided with five face mats colored silver, gold, blue, green, and white to provide a choice of color contrasts, with a clear plastic face plate, and with a snap on bezel to retain the face plate and mat. The hand set can be replaced by a number 52 or 53 type head telephone set (not furnished) for hands free operation. Overall dimensions are 24.10 inches long by 9 inches wide by 4.4 inches high.

The ringer provides for manual control to loud, soft, and off by means of a ringer arm projecting through the base. Consoles are arranged for direct station to central office connection by means of the NITE switch. They are equipped with a red alarm lamp above the dial which indicates a malfunction within the PBX or a power failure, and a green lamp which indicates an All Register Busy condition.

4BW1 and 4BW2: Each contains a rotary dial.

4BW1: Equipped with one 105 Apparatus Blank, a 598A Key which accommodates six central office trunks, and a 598B Key which accommodates three attendant trunks plus a dial back, hold, and release function. Also there is a field of 70 nonlocking illuminated pushbutton keys for direct station location. Each key is equipped with a 51A Lamp to indicate a busy position.

4BW2: Same as 4BW1 except equipped with three keys, one 598A Key and two 598B Keys, which accommodate ten central office trunks, two station lines, and three attendant trunks plus a dial back, hold, and release function.

4BW3 and 4BW4: Same as 4BW1 and 4BW2, respectively, except each contains a TOUCH-TONE dial.

Intended for use with 756A PBX.

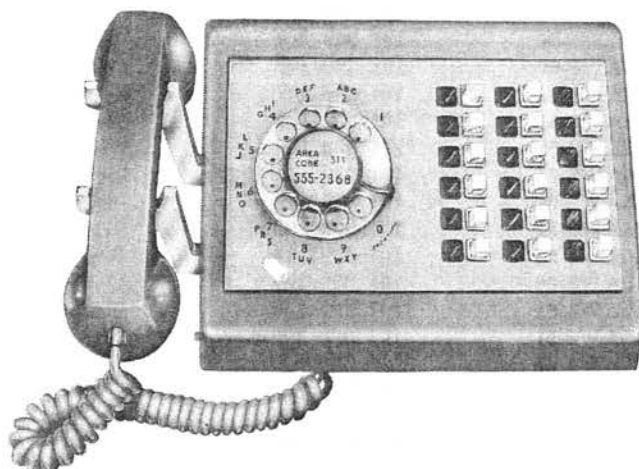
Code No.	Comcode	Color
4BW1-51	100 120 591	Green
4BW1-58	100 120 609	White
4BW1-60	100 120 617	Light beige
4BW1-61	100 120 625	Light gray
4BW2-51	100 120 633	Green
4BW2-58	100 120 641	White
4BW2-60	100 120 658	Light beige
4BW2-61	100 120 666	Light gray
4BW3-51	100 120 674	Green
4BW3-58	100 120 682	White
4BW3-60	100 120 690	Light beige
4BW3-61	100 120 708	Light gray
4BW4-51	100 120 716	Green
4BW4-58	100 120 724	White
4BW4-60	100 120 732	Light beige
4BW4-61	100 120 740	Light gray



## CONSOLES

## Telephone

## 14 Type



**14AW1:** A desk surface type telephone console having 6 control buttons (Night Service, Position Release, Transfer, Release Destination, Hold, and Start) and 12 pickup buttons. Overall dimensions are approximately 12.500 inches wide by 8.250 inches deep by 4.226 inches high. Designed for use with 800A PBX. Provides Series 100 service.

The console is shipped completely assembled, equipped with the housing, an 8P Dial (Rotary), a D80C type mounting cord, a G3AR type hand set, a 20NW1 Face Plate, a 599J Key, two 598A Keys, a 4010B Network, an A50B Connector Cable, a 185A Network, and an N1A Ringer.

**14AW2:** Same as the 14AW1 except it is equipped with a 25A3 TOUCH-TONE Dial and a 120NW1 Face Plate.

**14AW3:** Same as the 14AW1 except it is equipped with one 598A Key and one 105B Apparatus Blank in lieu of two 598A Keys.

**14AW4:** Same as the 14AW2 except it is equipped with one 598A Key and one 105B Apparatus Blank in lieu of two 598A Keys.

**14AW5:** Same as 14AW2 except it is equipped with a 35A3A TOUCH-TONE Dial and a 220NW1 Face Plate. Arranged for mounting, but not equipped with a P-90D012 polarity guard, which must be ordered separately.

**14AW6:** Same as 14AW5 except it is equipped with one 599J Key, one 598A Key, and one 105B Apparatus Blank.

Code No.	Comcode	Color
14AW1-51	101 338 929	Green
14AW1-58	101 338 937	White
14AW1-60	101 338 945	Light beige
14AW1-61	101 338 952	Light gray
14AW2-51	101 338 960	Green
14AW2-58	101 338 978	White
14AW2-60	101 338 986	Light beige
14AW2-61	101 338 994	Light gray
14AW3-51	101 339 000	Green
14AW3-58	101 339 018	White
14AW3-60	101 339 026	Light beige
14AW3-61	101 339 034	Light gray
14AW4-51	101 339 042	Green
14AW4-58	101 339 059	White
14AW4-60	101 339 067	Light beige
14AW4-61	101 339 075	Light gray
14AW5-51	101 339 281	Green
14AW5-58	101 339 299	White
14AW5-60	101 339 307	Light beige
14AW5-61	101 339 315	Light gray
14AW6-51	101 339 364	Green
14AW6-58	101 339 372	White
14AW6-60	101 339 380	Light beige
14AW6-61	101 339 398	Light gray



## CONSOLES

## Telephone

## 15 Type



Code No.	Comcode	Color
15AW1-51	101 339 083	Green
15AW1-58	101 339 091	White
15AW1-60	101 339 109	Light beige
15AW1-61	101 339 117	Light gray
15AW2-51	101 339 125	Green
15AW2-58	101 339 133	White
15AW2-60	101 339 141	Light beige
15AW2-61	101 339 158	Light gray
15AW3-51	101 339 166	Green
15AW3-58	101 339 174	White
15AW3-60	101 339 182	Light beige
15AW3-61	101 339 190	Light gray
15AW4-51	101 339 208	Green
15AW4-58	101 339 216	White
15AW4-60	101 339 224	Light beige
15AW4-61	101 339 232	Light gray
15AW5-51	101 339 448	Green
15AW5-58	101 339 455	White
15AW5-60	101 339 463	Light beige
15AW5-61	101 339 471	Light gray
15AW6-51	101 339 521	Green
15AW6-58	101 339 539	White
15AW6-60	101 339 547	Light beige
15AW6-61	101 339 554	Light gray

**15AW1:** A desk surface type telephone console having 6 control buttons (Night Service, Position Release, Transfer, Release Destination, Hold, and Start) and 24 pickup buttons. Overall dimensions are 15.125 inches wide by 8.250 inches deep by 4.226 inches high. Designed for use with the 800A PBX. Provides Series 100 service.

The console is shipped completely assembled, equipped with the housing, an 8P Dial (Rotary), a D120H type mounting cord, a G3AR type hand set, a 21NW1 Face Plate, a 599J Key, four 598A Keys, a 4010B Network, a 185A Network, an N1A Ringer and either an A75A Connector Cable or an A50B and A25B Connector Cable.

**15AW2:** Same as 15AW1 except it is equipped with a 25A3 TOUCH-TONE Dial and a 121NW1 Face Plate.

**15AW3:** Same as 15AW1 except it is equipped with three 598A Keys and a 105B Apparatus Blank in lieu of four 598A Keys.

**15AW4:** Same as 15AW2 except it is equipped with three 598A Keys and a 105B Apparatus Blank in lieu of four 598A Keys.

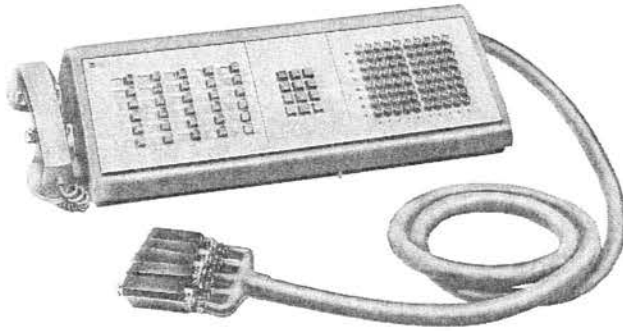
**15AW5:** Same as 15AW2 except it is equipped with a 35A3A TOUCH-TONE Dial and a 221NW1 Face Plate. Arranged for mounting, but not equipped with a P-90D012 polarity guard, which must be ordered separately.

**15AW6:** Same as 15AW5 except equipped with one 599J Key, three 598A Keys, and a 105B Apparatus Blank.

## CONSOLES

## Telephone

## 16 Type



**16AW1:** A desk surface type telephone console having 6 control buttons (Night Service, Position Release, Transfer, Release Destination, Hold and Start), 24 pickup buttons, and a DSS field for 80 stations. Overall dimensions are approximately 24.090 inches wide by 9.000 inches deep by 4.250 inches high. Designed for use with the 800A PBX. Provides Series 200 and 300 service.

Equipped with an 8P Dial (Rotary), a 599J Key, four 598A Keys, a 425D Network, a 151E Amplifier, a 4044C Network, and an MIA Ringer. The console, housing, and D250G type mounting cord is shipped loose for assembly at time of installation. Arranged for a G3CR type hand set or a number 52 or 53 type head set. Whichever is desired must be ordered separately. An A75A and an A50B or two A50B and one A25B Connector Cable are required and must be ordered separately.

**16AW9:** Same as 16AW1 except it is equipped with a 35A3A TOUCH-TONE Dial.

Code No.	Comcode	Color
16AW1-51	101 757 029	Green
16AW1-58	101 757 037	White
16AW1-60	101 757 045	Light beige
16AW1-61	101 757 052	Light gray
16AW9-51	101 757 110	Green
16AW9-58	101 757 136	White
16AW9-60	101 757 144	Light beige
16AW9-61	101 757 151	Light gray



## CORDS

This section pertains to cords used with apparatus which is or has appeared in this catalog. The section is divided into the following tables.

Table I — An alpha-numerical list of cords indicating lengths, colors, material of outer covering, and usage.

Table II — A list of Data Sets and Data Auxiliary Sets indicating cords required.

Table III — A list of Hand Sets indicating cords required.

Table IV — A list of Hand Telephone Sets and Head Telephone Sets indicating cords required.

Table V — A list of Telephone Sets indicating cords required.

Table VI — A list of miscellaneous apparatus indicating cords required.

The tables are arranged to facilitate cross reference of cord to usage and usage to cord. Any questions pertaining to cords or apparatus not listed herein should be forwarded as directed on Page ii, Volume I, of this catalog.

## Textile Covered

-3 Black

## Neoprene or Vinyl Jacket

- 3 Black  
-40 Light olive gray  
-50 Ivory  
-51 Green  
-52 Gray  
-53 Red  
-54 Brown  
-55 Beige  
-56 Yellow  
-58 White  
-60 Light beige  
-61 Light gray

TABLE I

## Letter-Number-Letter Codes Applied to Cords

Letter: First character; designates principle use as follows:

D-Telephone Set Cord. Includes desk stand cords; used between switchhook and base of desk stands.

H-Handset Cords. Connected directly to hand sets.

L-Operator's Telephone Set Cords or Head Telephone Set Cords.

M-Miscellaneous Cords. Not classified under other designations.

P-Patching Cords. For patching purposes; usually arranged for plug, jack or connector at each end of cord.

R-Receiver Cords.

S-Switchboard Cords. One end for connecting to switchboard; other end for a plug.

W-Test Cords. Used with test sets in connection with central office and other testing.

Number. Second character; corresponds to number of conductors.

Letter or Letters. Third character; no special significance; is arbitrarily assigned to indicate variation in physical structure, such as insulation, cord tips, etc.

Dash Number. Indicates color as follows:



## CORDS

Code No.	Comcode	Lengths Available	Outer Covering	Used On
D3BN-3	100 125 707	5'6"	Vinyl	500CRW, DRW, ERW, FRW, WRW & YRW, 501CRW & DRW, 591ARW & BRW, 1500DW and 2660AW Type Telephone Sets.
D3BN-50	100 125 731	5'6"	Vinyl	
D3BN-51	100 125 756	5'6"	Vinyl	
D3BN-53	100 125 772	5'6"	Vinyl	
D3BN-56	100 125 798	5'6"	Vinyl	
D3BN-58	100 125 814	5'6"	Vinyl	
D3BN-60	100 125 855	5'6"	Vinyl	
D3BN-61	100 125 871	5'6"	Vinyl	
D3BP-3	100 125 947	5'6"	Vinyl	
D3BP-3	100 127 323	9'0"	Vinyl	
D3BP-3	100 127 331	13'0"	Vinyl	Same as D4BJ and 15 Type Indicators.
D3BP-3	100 127 349	25'0"	Vinyl	
D3BP-49	100 999 457	5'6"	Vinyl	
D3BP-50	100 127 356	9'0"	Vinyl	
D3BP-50	100 127 364	13'0"	Vinyl	
D3BP-50	100 127 372	25'0"	Vinyl	
D3BP-51	100 127 380	9'0"	Vinyl	
D3BP-51	100 127 398	13'0"	Vinyl	
D3BP-51	100 127 406	25'0"	Vinyl	
D3BP-53	100 127 414	9'0"	Vinyl	
D3BP-53	100 127 422	13'0"	Vinyl	Same as D3BN and 15 & 17 Type Indicators, and 21C-49 Indicator.
D3BP-53	100 127 430	25'0"	Vinyl	
D3BP-56	100 127 448	9'0"	Vinyl	
D3BP-56	100 127 455	13'0"	Vinyl	
D3BP-56	100 127 463	25'0"	Vinyl	
D3BP-58	100 127 471	9'0"	Vinyl	
D3BP-58	100 127 489	13'0"	Vinyl	
D3BP-58	100 127 497	25'0"	Vinyl	
D3BP-60	100 127 539	9'0"	Vinyl	
D3BP-60	100 127 547	13'0"	Vinyl	
D3BP-60	100 127 554	25'0"	Vinyl	
D3BP-61	100 127 562	9'0"	Vinyl	
D3BP-61	100 127 570	13'0"	Vinyl	
D3BP-61	100 127 588	25'0"	Vinyl	
D3BU-3	100 126 341	9'0"	Vinyl	
D3BU-3	100 126 358	13'0"	Vinyl	
D3BU-3	100 126 366	25'0"	Vinyl	
D3BU-50	100 126 374	9'0"	Vinyl	
D3BU-50	100 126 382	13'0"	Vinyl	
D3BU-50	100 126 390	25'0"	Vinyl	
D3BU-51	100 126 408	9'0"	Vinyl	
D3BU-51	100 126 416	13'0"	Vinyl	
D3BU-51	100 126 424	25'0"	Vinyl	
D3BU-53	100 126 432	9'0"	Vinyl	
D3BU-53	100 126 440	13'0"	Vinyl	
D3BU-53	100 126 457	25'0"	Vinyl	
D3BU-56	100 125 465	9'0"	Vinyl	
D3BU-56	100 126 473	13'0"	Vinyl	
D3BU-56	100 126 481	25'0"	Vinyl	
D3BU-58	100 126 499	9'0"	Vinyl	
D3BU-58	100 126 507	13'0"	Vinyl	
D3BU-58	100 126 515	25'0"	Vinyl	
D3BU-60	100 126 556	9'0"	Vinyl	
D3BU-60	100 126 564	13'0"	Vinyl	
D3BU-60	100 126 572	25'0"	Vinyl	
D3BU-61	100 126 580	9'0"	Vinyl	
D3BU-61	100 126 598	13'0"	Vinyl	
D3BU-61	100 126 606	25'0"	Vinyl	

## CORDS

Code No.	Comcode	Lengths Available	Outer Covering	Used On
D4BD-3	100 126 721	5'6"	Vinyl	14BW Indicator and 17 & 18 Type Indicators.
D4BD-3	100 126 739	9'0"	Vinyl	
D4BD-3	100 126 747	13'0"	Vinyl	
D4BD-3	100 126 754	25'0"	Vinyl	
D4BD-49	100 126 762	5'6"	Vinyl	
D4BD-49	100 126 770	9'0"	Vinyl	
D4BD-49	100 126 788	13'0"	Vinyl	
D4BD-49	100 126 796	25'0"	Vinyl	Data Sets 603AW1 & AW2, Data Auxiliary Sets 804GW1 & GW2, and 500MRW and 510BRW Telephone Sets.
D4BJ-3	100 127 125	5'6"	Vinyl	
D4BJ-50	100 850 916	5'6"	Vinyl	
D4BJ-51	100 850 924	5'6"	Vinyl	
D4BJ-53	100 850 932	5'6"	Vinyl	
D4BJ-56	100 850 940	5'6"	Vinyl	
D4BJ-58	100 850 957	5'6"	Vinyl	
D4BJ-60	100 850 973	5'6"	Vinyl	Data Set 103FW2, 107AW Loudspeaker Set, and 694AW & BW Subscriber Sets.
D4BJ-61	100 850 981	5'6"	Vinyl	
D4BM-3	100 127 216	9'0"	Vinyl	
D4BM-50	101 350 056	9'0"	Vinyl	
D4BM-51	100 127 232	9'0"	Vinyl	
D4BM-53	101 350 064	9'0"	Vinyl	
D4BM-56	100 127 240	9'0"	Vinyl	
D4BM-58	100 127 257	9'0"	Vinyl	702BW & DW Telephone Sets.
D4BM-60	100 127 273	9'0"	Vinyl	
D4BM-61	100 127 281	9'0"	Vinyl	
D5AK-3	100 127 737	5'6"	Vinyl	
D5AK-3	100 127 752	9'0"	Vinyl	
D5AK-3	100 127 760	13'0"	Vinyl	
D5AK-51	100 127 778	5'6"	Vinyl	
D5AK-51	100 127 794	9'0"	Vinyl	
D5AK-51	100 127 802	13'0"	Vinyl	
D5AK-56	100 127 810	5'6"	Vinyl	
D5AK-56	100 127 836	9'0"	Vinyl	
D5AK-56	100 127 844	13'0"	Vinyl	
D5AK-58	100 127 851	5'6"	Vinyl	
D5AK-58	100 127 877	9'0"	Vinyl	
D5AK-58	100 127 885	13'0"	Vinyl	
D5AK-60	100 127 935	5'6"	Vinyl	20BW Indicator.
D5AK-60	100 127 950	9'0"	Vinyl	
D5AK-60	100 127 968	13'0"	Vinyl	
D5AK-61	100 127 976	5'6"	Vinyl	
D5AK-61	100 127 992	9'0"	Vinyl	
D5AK-61	100 128 008	13'0"	Vinyl	
D6W-3	100 128 230	5'6"	Vinyl	
D6W-3	100 128 248	9'0"	Vinyl	
D6W-3	100 128 255	13'0"	Vinyl	
D6W-3	100 128 263	25'0"	Vinyl	
D6W-49	100 128 271	5'6"	Vinyl	20BW Indicator.
D6W-49	100 128 289	9'0"	Vinyl	
D6W-49	100 128 297	13'0"	Vinyl	
D6W-49	100 128 305	25'0"	Vinyl	

## CORDS

Code No.	Comcode	Lengths Available	Outer Covering	Used On
D6AA-3	100 128 313	5'6"	Vinyl	Data Sets 202CW1, 401EW2 & EW3, 401JW2 & JW3, 402CW Type, 602CW1 & CW2, 603BW1, and 502BRW, 510ERW & FRW and 515BW Telephone Sets.
D6AA-3	100 128 339	9'0"	Vinyl	
D6AA-3	100 128 347	13'0"	Vinyl	
D6AA-3	100 128 354	25'0"	Vinyl	
D6AA-50	100 128 362	5'6"	Vinyl	
D6AA-50	100 128 370	9'0"	Vinyl	
D6AA-50	100 128 388	13'0"	Vinyl	
D6AA-50	100 128 396	25'0"	Vinyl	
D6AA-51	100 128 404	5'6"	Vinyl	
D6AA-51	100 128 412	9'0"	Vinyl	
D6AA-51	100 128 420	13'0"	Vinyl	
D6AA-51	100 128 438	25'0"	Vinyl	
D6AA-53	100 128 446	5'6"	Vinyl	
D6AA-53	100 128 453	9'0"	Vinyl	
D6AA-53	100 128 461	13'0"	Vinyl	
D6AA-53	100 128 479	25'0"	Vinyl	
D6AA-56	100 128 487	5'6"	Vinyl	
D6AA-56	100 128 495	9'0"	Vinyl	
D6AA-56	100 128 503	13'0"	Vinyl	
D6AA-56	100 128 511	25'0"	Vinyl	
D6AA-58	100 128 529	5'6"	Vinyl	
D6AA-58	100 128 537	9'0"	Vinyl	
D6AA-58	100 128 545	13'0"	Vinyl	
D6AA-58	100 128 552	25'0"	Vinyl	
D6AA-60	100 128 602	5'6"	Vinyl	
D6AA-60	100 128 610	9'0"	Vinyl	
D6AA-60	100 128 628	13'0"	Vinyl	
D6AA-60	100 128 636	25'0"	Vinyl	
D6AA-61	100 128 644	5'6"	Vinyl	
D6AA-61	100 128 651	9'0"	Vinyl	
D6AA-61	100 128 669	13'0"	Vinyl	
D6AA-61	100 128 677	25'0"	Vinyl	
D6AF-3	100 129 428	5'6"	Vinyl	660AW, 663AW, 2660AW2, and 2663AW1 Telephone Sets.
D6AF-3	100 129 444	9'0"	Vinyl	
D6AF-3	100 129 451	13'0"	Vinyl	
D6AF-3	101 641 835	25'0"	Vinyl	
D6AF-51	100 129 469	5'6"	Vinyl	
D6AF-51	100 129 485	9'0"	Vinyl	
D6AF-51	100 129 493	13'0"	Vinyl	
D6AF-51	101 641 843	25'0"	Vinyl	
D6AF-56	100 129 501	5'6"	Vinyl	
D6AF-56	100 129 519	9'0"	Vinyl	
D6AF-56	100 129 527	13'0"	Vinyl	
D6AF-56	101 641 850	25'0"	Vinyl	
D6AF-58	100 129 535	5'6"	Vinyl	
D6AF-58	100 129 543	9'0"	Vinyl	
D6AF-58	100 129 550	13'0"	Vinyl	
D6AF-58	101 641 868	25'0"	Vinyl	
D6AF-60	100 129 600	5'6"	Vinyl	
D6AF-60	100 129 618	9'0"	Vinyl	
D6AF-60	100 129 626	13'0"	Vinyl	
D6AF-60	101 641 876	25'0"	Vinyl	
D6AF-61	100 129 634	5'6"	Vinyl	Data Set 401AW1L2 513BW Telephone Set.
D6AF-61	100 129 659	9'0"	Vinyl	
D6AF-61	100 129 667	13'0"	Vinyl	
D6AF-61	101 641 884	25'0"	Vinyl	
D10M-61	100 130 897	5'6"	Vinyl	
D10N-61	100 130 913	9'0"	Vinyl	



## CORDS

Code No.	Comcode	Lengths Available	Outer Covering	Used On
D10P-3	101 593 937	5'6"	Vinyl	Data Sets 103GW1, GW2 & GW4, 601AW1 & BW1, Data Auxiliary Sets 801AW5 & AW6, and 500RRW & SRW, 514BW, and 1514BW Telephone Sets.
D10P-3	100 850 114	9'0"	Vinyl	
D10P-3	100 850 122	13'0"	Vinyl	
D10P-3	101 459 311	25'0"	Vinyl	
D10P-50	101 593 945	5'6"	Vinyl	
D10P-50	101 241 735	9'0"	Vinyl	
D10P-50	101 241 792	13'0"	Vinyl	
D10P-50	101 459 329	25'0"	Vinyl	
D10P-51	101 593 952	5'6"	Vinyl	
D10P-51	100 850 130	9'0"	Vinyl	
D10P-51	100 130 954	13'0"	Vinyl	
D10P-51	100 459 337	25'0"	Vinyl	
D10P-53	100 130 962	5'6"	Vinyl	
D10P-53	101 241 743	9'0"	Vinyl	
D10P-53	101 241 800	13'0"	Vinyl	
D10P-53	101 459 345	25'0"	Vinyl	
D10P-58	101 593 986	5'6"	Vinyl	
D10P-58	100 850 148	9'0"	Vinyl	
D10P-58	100 130 996	13'0"	Vinyl	
D10P-58	101 459 360	25'0"	Vinyl	
D10P-60	101 594 018	5'6"	Vinyl	
D10P-60	100 999 846	9'0"	Vinyl	
D10P-60	100 850 163	13'0"	Vinyl	
D10P-60	101 459 386	25'0"	Vinyl	
D10P-61	100 131 028	5'6"	Vinyl	
D10P-61	100 999 853	9'0"	Vinyl	
D10P-61	100 850 171	13'0"	Vinyl	
D10P-61	101 459 394	25'0"	Vinyl	
D10R-3	100 131 051	1'4"	Vinyl	1008BW Dial, and 2660AW3 & AW4 Telephone Sets.
D10R-3	100 131 069	5'6"	Vinyl	
D10R-50	100 131 077	1'4"	Vinyl	
D10R-50	100 131 085	5'6"	Vinyl	
D10R-51	100 131 093	1'4"	Vinyl	
D10R-51	100 131 101	5'6"	Vinyl	
D10R-53	101 026 698	1'4"	Vinyl	
D10R-53	101 314 136	5'6"	Vinyl	
D10R-56	100 131 119	1'4"	Vinyl	
D10R-56	100 131 127	5'6"	Vinyl	
D10R-58	100 131 135	1'4"	Vinyl	
D10R-58	100 131 143	5'6"	Vinyl	
D10R-60	100 131 176	1'4"	Vinyl	
D10R-60	100 131 184	5'6"	Vinyl	
D10R-61	100 131 192	1'4"	Vinyl	
D10R-61	100 131 200	5'6"	Vinyl	712BW Telephone Set and 2714AW-Type Telephone Sets.
D14L-3	100 131 754	5'6"	Vinyl	
D15L-51	100 131 788	5'6"	Vinyl	
D14L-56	100 131 796	5'6"	Vinyl	
D14L-58	100 131 804	5'6"	Vinyl	
D14L-60	100 131 820	5'6"	Vinyl	
D14L-61	100 131 838	5'6"	Vinyl	



## CORDS

Code No.	Comcode	Lengths Available	Outer Covering	Used On
D14M-3	100 131 861	1'0"	Vinyl	1066A3AW and 1066A4BW Dials.
D14M-3	101 285 153	5'0"	Vinyl	
D14M-50	101 390 227	1'0"	Vinyl	
D14M-50	101 459 568	5'0"	Vinyl	
D14M-51	100 131 879	1'0"	Vinyl	
D14M-51	101 218 972	5'0"	Vinyl	
D14M-53	101 390 235	1'0"	Vinyl	
D14M-53	101 459 576	5'0"	Vinyl	
D14M-56	100 131 887	1'0"	Vinyl	
D14M-56	101 413 920	5'0"	Vinyl	
D14M-58	100 131 895	1'0"	Vinyl	
D14M-58	101 218 980	5'0"	Vinyl	
D14M-60	100 131 911	1'0"	Vinyl	
D14M-60	101 218 998	5'0"	Vinyl	
D14M-61	100 131 929	1'0"	Vinyl	
D14M-61	101 219 004	5'0"	Vinyl	
D14N-61	101 213 825	3'	Vinyl	223AW-52 Hand Telephone Set 500ABW Telephone Set.
D16G-3	101 459 584	5'6"	Vinyl	
D20H-3	100 133 545	5'6"	Vinyl	566MDW Telephone Set and 6040KW Key.
D20H-50	100 133 560	5'6"	Vinyl	
D20H-51	100 133 578	5'6"	Vinyl	
D20H-53	100 133 602	5'6"	Vinyl	
D20H-54	100 133 610	5'6"	Vinyl	
D20H-56	100 133 628	5'6"	Vinyl	
D20H-58	100 133 636	5'6"	Vinyl	
D20H-60	100 133 669	5'6"	Vinyl	
D20H-61	100 133 685	5'6"	Vinyl	
D20J-3	101 026 508	5'6"	Vinyl	511FW Telephone Set.
D20J-50	101 248 177	5'6"	Vinyl	
D20J-51	101 026 516	5'6"	Vinyl	
D20J-53	101 199 354	5'6"	Vinyl	
D20J-56	101 026 524	5'6"	Vinyl	
D20J-58	101 026 532	5'6"	Vinyl	
D20J-60	101 026 557	5'6"	Vinyl	
D20J-61	101 026 565	5'6"	Vinyl	
D20K-3	101 026 599	5'6"	Vinyl	500ADW and 511HW Telephone Sets.
D20K-50	101 233 237	5'6"	Vinyl	
D20K-51	101 139 905	5'6"	Vinyl	
D20K-53	101 330 843	5'6"	Vinyl	
D20K-56	101 026 615	5'6"	Vinyl	
D20K-58	101 026 623	5'6"	Vinyl	
D20K-60	101 026 649	5'6"	Vinyl	Data Sets 401JW2 & JW3.
D20K-61	101 026 656	5'6"	Vinyl	
D24D-3	100 134 030	5'6"	Vinyl	
D24D-50	100 134 063	5'6"	Vinyl	
D24D-51	100 134 071	5'6"	Vinyl	
D24D-54	100 134 089	5'6"	Vinyl	
D24D-56	100 134 097	5'6"	Vinyl	
D24D-58	100 134 105	5'6"	Vinyl	
D24D-60	100 134 139	5'6"	Vinyl	2504BW and 3504BW Telephone Sets.
D24D-61	100 134 147	5'6"	Vinyl	
D24E-3	100 134 188	5'6"	Vinyl	
D24E-51	100 134 196	5'6"	Vinyl	
D24E-53	100 134 204	5'6"	Vinyl	
D24E-56	100 134 212	5'6"	Vinyl	
D24E-58	100 134 220	5'6"	Vinyl	
D24E-60	100 134 246	5'6"	Vinyl	
D24E-61	100 134 253	5'6"	Vinyl	

## CORDS

Code No.	Comcode	Lengths Available	Outer Covering	Used On
D26D-51	100 134 378	9'0"	Vinyl	AEW1 & AEW2 Telephone Bases.
D26D-58	100 134 394	9'0"	Vinyl	
D26D-60	100 134 410	9'0"	Vinyl	
D26D-61	100 134 428	9'0"	Vinyl	
D30D-3	100 135 276	5'6"	Vinyl	Data Auxiliary Set 804BW1, and 564HLW and 1564HLW Telephone Sets.
D30D-50	101 324 531	5'6"	Vinyl	
D30D-51	100 135 300	5'6"	Vinyl	
D30D-56	100 135 334	5'6"	Vinyl	
D30D-58	100 135 367	5'6"	Vinyl	
D30D-60	100 135 425	5'6"	Vinyl	
D30D-61	100 135 458	5'6"	Vinyl	Data Sets 202CW5, 6, 7, 8, and 564HAR, HBR, & HDR Telephone Sets.
D34B-3	100 135 698	5'6"	Vinyl	
D34B-50	100 135 722	5'6"	Vinyl	
D34B-51	100 135 748	5'6"	Vinyl	
D34B-56	100 135 789	5'6"	Vinyl	
D34B-58	100 135 797	5'6"	Vinyl	
D34B-60	100 135 839	5'6"	Vinyl	Data Sets 402DW1 & DW2.
D34B-61	100 135 862	5'6"	Vinyl	
D50C-3	101 571 446	5'6"	Vinyl	
D50C-50	100 136 894	5'6"	Vinyl	
D50C-51	100 136 936	5'6"	Vinyl	
D50C-56	100 136 977	5'6"	Vinyl	662AW, 664AW, 2662AW and 2664AW Telephone Sets.
D50C-58	100 136 985	5'6"	Vinyl	
D50C-60	100 137 025	5'6"	Vinyl	
D50C-61	100 137 066	5'6"	Vinyl	
D50K-3	100 137 314	5'6"	Vinyl	
D50K-50	101 414 340	5'6"	Vinyl	634DW and 638CW Telephone Sets.
D50K-51	100 137 322	5'6"	Vinyl	
D50K-53	100 137 330	5'6"	Vinyl	
D50K-56	100 137 348	5'6"	Vinyl	
D50K-58	100 137 355	5'6"	Vinyl	
D50K-60	100 137 371	5'6"	Vinyl	
D50K-61	100 137 389	5'6"	Vinyl	6040GW Key and 563HBW, 565HRW, 568HRW & HSW, and 2568HUU Telephone Sets.
D50L-3	100 137 413	8'0"	Vinyl	
D50L-51	100 137 421	8'0"	Vinyl	
D50L-56	100 137 439	8'0"	Vinyl	
D50L-58	100 137 447	8'0"	Vinyl	
D50L-60	100 137 462	8'0"	Vinyl	
D50L-61	100 137 470	8'0"	Vinyl	Data Auxiliary Sets 804AW1 & AW2
D50N-3	100 137 504	5'6"	Vinyl	
D50N-50	101 238 137	5'6"	Vinyl	
D50N-51	100 137 538	5'6"	Vinyl	
D50N-56	100 137 561	5'6"	Vinyl	
D50N-58	100 137 595	5'6"	Vinyl	
D50N-60	100 137 652	5'6"	Vinyl	565GKW Telephone Set and 6040HW Key.
D50N-61	100 137 686	5'6"	Vinyl	
D50R-61	100 137 868	5'6"	Vinyl	
D50S-3	100 137 876	5'6"	Vinyl	
D50S-50	101 332 443	5'6"	Vinyl	
D50S-51	100 137 884	5'6"	Vinyl	
D50S-56	100 137 892	5'6"	Vinyl	565GKW Telephone Set and 6040HW Key.
D50S-58	100 137 900	5'6"	Vinyl	
D50S-60	100 137 926	5'6"	Vinyl	
D50S-61	100 137 934	5'6"	Vinyl	

## CORDS

Code No.	Comcode	Lengths Available	Outer Covering	Used On
D50T-3	100 137 967	5'6"	Vinyl	565LKW Telephone and 6040JW Key.
D50T-50	101 334 944	5'6"	Vinyl	
D50T-51	100 137 975	5'6"	Vinyl	
D50T-56	100 137 983	5'6"	Vinyl	
D50T-58	100 137 991	5'6"	Vinyl	
D50T-60	100 138 015	5'6"	Vinyl	
D50T-61	100 138 023	5'6"	Vinyl	3568HTW & HHW and 3666AW1A & AW1B Telephone Sets.
D50W-3	100 138 056	5'6"	Vinyl	
D50W-50	101 319 937	5'6"	Vinyl	
D50W-51	100 138 064	5'6"	Vinyl	
D50W-53	100 138 072	5'6"	Vinyl	
D50W-56	100 138 080	5'6"	Vinyl	
D50W-58	100 138 098	5'6"	Vinyl	635DW and 639DW Telephone Sets.
D50W-60	100 138 114	5'6"	Vinyl	
D50W-61	100 138 122	5'6"	Vinyl	
D80B-3	100 138 296	8'0"	Vinyl	
D80B-51	100 138 304	8'0"	Vinyl	
D80B-56	100 138 312	8'0"	Vinyl	
D80B-58	100 138 320	8'0"	Vinyl	632CW Telephone Set.
D80B-60	100 138 346	8'0"	Vinyl	
D80B-61	100 138 353	8'0"	Vinyl	
D94B-3	100 138 429	8'0"	Vinyl	
D94B-51	100 138 437	8'0"	Vinyl	
D94B-56	100 138 445	8'0"	Vinyl	618BW, 630DW, 636CW, 680AW, and 2684AW Telephone Sets.
D94B-58	100 138 452	8'0"	Vinyl	
D94B-60	100 138 478	8'0"	Vinyl	
D94B-61	100 138 486	8'0"	Vinyl	
D120C-3	100 138 684	8'0"	Vinyl	
D120C-51	100 138 692	8'0"	Vinyl	
D120C-56	100 138 700	8'0"	Vinyl	2626AW1 Telephone Set.
D120C-58	100 138 718	8'0"	Vinyl	
D120C-60	100 138 734	8'0"	Vinyl	
D120C-61	100 138 742	8'0"	Vinyl	
D120F-3	100 138 825	8'0"	Vinyl	
D120F-51	101 247 088	8'0"	Vinyl	617BW15 & BW21 Telephone Sets.
D120F-58	101 247 096	8'0"	Vinyl	
D120F-60	101 247 104	8'0"	Vinyl	
D120F-61	101 247 112	8'0"	Vinyl	
D150K-61	100 139 153	8'0"	Vinyl	
D150P-51	100 838 267	8'0"	Vinyl	3640AW Telephone Set.
D150P-58	100 838 291	8'0"	Vinyl	
D150P-60	101 000 081	8'0"	Vinyl	
D150P-61	101 000 099	8'0"	Vinyl	
D200F-3	100 139 369	8'0"	Vinyl	
D200F-51	100 139 377	8'0"	Vinyl	608CW, 631DW, 637DW, 681AW and 2685AW Telephone Sets.
D200F-56	100 139 385	8'0"	Vinyl	
D200F-58	100 139 393	8'0"	Vinyl	
D200F-60	100 139 419	8'0"	Vinyl	
D200F-61	100 139 427	8'0"	Vinyl	
D250F-3	100 838 309	8'0"	Vinyl	3641AW Telephone Set.
D250F-51	100 838 317	8'0"	Vinyl	
D250F-53	100 838 325	8'0"	Vinyl	
D250F-56	100 838 333	8'0"	Vinyl	
D250F-58	100 838 341	8'0"	Vinyl	
D250F-60	101 000 131	8'0"	Vinyl	
D250F-61	101 000 149	8'0"	Vinyl	1013AW Hand Set
H2B-3	101 319 945	4'0"	Nylon	
H2C-3	101 319 952	0'10"	Nylon	1014AW Hand Set



## CORDS

Code No.	Comcode	Lengths Available	Outer Covering	Used On
H3N-9	100 139 906	1'6"	Textile	F1EW-3 Hand Set.
*H3AN-3	100 140 003	4'0"	Neoprene	F6ARW-3 Hand Set.
H3AS-3	100 140 094	9'0"	Vinyl	F1CW & GW Hand Sets.
H3AS-3	100 140 102	13'0"	Vinyl	
*H4BL-50	100 140 276	4'0"	Vinyl	G3ABW, G3ACW, and G3CRW Hand Sets.
*H4BL-50	100 140 292	9'0"	Vinyl	
*H4BL-50	101 792 331	13'0"	Vinyl	
*H4BL-51	100 140 300	4'0"	Vinyl	
*H4BL-51	100 140 334	9'0"	Vinyl	
*H4BL-51	101 790 640	13'0"	Vinyl	
*H4BL-52	100 140 342	4'0"	Vinyl	
*H4BL-52	100 140 367	9'0"	Vinyl	
*H4BL-52	101 790 657	13'0"	Vinyl	
*H4BL-56	100 140 375	4'0"	Vinyl	
*H4BL-56	100 140 383	9'0"	Vinyl	
*H4BL-56	101 790 665	13'0"	Vinyl	
*H4BL-58	100 140 391	4'0"	Vinyl	
*H4BL-58	100 140 409	9'0"	Vinyl	
*H4BL-58	101 790 673	13'0"	Vinyl	
*H4BL-60	100 140 433	4'0"	Vinyl	
*H4BL-60	100 140 466	9'0"	Vinyl	
*H4BL-60	100 140 482	13'0"	Vinyl	
*H4BL-61	100 140 490	4'0"	Vinyl	G5FRW Hand Set.
*H4BL-61	100 140 524	9'0"	Vinyl	
*H4BL-61	100 140 540	13'0"	Vinyl	F3BW-3 Hand Set.
*H4BM-3	100 140 599	4'0"	Vinyl	
H4BY-3	100 140 706	4'0"	Vinyl	
H4BY-3	100 140 748	9'0"	Vinyl	F2AW-3 Hand Set.
H4BY-3	100 140 763	13'0"	Vinyl	
H4CA-3	100 140 789	4'0"	Vinyl	G1AR-3, G3ARW, G3YW, G4BW, G5GRW and GRRW Hand Sets.
*H4CJ-3	100 141 035	4'0"	Vinyl	
*H4CJ-3	100 141 050	9'0"	Vinyl	
*H4CJ-3	100 141 076	13'0"	Vinyl	
*H4CJ-50	100 141 084	4'0"	Vinyl	
*H4CJ-50	100 141 100	9'0"	Vinyl	
*H4CJ-50	100 141 118	13'0"	Vinyl	
*H4CJ-51	100 141 126	4'0"	Vinyl	
*H4CJ-51	100 141 142	9'0"	Vinyl	
*H4CJ-51	100 141 159	13'0"	Vinyl	
*H4CJ-52	101 146 330	4'0"	Vinyl	
*H4CJ-52	101 499 135	9'0"	Vinyl	
*H4CJ-52	101 499 267	13'0"	Vinyl	
*H4CJ-53	100 141 167	4'0"	Vinyl	
*H4CJ-53	100 141 183	9'0"	Vinyl	
*H4CJ-53	100 141 191	13'0"	Vinyl	
*H4CJ-54	100 141 209	4'0"	Vinyl	
*H4CJ-54	100 141 225	9'0"	Vinyl	
*H4CJ-54	100 141 233	13'0"	Vinyl	
*H4CJ-56	100 141 241	4'0"	Vinyl	
*H4CJ-56	100 141 266	9'0"	Vinyl	
*H4CJ-56	100 141 274	13'0"	Vinyl	
*H4CJ-58	100 141 290	4'0"	Vinyl	
*H4CJ-58	100 141 316	9'0"	Vinyl	
*H4CJ-58	100 141 324	13'0"	Vinyl	

(\*) Retractable spring cord.



## CORDS

Code No.	Comcode	Lengths Available	Outer Covering	Used On
H4CJ-60	100 141 399	4'0"	Vinyl	G1AR-3, G3ARW, G3YW, G4BW, G5GRW and GRRW Hand Sets.
H4CJ-60	100 141 415	9'0"	Vinyl	
H4CJ-60	100 141 423	13'0"	Vinyl	
H4CJ-61	100 141 431	4'0"	Vinyl	
H4CJ-61	100 141 456	9'0"	Vinyl	
H4CJ-61	100 141 464	13'0"	Vinyl	G5CRW Hand Sets. G1J and G3AAW Hand Sets.
H4CM-3	100 141 936	7'0"	Vinyl	
H4CS-3	100 142 132	1'2"	Vinyl	G6BW, G7ARW and G8BW Hand Sets.
H4CT-3	100 142 157	4'0"	Vinyl	
H4CT-3	101 000 172	13'0"	Vinyl	
H4CT-50	100 142 181	4'0"	Vinyl	
H4CT-50	101 319 960	13'0"	Vinyl	
H4CT-51	100 142 199	4'0"	Vinyl	
H4CT-51	101 319 978	13'0"	Vinyl	
H4CT-53	100 142 207	4'0"	Vinyl	
H4CT-53	101 319 986	13'0"	Vinyl	
H4CT-54	100 142 223	4'0"	Vinyl	
H4CT-54	101 622 934	13'0"	Vinyl	
H4CT-56	100 142 231	4'0"	Vinyl	
H4CT-56	101 319 994	13'0"	Vinyl	
H4CT-58	100 142 249	4'0"	Vinyl	
H4CT-58	101 414 506	13'0"	Vinyl	
H4CT-60	100 142 272	4'0"	Vinyl	
H4CT-60	101 320 018	13'0"	Vinyl	
H4CT-61	100 142 298	4'0"	Vinyl	G36W & G5MRW Hand Sets.
H4CT-61	101 320 026	13'0"	Vinyl	
H4CU-51	100 142 322	4'0"	Vinyl	
H4CU-51	100 142 348	9'0"	Vinyl	
H4CU-58	100 142 363	4'0"	Vinyl	
H4CU-58	100 142 371	9'0"	Vinyl	
H4CU-60	100 142 389	4'0"	Vinyl	220AW Type Telephone Sets.
H4CU-60	100 142 397	9'0"	Vinyl	
H4CU-61	100 142 405	4'0"	Vinyl	
H4CU-61	100 142 413	9'0"	Vinyl	
H4DB-3	100 984 525	5'6"	Vinyl	
H4DB-3	101 000 198	9'0"	Vinyl	
H4DB-3	101 000 206	13'0"	Vinyl	
H4DB-50	101 000 214	5'6"	Vinyl	
H4DB-50	101 000 222	9'0"	Vinyl	
H4DB-50	101 000 230	13'0"	Vinyl	
H4DB-51	100 984 533	5'6"	Vinyl	
H4DB-51	101 000 255	9'0"	Vinyl	
H4DB-51	101 000 263	13'0"	Vinyl	
H4DB-53	101 000 271	5'6"	Vinyl	
H4DB-53	101 000 289	9'0"	Vinyl	
H4DB-53	101 000 297	13'0"	Vinyl	
H4DB-54	101 000 305	5'0"	Vinyl	
H4DB-54	101 000 313	9'0"	Vinyl	
H4DB-54	101 000 321	13'0"	Vinyl	
H4DB-56	100 984 541	5'6"	Vinyl	
H4DB-56	101 000 347	9'0"	Vinyl	
H4DB-56	101 000 354	13'0"	Vinyl	
H4DB-58	100 984 558	5'6"	Vinyl	
H4DB-58	101 000 370	9'0"	Vinyl	
H4DB-58	101 000 388	13'0"	Vinyl	

Note: All cords listed on this page are retractable spring cords except H4CS-3.

## CORDS

Code No.	Comcode	Lengths Available	Outer Covering	Used On
H4DB-60	100 984 574	5'6"	Vinyl	220AW Type Telephone Sets.
H4DB-60	101 000 438	9'0"	Vinyl	
H4DB-60	101 000 446	13'0"	Vinyl	
H4DB-61	100 984 582	5'6"	Vinyl	
H4DB-61	101 000 461	9'0"	Vinyl	
H4DB-61	101 000 479	13'0"	Vinyl	G10DW Hand Set.
H4DD-3	101 125 623	4'0"	Vinyl	
H4DD-3	101 125 722	13'0"	Vinyl	
H4DD-51	101 125 631	4'0"	Vinyl	
H4DD-51	101 125 730	13'0"	Vinyl	
H4DD-53	101 125 649	4'0"	Vinyl	
H4DD-53	101 125 748	13'0"	Vinyl	
H4DD-56	101 125 656	4'0"	Vinyl	
H4DD-56	101 125 755	13'0"	Vinyl	
H4DD-58	101 125 664	4'0"	Vinyl	
H4DD-58	101 125 763	13'0"	Vinyl	
H4DD-60	101 125 680	4'0"	Vinyl	
H4DD-60	101 125 789	13'0"	Vinyl	
H4DD-61	101 125 698	4'0"	Vinyl	
H4DD-61	101 125 797	13'0"	Vinyl	
H5AA-3	100 142 967	5'6"	Vinyl	1220AW Hand Telephone Set.
H5AA-3	100 142 975	9'0"	Vinyl	
H5AA-3	100 142 983	13'0"	Vinyl	
H5AA-50	100 142 991	5'6"	Vinyl	
H5AA-50	100 143 007	9'0"	Vinyl	
H5AA-50	100 143 015	13'0"	Vinyl	
H5AA-51	100 143 023	5'6"	Vinyl	
H5AA-51	100 143 031	9'0"	Vinyl	
H5AA-51	100 143 049	13'0"	Vinyl	
H5AA-53	100 143 056	5'6"	Vinyl	
H5AA-53	100 143 064	9'0"	Vinyl	
H5AA-53	100 143 072	13'0"	Vinyl	
H5AA-54	100 143 080	5'6"	Vinyl	
H5AA-54	100 143 098	9'0"	Vinyl	
H5AA-54	100 143 106	13'0"	Vinyl	
H5AA-56	100 143 114	5'6"	Vinyl	
H5AA-56	100 143 122	9'0"	Vinyl	
H5AA-56	100 143 130	13'0"	Vinyl	
H5AA-58	100 143 148	5'6"	Vinyl	
H5AA-58	100 143 155	9'0"	Vinyl	
H5AA-58	100 143 163	13'0"	Vinyl	
H5AA-60	100 143 205	5'6"	Vinyl	
H5AA-60	100 143 213	9'0"	Vinyl	
H5AA-60	100 142 221	13'0"	Vinyl	
H5AA-61	100 143 239	5'6"	Vinyl	
H5AA-61	100 143 247	9'0"	Vinyl	
H5AA-61	100 143 254	13'0"	Vinyl	
H5AB-3	100 143 320	4'0"	Vinyl	G5ARW Hand Set.
H5P-3	100 142 561	4'0"	Vinyl	G5ERW & G5HRW Hand Sets.
H5P-50	100 142 611	4'0"	Vinyl	
H5P-51	100 142 629	4'0"	Vinyl	
H5P-52	100 142 637	4'0"	Vinyl	
H5P-53	100 142 645	4'0"	Vinyl	
H5P-54	100 142 652	4'0"	Vinyl	
H5P-55	100 142 660	4'0"	Vinyl	

Note: All cords listed on this page are retractable spring cords.

## CORDS

Code No.	Comcode	Lengths Available	Outer Covering	Used On
*H5P-56	100 142 678	4'0"	Vinyl	G5ERW & G5HRW Hand Sets.
*H5P-58	100 142 686	4'0"	Vinyl	
*H5P-60	100 142 702	4'0"	Vinyl	
*H5P-61	100 142 736	4'0"	Vinyl	
*H5Y-3	100 142 959	3'6"	Vinyl	G5NR Hand Set.
*H6E-3	100 143 445	4'0"	Vinyl	G10AW & BW Hand Sets.
*H6E-3	100 143 460	9'0"	Vinyl	
*H6E-3	100 143 478	13'0"	Vinyl	
*H6E-50	100 143 486	4'0"	Vinyl	
*H6E-50	100 143 494	9'0"	Vinyl	
*H6E-50	100 143 502	13'0"	Vinyl	
*H6E-51	100 143 510	4'0"	Vinyl	
*H6E-51	100 143 528	9'0"	Vinyl	
*H6E-51	100 143 536	13'0"	Vinyl	
*H6E-53	100 143 544	4'0"	Vinyl	
*H6E-53	100 143 551	9'0"	Vinyl	
*H6E-53	100 143 568	13'0"	Vinyl	
*H6E-56	100 143 577	4'0"	Vinyl	
*H6E-56	100 143 585	9'0"	Vinyl	
*H6E-56	100 143 593	13'0"	Vinyl	
*H6E-58	100 143 601	4'0"	Vinyl	
*H6E-58	100 143 619	9'0"	Vinyl	
*H6E-58	100 143 627	13'0"	Vinyl	
*H6E-60	100 143 668	4'0"	Vinyl	
*H6E-60	100 143 676	9'0"	Vinyl	
*H6E-60	100 143 684	13'0"	Vinyl	
*H6E-61	100 143 692	4'0"	Vinyl	
*H6E-61	100 143 700	9'0"	Vinyl	
*H6E-61	100 143 718	13'0"	Vinyl	
*H6F-3	100 143 783	4'0"	Vinyl	G5JRW & LRW and G10CW Hand Sets.
*H6F-3	101 415 685	13'0"	Vinyl	
*H6F-61	100 143 791	4'0"	Vinyl	
*H6F-61	100 415 743	13'0"	Vinyl	
L2Y	100 143 965	4'6"	Textile	52EW Head Telephone Set.
L3K-3	100 144 005	5'0"	Vinyl	53NW Head Telephone Set.
L4BC-3	100 144 609	1'10 1/2"	Vinyl	53BW Head Telephone Set.
L4BC-3	100 144 617	3'0"	Vinyl	53JRW Head Telephone Set.
*L4BS	100 145 184	5'0"	Vinyl	
*L4BU	100 145 218	12'0"	Vinyl	53MRW & PRW Head Telephone Sets.
*L4BW-3	100 145 234	9'0"	Vinyl	
*L4BW-3	100 145 242	15'0"	Vinyl	
*L4BY-3	100 145 259	10'0"	Vinyl	52LW Head Telephone Set.
*L4BY-56	101 788 578	10'0"	Vinyl	
*L4CA-3	100 145 267	7'0"	Vinyl	52NW Head Telephone Set.
*L4CA-3	100 145 275	15'0"	Vinyl	
*L4CA-56	101 788 586	7'0"	Vinyl	
*L4CA-56	101 788 594	15'0"	Vinyl	
L4CC-3	100 145 309	5'0"	Vinyl	52MW Head Telephone Set.
L4CC-3	100 145 317	7'0"	Vinyl	52TW Head Telephone Set.
*L4CD	100 145 333	18'0"	Vinyl	
*L6H-3	100 145 440	7'0"	Vinyl	52RRW Head Telephone Set.
*L6H-3	100 145 457	12'0"	Vinyl	

(\*) Retractable spring cord.



## CORDS

Code No.	Comcode	Lengths Available	Outer Covering	Used On
M2EP	100 146 554	5'6"	Vinyl	603AW1 and AW2 Data Sets.
M2ER-51	101 415 982	11'0"	Vinyl	261A Switch.
M2ER-58	100 847 441	6'0"	Vinyl	
M2ER-58	101 217 784	11'0"	Vinyl	
M2ER-60	100 847 458	6'0"	Vinyl	
M2ER-60	101 217 768	11'0"	Vinyl	
M2ER-61	100 847 466	6'0"	Vinyl	
M2ER-61	101 218 287	11'0"	Vinyl	270A Switch.
M4AJ-3	101 473 494	4'0"	Vinyl	
M4AK	101 415 990	10'0"	Vinyl	270A Switch.
M12M-61	101 026 680	6'0"	Vinyl	1066D4BW Dial.
M26D-61	100 148 519	0'5"	Vinyl	901B Test Set.
M26F-61	100 148 550	0'5"	Vinyl	901B Test Set.
P2AS-3	100 150 804	7'6"	Textile	79D Test Set.
R2FK-3	100 157 346	5'6"	Vinyl	760AW Loudspeaker.
R2FK-49	100 157 387	5'6"	Vinyl	
R2FK-50	100 157 395	5'6"	Vinyl	
R2FK-51	100 157 403	5'6"	Vinyl	
R2FK-53	100 157 429	5'6"	Vinyl	
R2FK-54	100 157 437	5'6"	Vinyl	
R2FK-56	100 157 460	5'6"	Vinyl	
R2FK-58	100 157 478	5'6"	Vinyl	
R2FK-60	100 157 502	5'6"	Vinyl	
R2FK-61	100 157 536	5'6"	Vinyl	
*R2FL-51	100 157 577	4'3 1/2"	Vinyl	731AW Receiver.
*R2FL-61	100 157 585	4'3 1/2"	Vinyl	
W1AN-3	100 164 096	3'0"	Vinyl	120A Test Set.
W2BJ	100 164 193	6'0"	Textile	91A Test Set.
W2CC-3	100 164 540	8'0"	Vinyl	120A Test Set.
W2CG-3	100 164 599	6'0"	Tinsel	93A Test Set.
W2CJ-3	100 164 631	1'0"	Textile	67C Test Set.
*W2FC-3	100 165 471	4'0"	Vinyl	120A Test Set.
W3AG-3	100 166 107	20'0"	Vinyl	96A & B Test Sets.
W3AM-3	100 166 198	22'0"	Vinyl	105D, 110A, and 111A Test Sets.
W6E-3	100 167 139	5'0"	Vinyl	97A Test Set.
W9A-3	100 167 378	10'0"	Textile	Data Set 301BW2.

(\*) Retractable spring cord.



## CORDS

TABLE II

Data Set	Mounting Cord	Power Cord
103FW2	D4BM-61	KS-14532L16
103GW1, 2, 4	D10P-61	—
201AW3 & 4	D25C-61	KS-14532L15
201BW1 & 2	D25C-61	KS-14532L15
202CW5, 6, 7 & 8	{ D34B-61 (4-wire) D6AA-61 (2-wire)	KS-14532L16
301BW2	W9A	KS-14532L15
401AW1L2	D10M	—
401EW2 & 3	D6AA-61	—
401JW2 & 3	{ D24D-61 D6AA-61	KS-14532L16
402CW Type	D6AA-61	KS-14532L16
402DW1 & 2	D50C-61	KS-14532L16
601AW1 & BW1	D10P-61	—
602CW1 & CW2	D6AA-61	KS-14532L16
603AW1 & AW2	D4BJ-61, D4BP	M2EP
603BW1	D6AA-61	KS-14532L16
Data Auxiliary Set		
801AW5 & 6	D10P-61	KS-14532L16
804AW1 & 2	D50R	—
804BW1	D30D-61	—
804GW1 & 2	D4BJ	—

TABLE III

Hand Set	Cord
1011AW & BW	W2BT
1011GW	H2A
F1CW-3	H3AS-3
F1EW-3	H3N-9
F1GW-3	H3AS-3
F2AW-3	H4CA-3
F3BW-3	H4BY-3
F6ARW-3	H3AN-3
G1J-3	H4CS-3
G1AR-3	H4CJ-3
G3AAW	H4CS
G3ABW	H4BL
G3ACW	H4BL
G3ARW Type	H4CJ Type
G3BRW	H4CJ
G3CRW	H4BL
G3LW	H4CU
G3YW	H4CJ
G4BW	H4CJ
G5ARW	H5AB
G5CRW	H4CM
G5ERW	H5P
G5FRW	H4BM
G5GRW	H4CJ
G5HRW Type	H5P Type
G5JRW-3	H6F-3
G5LRW-61	H6F-61

## Hand Set

G5MRW-51  
G5NRW-3  
G5PRW  
G5RRW Type  
G6BW Type  
G7ARW Type  
G8BW  
G10AW Type  
G10BW Type  
G10CW Type  
G10DW Type

## Cord

H4CU-51  
H5Y-3  
H6E  
H4CJ Type  
H4CT Type  
H4CT Type  
H4CT  
H6E Type  
H6E Type  
H6F Type  
H4DD Type

TABLE IV

## Hand Telephone Set

220AW Type  
223AW-52  
1220AW

## Cord

H4DB Type  
D14N-61  
H5AA Type

## Head Telephone Set

52EW  
52LW  
52MW  
52NW  
52SW  
52TW  
52RRW  
53BW  
53NW  
53JRW  
53LRW  
53MRW  
53PRW

L2Y  
L4BY  
L4CC  
L4CA  
L4CC  
L4CD  
L6H  
L4BC  
L3K  
L4BS  
L4BU  
L4BU & BW  
L4BU & BW

TABLE V

## Telephone Set

500ABW  
500ADW  
500CRW  
500DRW  
500ERW  
500FRW  
500MRW  
500RRW  
500SRW  
500WRW  
500YRW  
501CRW  
501DRW  
502BRW  
510BRW  
510ERW

## Cord

D16G  
D20K  
D3BN, D3BU  
D3BN, D3BU  
D3BN, D3BU  
D3BN, D3BU  
D4BJ, D4BP  
D10P  
D10P  
D3BN, D3BU  
D3BN, D3BU  
D3BN, D3BU  
D3BN, D3BU  
D6AA  
D4BJ, D4BP  
D6AA

## CORDS

TABLE V (Continued)

Telephone Set	Cord	Telephone Set	Cord
510FRW	D6AA	2684AW1	D120C
511FW	D20J	2684AW2	D120C
511HW	D20K	2684AW4	D120C
513BW-61	D10N-61	2684AW6	D120C
514BW	D10P	2684AW7	D120C
515BW	D6AA	2684AW9	D120C
563HBW	D50N	2684AW10	D120C
564HAR	D34B	2684AW11	D120C
564HBR	D34B	2684AW12	D120C
564HDR	D34B	2684AW13	D120C
564HLW	D30D	2684AW14	D120C
565GKW	D50S	2684AW15	D120C
565HKW	D50N	2685AW1	D200F
565LKW	D50T	2685AW2	D200F
566MDW	D20H	2685AW3	D200F
568HRW	D50N	2685AW4	D200F
568HSW	D50N	2685AW5	D200F
591ARW	D3BN, D3BU	2685AW9	D200F
591BRW	D3BN, D3BU	2685AW10	D200F
*608CW	D200F	2685AW11	D200F
*617BW15-61	D150K	2685AW12	D200F
*617BW21-61	D150K	2685AW13	D200F
*618BW	D120C	2685AW14	D200F
*630DW	D120C	2685AW15	D200F
*631DW	D200F	2685AW16	D200F
*632CW	D94B	2685AW17	D200F
*634DW	D50L	2685AW18	D200F
*635DW	D80B	2685AW19	D200F
*636CW	D120C	2714AW Type	D14L
*637DW	D200F	3504BW	D24E
*638CW	D50L	3568HTW	D50W
*639DW	D80B	3568HHW	D50W
660AW	D6AF	*3640AW	D150P
662AW	D50K	*3641AW	D250F
663AW	D6AF	3666AW1A	D50W
664AW	D50K	3666AW1B	D50W
680AW	D120C		
681AW	D200F		
702BW	D5AK		
702DW	D5AK		
712BW	D14L		
1500DW	D3BN, D3BU		
1514BW-3	D10P-3		
1564HLW	D30D		
2504BW	D24E		
2568HUW	D50N		
2626AW1-3	D120F		
2660AW1	D3BN		
2660AW2	D6AF		
2660AW3	D10R		
2660AW4	D10R		
2662AW Type	D50K Type		
2663AW1	D6AF		
2664AW Type	D50K Type		

\*CALL DIRECTOR

## CORDS

TABLE VI

### Miscellaneous Apparatus

Bases	Cord
AEW1	D26D
AEW2	D26D
Dial	Cord
1008BW	D10R
1066A3AW	D14M
1066A4BW	D14M
1066D4BW	M12M
Indicator	Cord
14BW	D4BD
15 Type	D3BU, D3BP
17 Type	D3BU, D4BD
18 Type	D4BD
20BW-49	D6W
21C-49	D3BU
Key	Cord
6040KW	D20H
6040JW	D50T
6040GW	D50N
6040HW	D50S
Loudspeaker	Cord
760AW Type	R2FK Type
Receiver	Cord
731AW	R2FL
Loudspeaker Set	Cord
107AW	D4BM
Subscriber Set	Cord
694AW	D4BM
694BW	D4BM

Test Set	Cord
67C	W2CJ
79D	P2AS
91A	W2BJ
93A	W2CG
96A	W3AG
96B	W3AG
97A	W6E
105D	W3AM
110A	W3AM
111A	W3AM
120A	W2CC, W1AN, W2FC
901B	M26D, M26F

Switch	Cord
261A	M2ER
270A	M4AJ, M4AK

## CORDS

## Patching

The following is a list of schematics for each type patching cord, which indicates the termination on each end of the cord and the cord color. This, in conjunction with the information following the schematics, describes the cord.

## 1P Type



Fig. 1



Fig. 2



Fig. 3



Fig. 4



Fig. 5

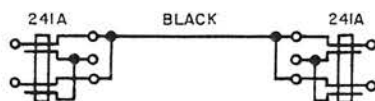


Fig. 6



Fig. 7

## 2P Type

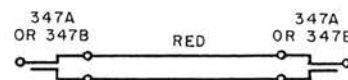


Fig. 1

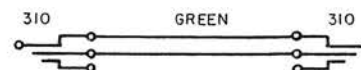


Fig. 2



Fig. 3

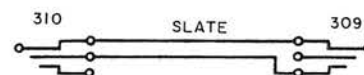


Fig. 4

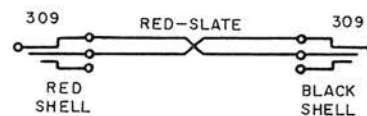


Fig. 5

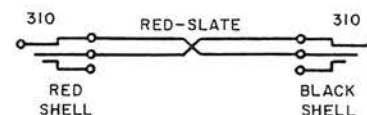


Fig. 6

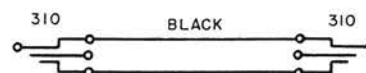


Fig. 7

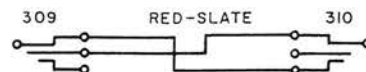


Fig. 8



## CORDS

## Patching

## 2P Type (Continued)

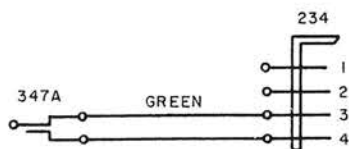


Fig. 9

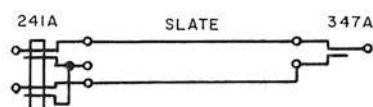


Fig. 10

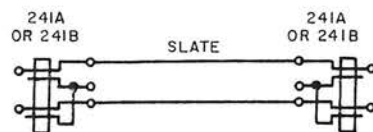


Fig. 11

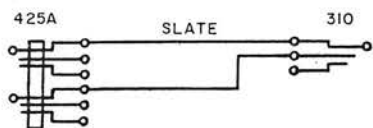


Fig. 12

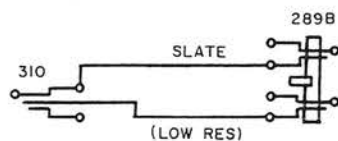


Fig. 13



Fig. 14

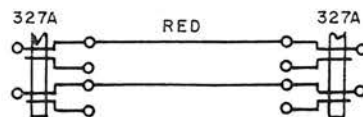


Fig. 15

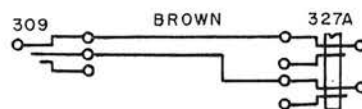


Fig. 16

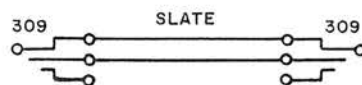


Fig. 17

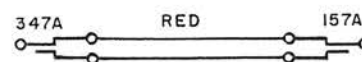


Fig. 18

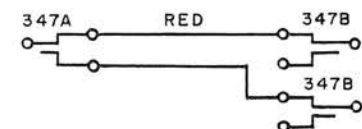


Fig. 19

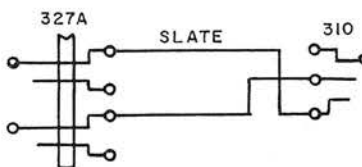


Fig. 20

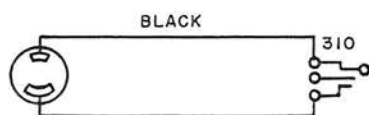


Fig. 21

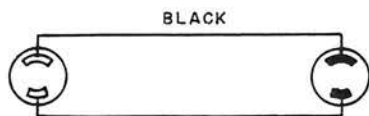


Fig. 22

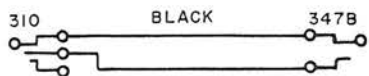


Fig. 23

# CORDS Patching

## 2P Type (Continued)

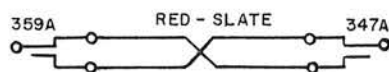


Fig. 24

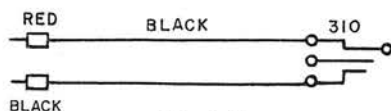


Fig. 25



Fig. 26

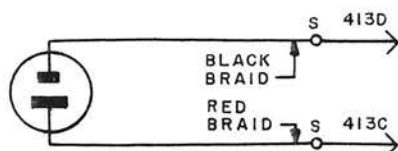


Fig. 27

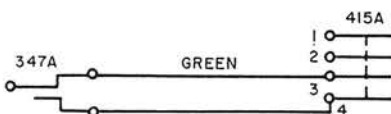


Fig. 28

## 3P Type

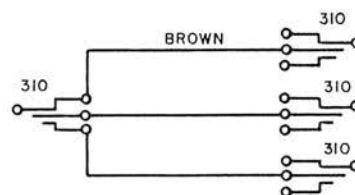


Fig. 1

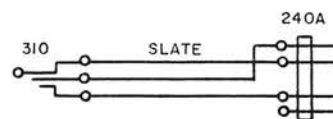


Fig. 2

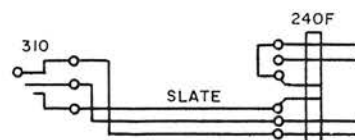


Fig. 3

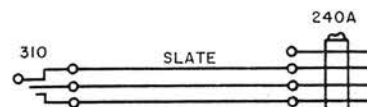


Fig. 4

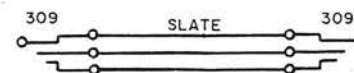


Fig. 5

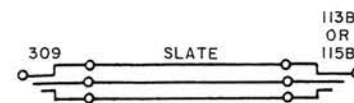


Fig. 6

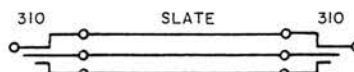


Fig. 7

# CORDS

## Patching

## 3P Type (Continued)

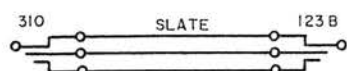


Fig. 8

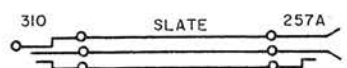


Fig. 9

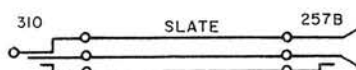


Fig. 10

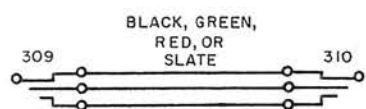


Fig. 11

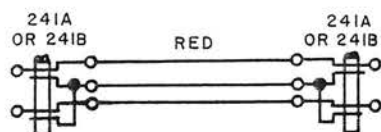


Fig. 12

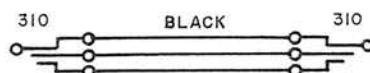


Fig. 13

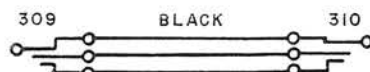


Fig. 14

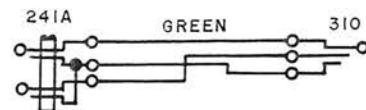


Fig. 15

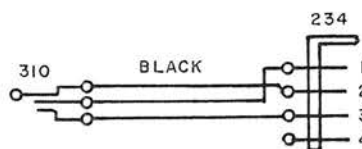


Fig. 16

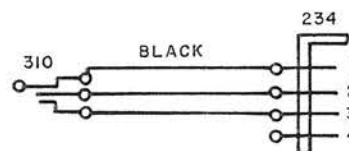


Fig. 17

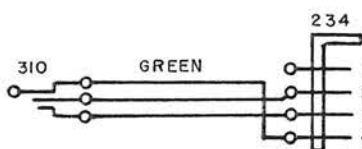


Fig. 18

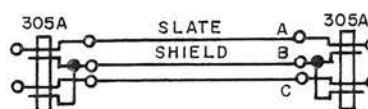


Fig. 19

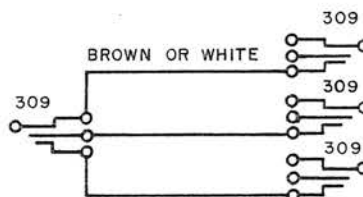


Fig. 20

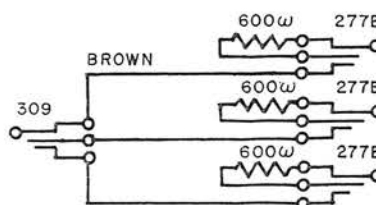


Fig. 21

# CORDS

## Patching

3P Type (Continued)

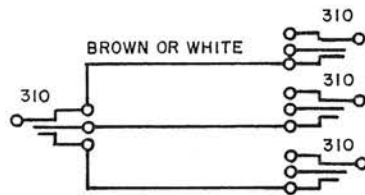


Fig. 22

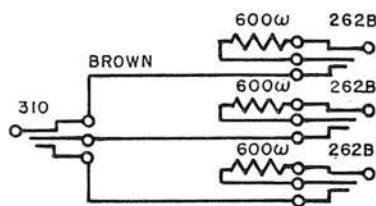


Fig. 23

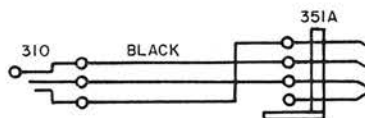


Fig. 24

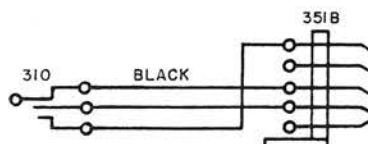


Fig. 25

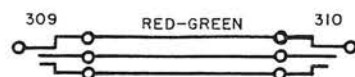


Fig. 26

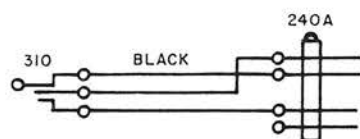


Fig. 27

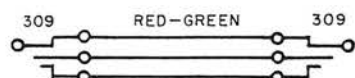


Fig. 28

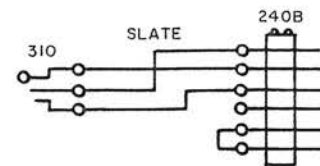


Fig. 29

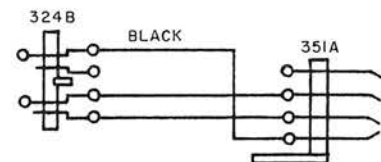


Fig. 30

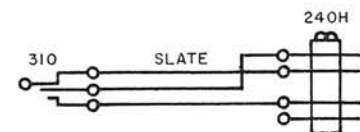


Fig. 31

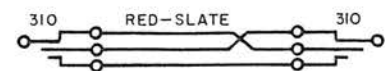


Fig. 32

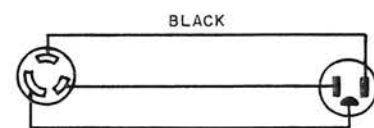


Fig. 33

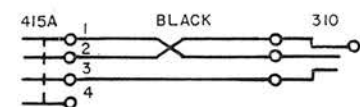


Fig. 34

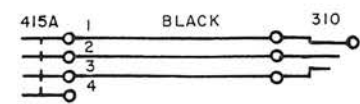


Fig. 35

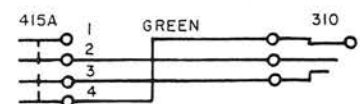


Fig. 36



# CORDS Patching

4P Type

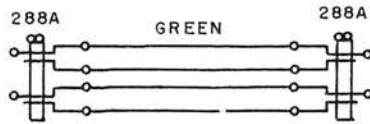


Fig. 1

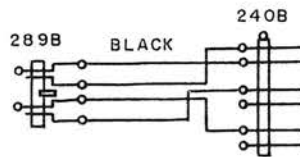


Fig. 2

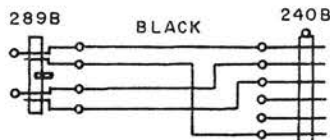


Fig. 3

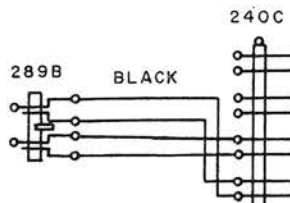


Fig. 4

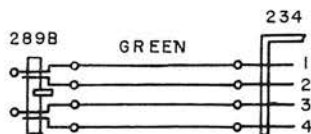


Fig. 5

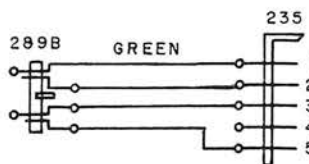


Fig. 6

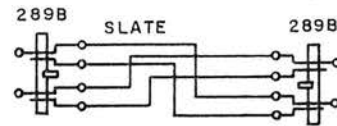


Fig. 7

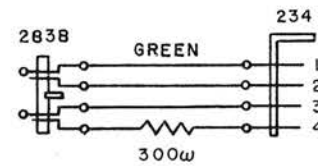


Fig. 8

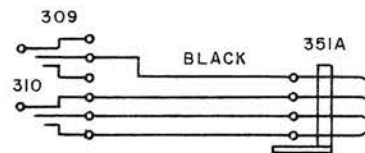


Fig. 9

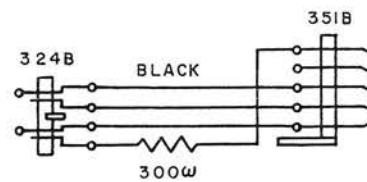


Fig. 10

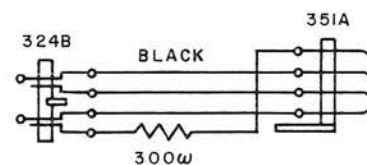


Fig. 11

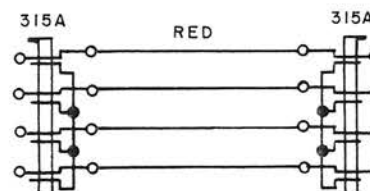


Fig. 12

# CORDS

## Patching

### 4P Type (Continued)

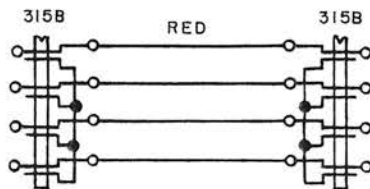


Fig. 13

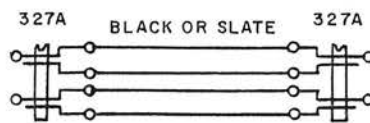


Fig. 14

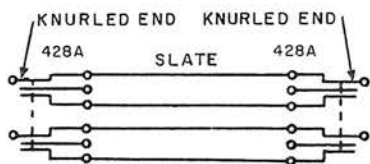


Fig. 15

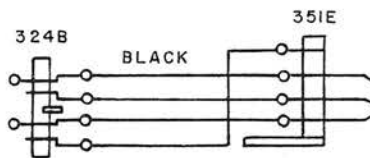


Fig. 16

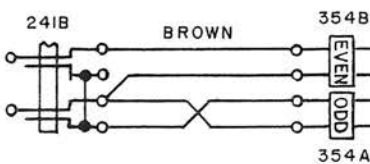


Fig. 17

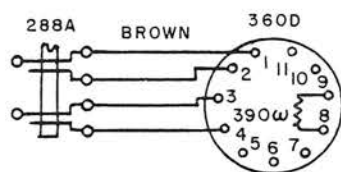


Fig. 18

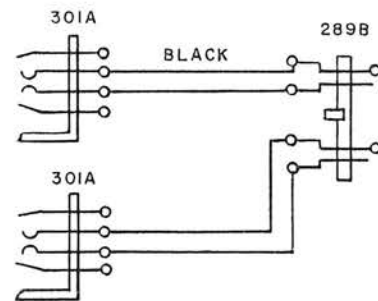


Fig. 19

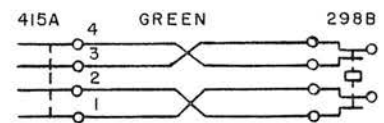


Fig. 20

### 5P Type

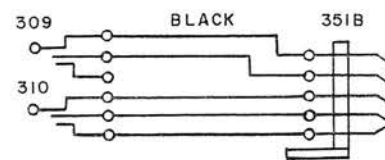


Fig. 1

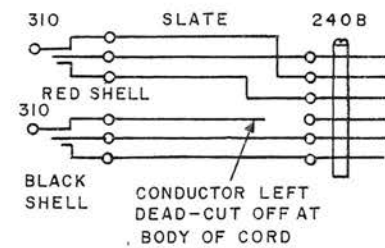


Fig. 2

## CORDS

## Patching

## 5P Type (Continued)

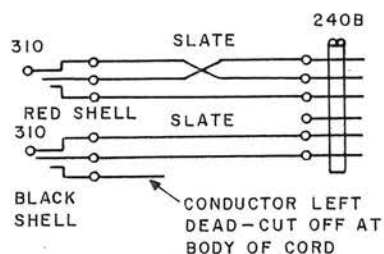


Fig. 3

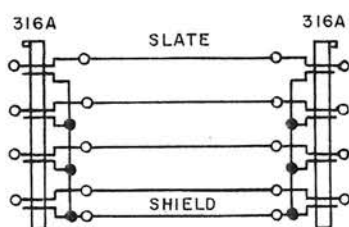


Fig. 4

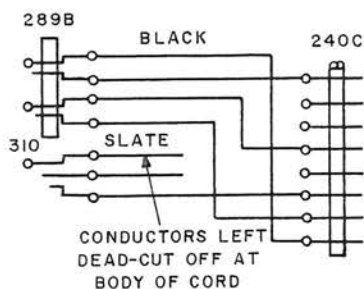


Fig. 5

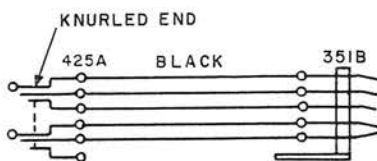


Fig. 6

## 6P Type

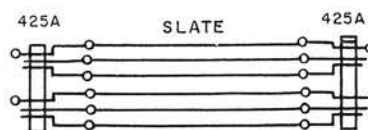


Fig. 1

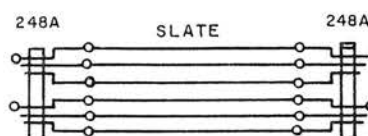


Fig. 2

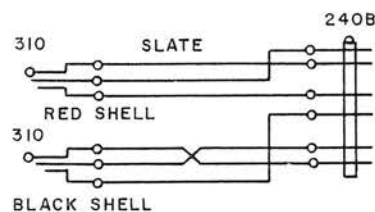


Fig. 3

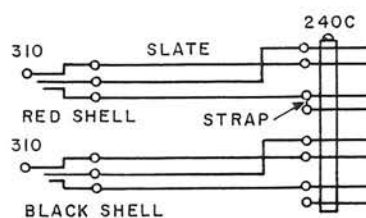


Fig. 4

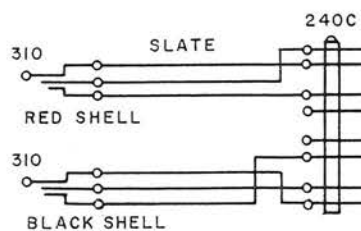


Fig. 5

# CORDS Patching

## 6P Type (Continued)

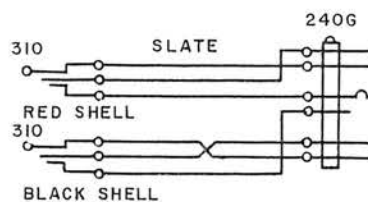


Fig. 6

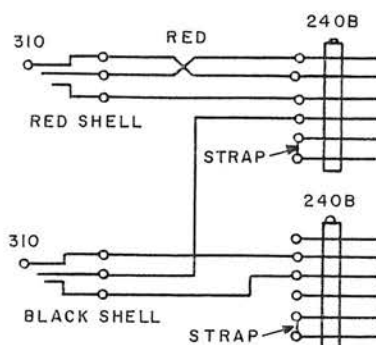


Fig. 7

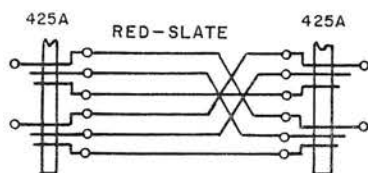


Fig. 8

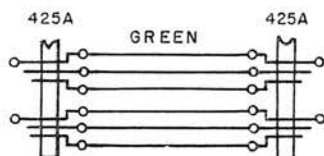


Fig. 9

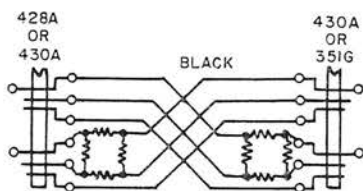
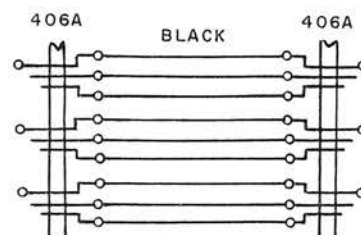


Fig. 10

## 9P Type



## 1W Type



Fig. 1



Fig. 2



Fig. 3



Fig. 4



Fig. 5



# CORDS Patching

## 1W Type (Continued)



Fig. 6



Fig. 7



Fig. 8



Fig. 9



Fig. 10



Fig. 11



Fig. 12



Fig. 13



Fig. 14



Fig. 15

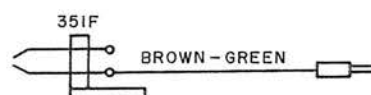


Fig. 16

## 2W Type

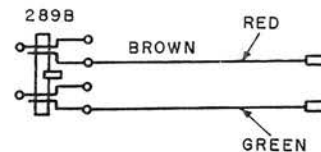


Fig. 1

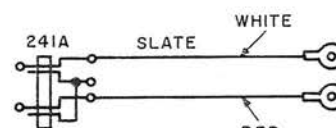


Fig. 2

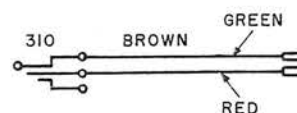


Fig. 3

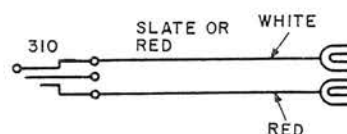


Fig. 4

# CORDS Patching

## 2W Type (Continued)

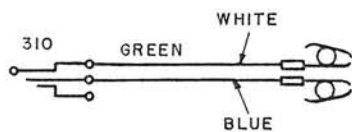


Fig. 5

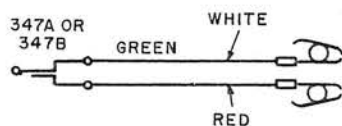


Fig. 6

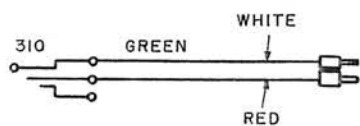


Fig. 7

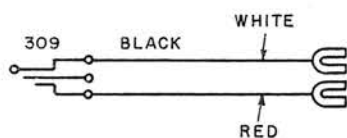


Fig. 8

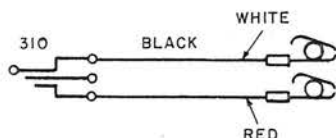


Fig. 9

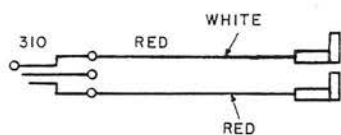


Fig. 10

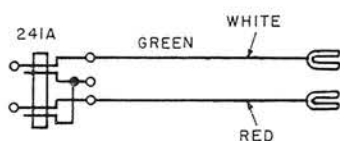


Fig. 11

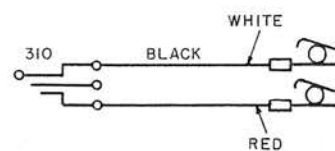


Fig. 12

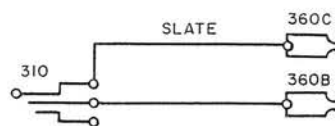


Fig. 13

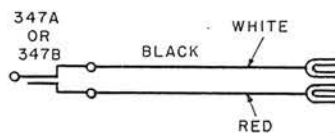


Fig. 14

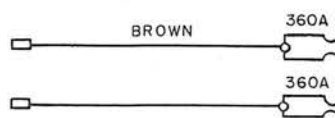


Fig. 15

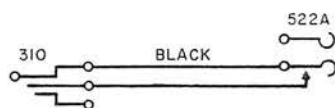


Fig. 16

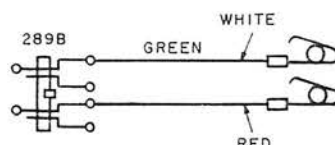


Fig. 17

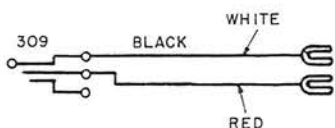


Fig. 18

## CORDS

### Patching

#### 2W Type (Continued)

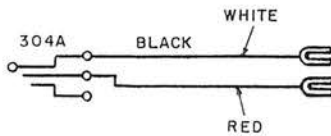


Fig. 19

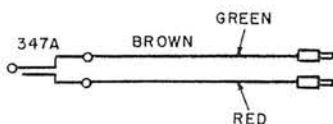


Fig. 20

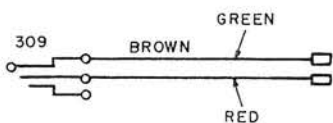


Fig. 21

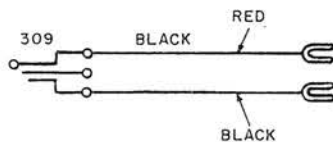


Fig. 22

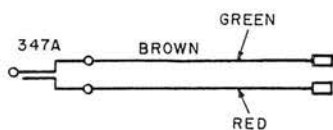


Fig. 23

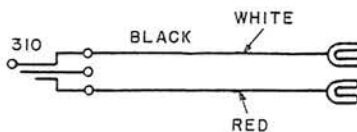


Fig. 24

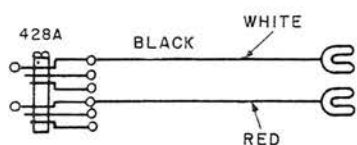


Fig. 25

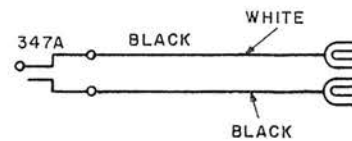


Fig. 26

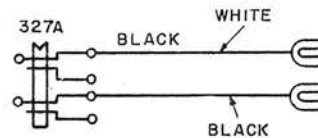


Fig. 27

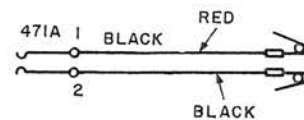


Fig. 28

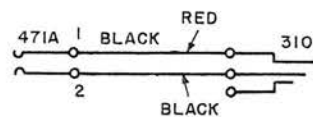


Fig. 29

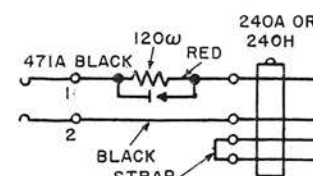


Fig. 30

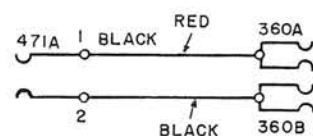


Fig. 31

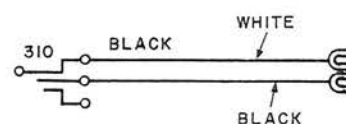


Fig. 32

## CORDS

## Patching

## 2W Type (Continued)

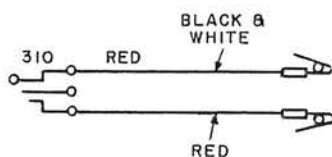


Fig. 33

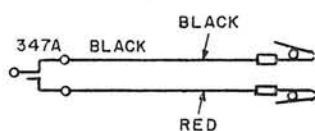


Fig. 34

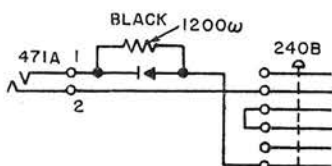


Fig. 35

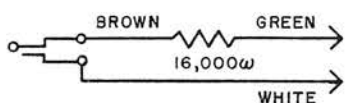


Fig. 36

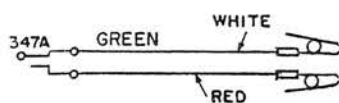


Fig. 37

## 3W Type

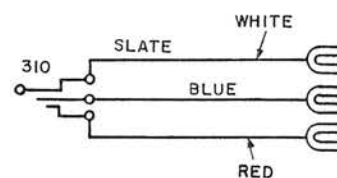


Fig. 1

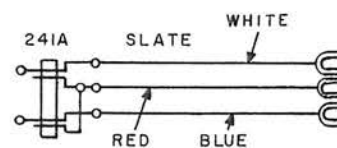


Fig. 2

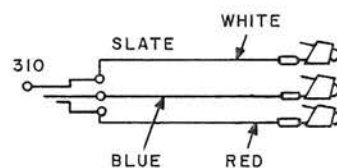


Fig. 3

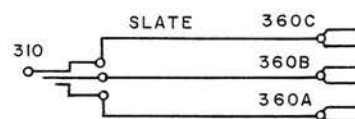


Fig. 4

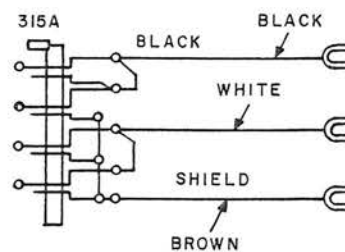


Fig. 5



## CORDS

## Patching

3W Type (Continued)

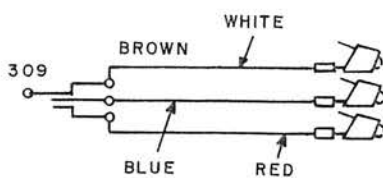


Fig. 6

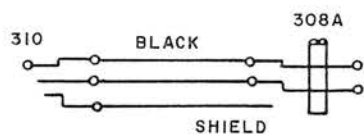


Fig. 7

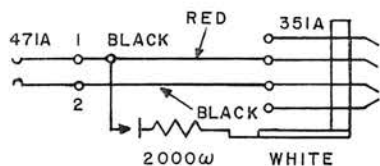


Fig. 8

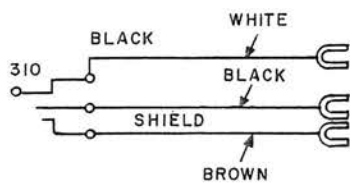


Fig. 9

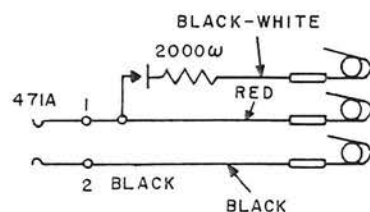


Fig. 10

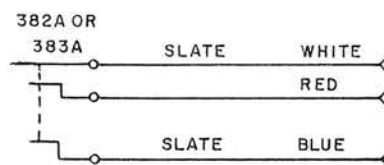


Fig. 11

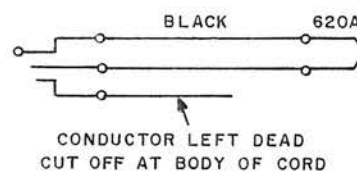


Fig. 12

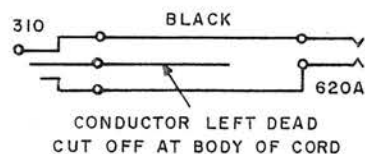


Fig. 13

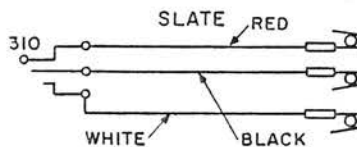


Fig. 14

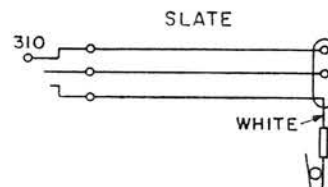


Fig. 15

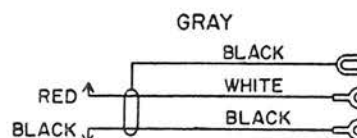


Fig. 16

## CORDS

## Patching

4W Type

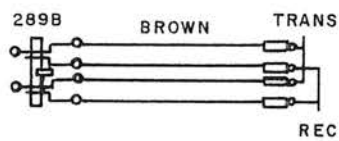


Fig. 1

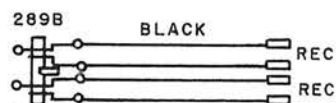


Fig. 2

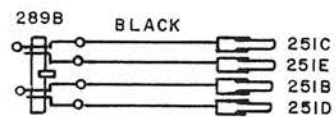


Fig. 3

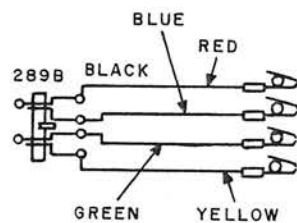


Fig. 4

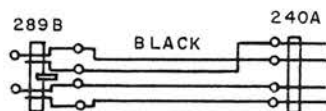


Fig. 5

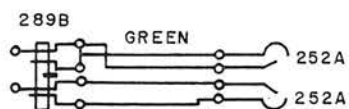


Fig. 6

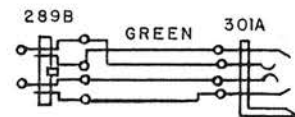


Fig. 7

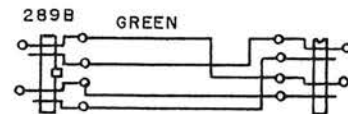


Fig. 8

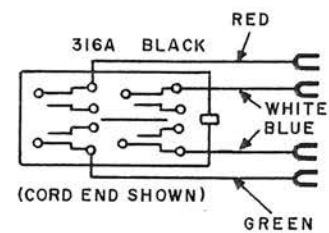


Fig. 9

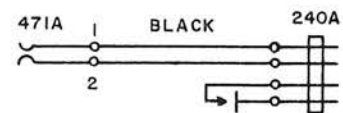


Fig. 10

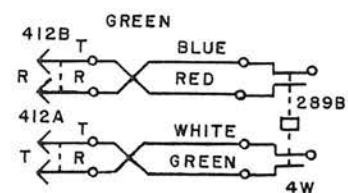


Fig. 11

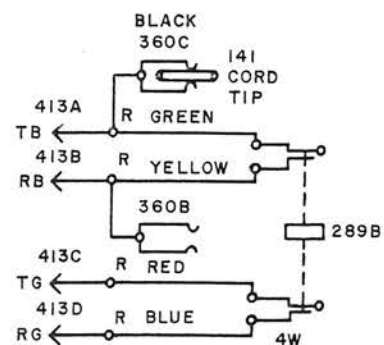


Fig. 12

## CORDS

## Patching

6W Type

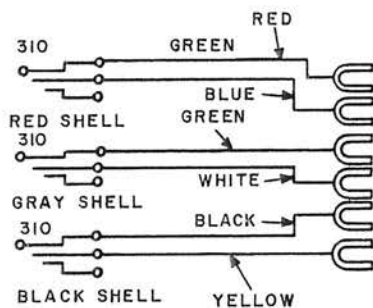


Fig. 1

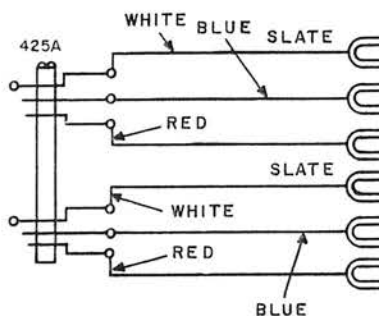


Fig. 2

Code No.	Comcode	Fig. No.	Extended Length (Feet)	Cord	Jack	Consists of Plug No.	Tool No.
1P1A	100 121 839	1	2	P1A	—	1E	—
1P2A	100 121 847	2	3	P1B	—	347A	—
1P3A	100 121 854	2	3	P1B	—	347B	—
1P4A	100 121 862	2	2	P1B	—	347B	—
1P4B	100 121 870	2	4	P1B	—	347B	—
1P4C	100 121 888	2	6	P1B	—	347B	—
1P6A	100 121 904	3	6	P1D	—	310	—
1P7A	100 121 912	4	3	P1E	—	309	—
1P8A	100 121 920	5	5	P1G	—	347B	—
1P9A	100 121 938	6	1	P1H	—	241A	—
1P11A	100 121 946	7	6	P1L	—	347B	—
2P1A	100 122 159	1	1/2	P2A	—	347A	—
2P1B	100 122 167	1	2	P2A	—	347A	—
2P1C	100 122 175	1	4	P2A	—	347A	—
2P1D	100 122 183	1	6	P2A	—	347A	—
2P2A	100 122 191	1	3	P2A	—	347A	—
2P3A	100 122 209	1	3	P2A	—	347B	—
2P3B	100 122 217	1	6	P2A	—	347B	—
2P4A	100 122 431	2	3	P2B	—	310	—
2P4B	100 122 449	2	4	P2B	—	310	—
2P4C	100 122 456	2	6	P2B	—	310	—
2P5A	100 122 464	3	3	P2B	—	310 and 257A	—
2P6A	100 122 472	4	10	P2AH	—	309 and 310	—
2P7A	100 122 480	5	10	P2G	—	309	—
2P8A	100 122 498	6	10	P2H	—	310	—
2P9A	100 122 506	7	9	P2J	—	310	—
2P9B	100 122 514	7	6	P2J	—	310	—
2P9C	100 122 522	7	6	P2J	—	310	—

## CORDS

## Patching

Code No.	Comcode	Fig. No.	Extended Length (Feet)	Consists of			
				Cord	Jack	Plug No.	Tool No.
2P10A	100 122 530	8	10	P2P	—	309 and 310	—
2P10B	100 122 548	8	10	P2P	—	309 and 310	—
2P11A	100 122 555	9	19-1/2	P2R	—	347 and 234	—
2P12A	100 122 563	10	6	P2T	—	347A and 241A	—
2P13A	100 122 571	11	3	P2AA	—	241A	—
2P13B	100 122 589	11	6	P2AA	—	241A	—
2P13C	100 122 597	11	15	P2AA	—	241A	—
2P13D	100 122 605	11	2	P2AA	—	241A	—
2P14A	100 122 613	11	3	P2AA	—	241B	—
2P15A	100 122 621	12	6	P2DJ	—	310 and 425A	—
2P16A	100 122 639	13	4	P2AE	—	310 and 289B	—
2P20A	100 122 647	14	8	P2AK	—	347B	—
2P21A	100 122 654	15	8	P2AL	—	327A	—
2P22A	100 122 662	16	8	P2AM	—	309 and 327A	—
2P23A	100 122 670	17	6	(a)	—	309	—
2P24A	100 122 688	18	6	P2A	—	(b)	—
2P25A	100 122 696	19	4	P2AR	—	347A and 347B	—
2P27A	100 122 704	20	6	P2BL	—	310 and 327A	—
2P28A	100 122 712	21	10	P2CM	—	(c)	—
2P29A	100 122 720	22	6	P2CN	—	(d)	—
2P30A	100 122 738	23	15	P2CP	—	310 and 347B	—
2P30B	100 122 746	23	6	P2CP	—	310 and 347B	—
2P31A	100 122 753	24	6	P2CU	—	359A and 347A	—
2P32A	100 122 761	25	8	P2AW	—	310	—
2P33A	100 122 779	26	4	P2DA	—	359A and 310	—
2P34A	100 122 787	27	5/6	P2DD	—	413C and 413D	—
2P35A	100 122 795	28	19-1/2	P2R	—	347A and 415A	—
3P1A	100 123 355	1	3	P3A	—	310	—
3P2A	100 123 363	2	10	P3H	—	310 and 240A	—
3P2B	100 123 371	3	5	P3H	—	310 and 240F	—
3P2C	100 123 389	4	10	P3H	—	310 and 240A	—
3P3A	100 123 397	5	6	P3D	—	309	—
3P3B	100 123 405	5	8	P3D	—	309	—
3P3C	100 123 413	5	3	P3D	—	309	—
3P3D	100 123 421	5	3/4	P3D	—	309	—
3P4A	100 123 439	6	6	(h) P3D	—	(e)	—
3P5A	100 123 447	6	6	P3D	—	(f)	—

(a) P3D Cord with sleeve (red) conductor cut off at each end of cord body.

(b) 347A and 157A Gauge 121A Cord weight.

(c) 310 and Hubbell 7464 Connector body.

(d) Hubbell 7464 Connector body and 7479 Plug Cap.

(e) 309 Plug and 113B Gauge.

(f) 309 Plug and 115B Gauge.

(h) Also a 121A Cord Weight.



## CORDS

## Patching

Code No.	Comcode	Fig. No.	Extended Length (Feet)	Cord	Consists of		
					Jack	Plug No.	Tool No.
3P6A	100 123 454	7	1	P3E	—	310	—
3P6C	100 123 462	7	6	P3E	—	310	—
3P6D	100 123 470	7	6	P3E	—	310	—
3P6E	100 123 488	7	8	P3E	—	310	—
3P6F	100 123 496	7	10	P3E	—	310	—
3P6G	100 123 504	7	12	P3E	—	310	—
3P6H	100 123 512	7	15	P3E	—	310	—
3P6J	100 123 520	7	20	P3E	—	310	—
3P6K	100 123 538	7	25	P3E	—	310	—
3P7A	100 123 546	7	6	P3E	—	310	—
3P7B	100 123 553	7	3	P3E	—	310	—
3P7C	100 123 561	7	8	P3E (green)	—	310	—
3P7D	100 123 579	7	2	P3E	—	310	—
3P7E	100 123 587	7	4	P3E	—	310	—
3P8A	100 123 595	8	6	P3E	—	(a)	—
3P10A	100 123 629	9	6	P3E	—	310 and 257A	—
3P11A	100 123 637	10	6	P3E	—	310 and 257B	—
3P12A	100 123 645	11	4	P3F (slate)	—	309 and 310	—
3P12B	100 123 652	11	4	P3F (red)	—	309 and 310	—
3P12C	100 123 660	11	4	P3F (green)	—	309 and 310	—
3P12D	100 123 678	11	4	P3F (black)	—	309 and 310	—
3P12E	100 123 686	11	6	P3F (slate)	—	309 and 310	—
3P12F	100 123 694	11	6	P3F (slate)	—	309 and 310	—
3P12G	100 123 702	11	6	P3F (slate)	—	309 and 310	—
3P12H	100 123 710	11	8	P3F (slate)	—	309 and 310	—
3P13A	100 123 728	12	3	P3J	—	241A	—
3P14A	100 123 736	12	3	P3J	—	241B	—
3P14B	100 123 744	12	6	P3J	—	241B	—
3P15A	100 123 751	13	6	P3K	—	310	—
3P15B	100 123 769	13	12	P3K	—	310	—
3P16A	100 123 777	14	6	P3L	—	309 and 310	—
3P16B	100 123 785	14	12	P3L	—	309 and 310	—
3P17A	100 123 793	15	3	P3N	—	310 and 241A	—
3P17B	100 123 801	15	6	P3N	—	310 and 241A	—
3P17C	100 123 819	15	15	P3N	—	310 and 241A	—
3P18A	100 123 827	16	19-1/2	P3R	—	310 and 234	—
3P18B	100 123 835	17	19-1/2	P3R	—	310 and 234	—
3P19A	100 123 843	18	19-1/2	P3S	—	310 and 234	—

(a) 310 Plug and 123B Gauge.

## CORDS

## Patching

Code No.	Comcode	Fig. No.	Extended Length (Feet)	Cord	Consists of		
					Jack	Plug No.	Tool No.
3P20A	100 123 850	19	4	P3P	—	305A	—
3P20B	100 123 868	19	6	P3P	—	305A	—
3P20C	100 123 876	19	12	P3P	—	305A	—
3P21A	100 123 884	20	3-1/2	642 (brown)	—	309	—
3P21B	100 123 892	20	3-1/2	642 (brown)	—	309	—
3P21C	100 123 900	20	5	642 (white)	—	309	—
3P22A	100 123 918	21	3-1/2	642	—	309 and 277B	—
3P23A	100 123 926	22	3	643 (brown)	—	310	—
3P23B	100 123 934	22	5	643 (white)	—	310	—
3P24A	100 123 942	23	3	643	—	310 and 262B	—
3P27A	100 123 959	24	7	P3U	—	310 and 351A	—
3P27B	100 123 967	24	7	P3U	—	310 and 351A	—
3P28A	100 123 975	25	7	P3U	—	310 and 351B	—
3P29A	100 123 983	26	8	P3F	—	309 and 310	—
3P30A	100 123 991	27	10	P3AA	—	240A and 310	—
3P31A	100 124 007	28	8	P3D	—	309	—
3P32A	100 124 015	29	5	P3H	—	240B and 310	—
3P33A	100 124 023	29	10	P3H	—	240B and 310	—
3P34A	100 124 031	30	7	P3AC	—	351A and 324B	—
3P35A	100 124 056	31	10	P3H	—	310 and 240H	—
3P36A	100 124 064	32	10	P3AJ	—	310	—
3P36B	100 124 072	32	15	P3AJ	—	310	—
3P36C	100 124 080	32	20	P3AJ	—	310	—
3P36D	100 124 098	32	25	P3AJ	—	310	—
3P38A	100 124 106	33	10	P3AR	—	(a)	—
3P39A	100 124 114	34	19-1/2	P3R	—	415A and 310	—
3P39B	100 124 122	35	19-1/2	P3S	—	415A and 310	—
3P40A	100 124 130	36	19-1/2	P3S	—	415A and 310	—
4P3A	100 124 346	1	6	P3H	—	288A	—
4P4A	100 124 353	2	12	P4K	—	240B and 289B	—
4P4B	100 124 361	3	12	P4K	—	240B and 289B	—
4P5A	100 124 379	4	12	P4K	—	240C and 289B	—
4P6A	100 124 387	5	19-1/2	P4L	—	234 and 289B	—
4P7A	100 124 395	6	19-1/2	P4L	—	235 and 289B	—
4P8A	100 124 403	7	4	P4N	—	289B	—
4P8B	100 124 411	7	6	P4N	—	289B	—
4P9A	100 124 429	8	19-1/2	P4R	—	234 and 289B	—
4P14A	100 124 437	9	7	P4Y	—	309, 310, and 351A	—
4P15A	100 124 452	10	7	P4AA	—	324B and 351B	—
4P16A	100 124 478	11	7	P4AA	—	324B and 351A	—

(a) Hubbell 7555G Connector Body. Hubbell 5264 Plug Cap.

## CORDS

## Patching

Code No.	Comcode	Fig. No.	Extended Length (Feet)	Cord	Consists of		
					Jack	Plug No.	Tool No.
4P17A	100 124 494	12	4	P4S	—	315A	—
4P17B	100 124 502	12	6	P4S	—	315A	—
4P17C	100 124 510	12	10	P4S	—	315A	—
4P17D	100 124 528	13	6	P4S	—	315B	—
4P18A	100 124 536	14	2	P4H (slate)	—	327A	—
4P18B	100 124 544	14	4	P4H (slate)	—	327A	—
4P18C	100 124 551	14	6	P4H (slate)	—	327A	—
4P18D	100 124 569	14	6	P4H (black)	—	327A	—
4P19A	100 124 577	15	8	P4AR	—	428A	—
4P19B	100 124 585	15	5	P4AR	—	428A	—
4P20A	100 124 593	16	7	P4AC	—	324B and 351E	—
4P21A	100 124 619	17	6	P4AD	—	241B, 354A, and 354B	—
4P22A	100 124 627	18	7	P4AE	—	288A and 360D	—
4P23A	100 124 635	19	6	P4AH	—	301A and 289B	—
4P24A	100 124 643	20	19-1/2	P4AL	—	289B and 415A	—
5P2A	100 124 809	1	7	P5B	—	309, 310, and 351B	—
5P3A	100 124 825	2	10	Two P3H	—	240B and 310	—
5P3B	100 124 833	3	10	Two P3H	—	240B and 310	—
5P4B	100 124 841	4	10	P5D	—	316A	—
5P5A	100 124 858	5	10	P3H	—	289B,	—
			12	P4K	—	310 and 240C	—
5P6A	100 124 866	6	7	P5J	—	425A and 351B	—
6P1A	100 124 874	1	6	P6L	—	425A	—
6P1B	100 124 882	1	3	P6L	—	425A	—
6P1C	100 124 890	1	8	P6L	—	425A	—
6P1D	100 124 908	1	1	P6L	—	425A	—
6P2A	100 124 916	2	6	Two P3E	—	248A	—
6P3A	100 124 924	3	5	Two P3H	—	240B and 310	—
6P4A	100 124 932	4	10	Two P3H	—	240C and 310	—
6P4B	100 124 940	5	10	Two P3H	—	240C and 310	—
6P4C	100 124 957	5	10	Two P3H	—	240C and 310	—
6P5A	100 124 965	6	10	Two P3H	—	240G and 310	—
6P6A	100 124 973	7	11	P6B	—	240B and 310	—
6P7A	100 124 981	8	3	P6L	—	425A	—
6P7B	100 124 999	8	5	P6L	—	425A	—
6P7C	100 125 004	8	7	P6L	—	425A	—
6P7D	100 125 012	8	9	P6L	—	425A	—
6P8A	100 125 020	9	6	P6L	—	425A	—
6P8B	100 125 038	9	10	P6L	—	425A	—
6P8C	100 125 046	9	15	P6L	—	425A	—
6P8D	100 125 053	9	20	P6L	—	425A	—

## CORDS

## Patching

Code No.	Comcode	Fig. No.	Extended Length (Feet)	Cord	Jack	Consists of Plug No.	Tool No.
6P8E	100 125 061	9	25	P6L	—	425A	—
(a) 6P9A	100 125 079	10	10	P6M	—	430A	—
(a) 6P9B	100 125 087	10	15	P6M	—	430A	—
(a) 6P9C	100 125 095	10	20	P6M	—	430A	—
(b) 6P10A	100 125 111	10	10	P6N	—	430A	—
(b) 6P10B	100 125 129	10	15	P6N	—	430A	—
(b) 6P10C	100 125 137	10	20	P6N	—	430A	—
(b) 6P10D	100 125 145	10	25	P6N	—	430A	—
6P11A	100 125 152	10	7	P6K	—	428A and 351G	—
9P1A	100 125 186	—	4	P9B	—	406A	—
9P1B	100 125 194	—	8	P9B	—	406A	—
14P1A	100 125 202	1	4-1/2	P14B	—	KS-19471 L1	—
14P1B	100 125 210	1	4-1/2	P14B	—	KS-19471 L2	—
14P1C	100 125 228	1	4-1/2	P14B	—	KS-19471 L3	—
14P1D	100 125 236	1	4-1/2	P14B	—	KS-19471 L4	—
14P1E	100 125 244	1	4-1/2	P14B	—	KS-19471 L5	—
14P1F	100 125 251	1	4-1/2	P14B	—	KS-19471 L6	—
14P1G	100 125 269	1	4-1/2	P14B	—	KS-19471 L7	—
14P1H	100 125 277	1	4-1/2	P14B	—	KS-19471 L8	—
14P1J	100 125 285	1	4-1/2	P14B	—	KS-19471 L9	—
14P1K	100 125 293	1	4-1/2	P14B	—	KS-19471 L10	—
1W1A	100 121 953	1	100	M1N	—	310	—
1W2A	100 121 961	2	30	M1P	—	263A	—
1W3A	100 121 979	3	6	S1C	—	347A	—
1W4A	100 121 987	4	12	W1P	—	1C	—
1W5A	100 121 995	5	10	W1B	—	310	—
1W5B	100 122 001	5	10	W1B	—	310	—
1W6A	100 122 019	6	12	W1C	—	1B	360B
1W6B	100 122 027	6	20	W1C	—	1C	360B
1W7A	100 122 035	7	12	W1W	—	310	—
1W8A	100 122 043	8	10	W1H	—	347B	360A
1W9A	100 122 050	9	20	W1C	—	1C	360A
1W11A	100 122 068	10	12	W1W	—	310	—
1W12A	100 122 076	11	12	815	—	1C	262
1W13A	100 122 084	12	3	893	—	—	360A
1W13B	100 122 092	12	6	893	—	—	360A

(a) Contains a 17 DB Pad in each tip and ring circuit.

(b) Contains a 23 DB Pad in each tip and ring circuit.



## CORDS

## Patching

Code No.	Comcode	Fig. No.	Extended Length (Feet)	Cord	Consists of		
					Jack	Plug No.	Tool No.
1W14A	100 122 100	13	19-1/2	W1H	—	347A	360A
1W14B	100 122 118	13	12	W1H	—	347A	360A
1W15A	100 122 126	14	6	W1AC	—	(a)	—
1W16A	100 122 134	15	12	W1AE	—	336A	360B
1W17A	100 122 142	16	8	W1AM	—	351F	—
2W2A	100 122 860	1	4	L2K	—	289B	—
2W3A	100 122 878	2	3	P2AA	—	241A	—
2W4A	100 122 886	3	6	R2CF	—	310	—
2W5A	100 122 894	4	6	S2B (slate)	—	310	—
2W5B	100 122 902	4	10	S2B (red)	—	310	—
2W6A	100 122 910	5	10	W2C	—	310	—
2W7A	100 122 928	6	9-1/2	W2F	—	347A	—
2W7B	100 122 936	6	12	W2F	—	347A	—
2W8A	100 122 944	6	9-1/2	W2F	—	347B	—
2W9A	100 122 951	7	9-1/2	W2J	—	310	—
2W11A	100 122 969	8	5	W2L	—	309	—
2W12A	100 122 977	9	9	W2M	—	310	—
2W12B	100 122 985	9	9	W2M	—	310	—
2W13A	100 122 993	10	6	W2R	—	310	—
2W14A	100 123 009	11	2-1/2	W2S	—	241A	—
2W15A	100 123 017	11	2-1/2	W2BP	—	241A	—
2W15B	100 123 025	11	6	W2BP	—	241A	—
2W16A	100 123 033	12	9	W2T	—	310	—
2W17A	100 123 041	13	6	W2W	—	310	360B & C
2W17B	100 123 058	13	30	W2W	—	310	360B & C
2W17C	100 123 066	13	10	W2W	—	310	360B & C
2W17D	100 123 074	13	1	W2CF	—	310	360B & C
2W19A	100 123 082	14	5	W2AA	—	347B	—
2W20A	100 123 090	14	5	W2AA	—	347A	—
2W21A	100 123 108	15	6	W2AB	—	—	360A
2W22A	100 123 116	16	8	W2AS	—	310	522A Key
2W24A	100 123 124	17	19-1/2	W2AY	—	289B	—
2W25A	100 123 132	18	5	W2BB	—	309	—
2W26A	100 123 140	19	5-1/2	W2BC	—	304A	—
2W28A	100 123 157	20	5-1/2	630	—	347A	—
2W29A	100 123 165	21	6	R2CU	—	309	—
2W30A	100 123 173	22	4	W2BR	—	309	—
2W32A	100 123 181	23	6	R2DB	—	347	—
2W33A	100 123 199	24	5	W2BS	—	310	—
2W34A	100 123 207	25	6	W2FG	—	428A	—
2W35A	100 123 215	26	4-1/2	W2BY	—	347A	—

(a) 310 Plug and Hubbell 9970 Plug Cap.

## CORDS

## Patching

Code No.	Comcode	Fig. No.	Extended Length (Feet)	Cord	Consists of		
					Jack	Plug No.	Tool No.
2W36A	100 123 223	27	5-1/2	W2CA	—	327A	—
2W37A	100 123 231	28	4	W2DB	471A	—	—
2W38A	100 123 249	29	5	W2CK	471A	310	—
2W39A	100 123 256	30	4	W2CL	471A	240A	—
2W40A	100 123 264	30	4	W2CL	471A	240H	—
2W41A	100 123 272	31	4	W2CJ	471A	360A & B	—
2W42A	100 123 280	32	5-1/2	W2DL	—	310	—
2W43A	100 123 298	33	8	W2EL	—	310	—
2W44A	100 123 306	34	3	W2EM	—	347A	—
2W45A	100 123 314	35	4	W2CL	471A	240B	—
2W46A	100 123 322	36	2-1/2	R2DN	—	(c)	—
2W47A	100 123 330	37	9-1/2	W2FE	—	347A	—
2W47B	100 123 348	37	19-1/2	W2FE	—	347A	—
3W1A	100 124 148	1	10	S3B	—	310	—
3W2A	100 124 155	2	6	S3F	—	241A	—
3W3A	100 124 163	3	12	W3A	—	310	—
3W4A	100 124 171	4	6	W3M	—	310	360A, B, C
3W4B	100 124 189	4	15	W3M	—	310	360A, B, C
3W5A	100 124 197	5	6	W3W	—	315	—
3W6A	100 124 205	6	19-1/2	W3Y	—	309	—
3W7A	100 124 213	7	12	W3AB	—	308A & 310	—
3W8A	100 124 221	8	5	W3AA	471A	351A	—
3W9A	100 124 239	9	5	W3AF	—	310	—
3W10A	100 124 247	10	4	W3AH	471A	—	—
3W11A	100 124 254	11	6	(b)	—	382A	—
3W12A	100 124 262	11	6	(b)	—	383A	—
(a)3W13A	100 124 270	12	12	W3AJ	—	310	620A
(a)3W13B	100 124 288	13	12	W3AJ	—	310	620A
3W14A	100 124 296	14	4	W3AN	—	310	—
3W14B	100 124 304	14	9	W3AN	—	310	—
3W15A	100 124 312	15	4	W3AT	—	310	—
3W17A	100 124 320	16	4	W3AY	—	(d)	—
3W17B	100 124 338	16	4	W3AY	—	(e)	—
4W1A	100 124 650	1	6	L4R	—	289B	—
4W1B	100 124 668	1	10	L4R	—	289B	—
4W1C	100 124 676	1	12	L4R	—	289B	—
4W1D	100 124 684	1	20	L4R	—	289B	—

(a) Tip of plug is connected to spring contact on side of tool bearing code marking.

(b) One S3B Cord with tip (white) and sleeve (red) conductors cut off at each end of cord body, and one S2B Cord.

(c) Mallory 75 plug.

(d) AT8255D Cable Clip.

(e) AT8255E Cable Clip.

## CORDS

## Patching

Code No.	Comcode	Fig. No.	Extended Length (Feet)	Cord	Consists of		
					Jack	Plug No.	Tool No.
4W2A	100 124 692	2	6	L4U	—	289B	—
4W3A	100 124 700	3	6	W4AC	—	251B, C, D and 289B	—
4W4A	100 124 718	4	6	W4AD	—	289B	—
4W5A	100 124 726	5	6	W4AE	—	240A & 289B	—
4W6A	100 124 734	6	12	W4AG	—	252, B and 289B	—
4W7A	100 124 742	7	12	W4AL	—	289B & 301A	—
4W8A	100 124 759	8	6	W4AN	—	(a) 289B	—
4W9A	100 124 767	9	10	W4AS	—	316A	—
4W10A	100 124 775	10	8	W4AY	471A	240A	—
4W11A	100 124 783	11	12	W4AG	—	289B and 412A, B	—
4W12A	100 124 791	12	6	W4BF	—	289B and 413A, B, C, D	—
6W1A	100 125 160	1	20	W6A	—	310	—
6W2A	100 125 178	2	5-3/4	W6K	—	425A	—

(a) Cord has mold-on plug at other end.

# CORDS

## Patching and Test

P1 Type

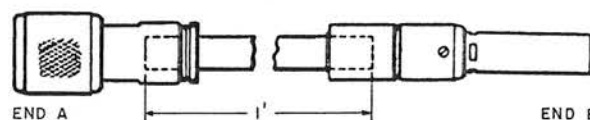
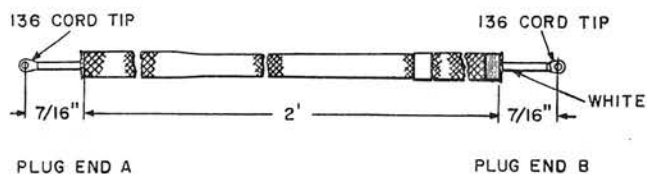


Fig. 4

P2 Type

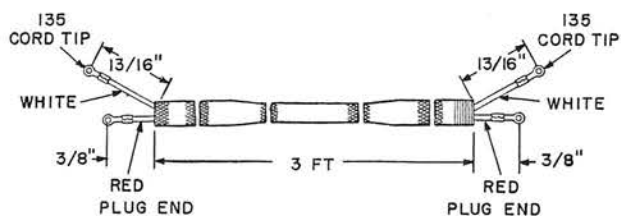


Fig. 1

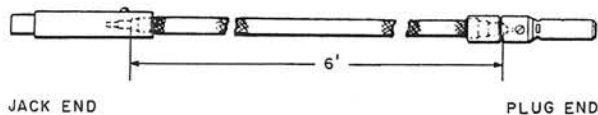


Fig. 2

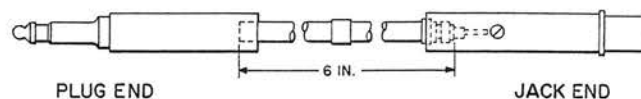


Fig. 5

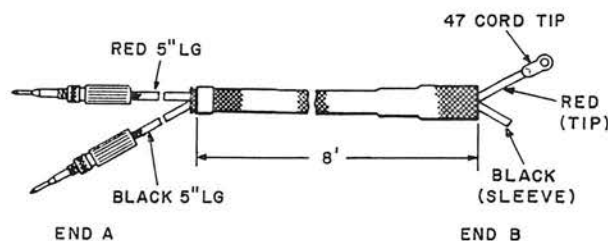


Fig. 6

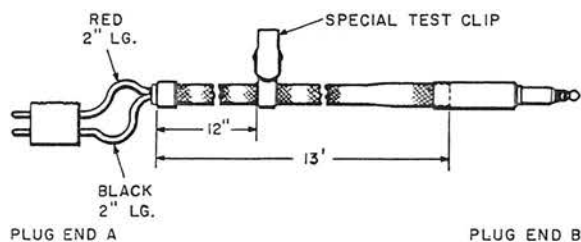


Fig. 3

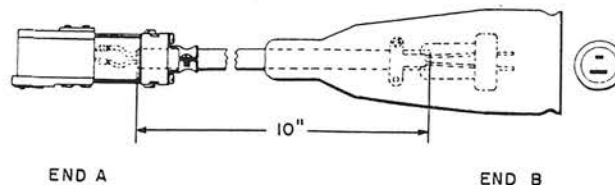


Fig. 7



## CORDS

## Patching and Test

P3 Type

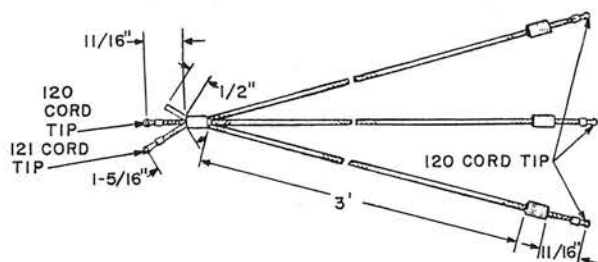
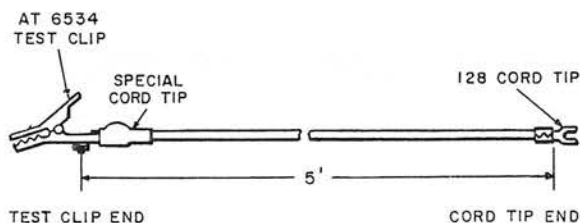


Fig. 1

W1T



W16C

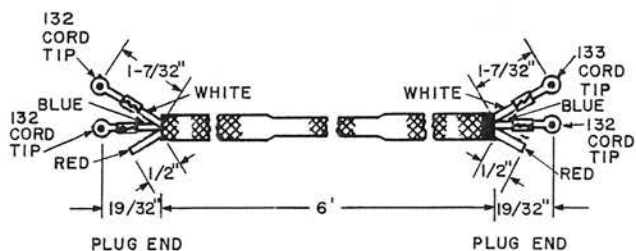
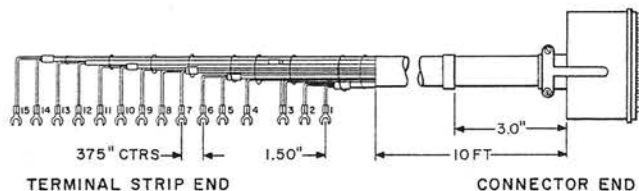
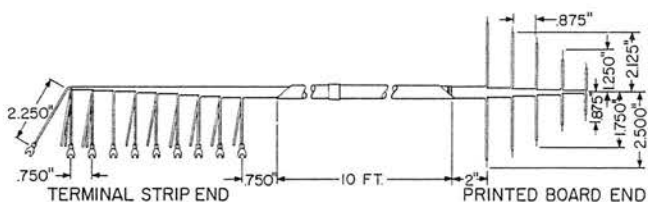
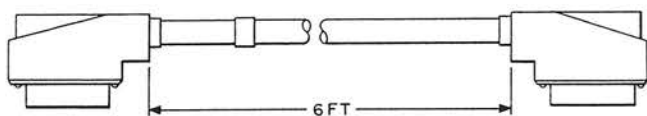


Fig. 2

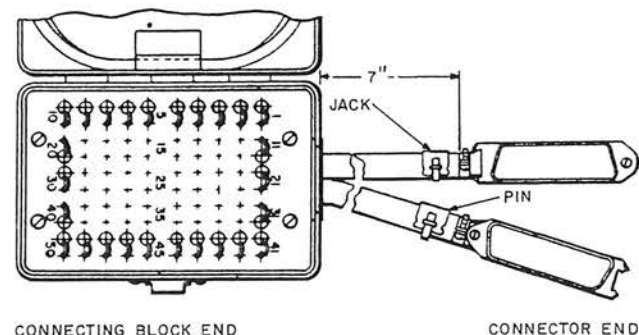
W21D



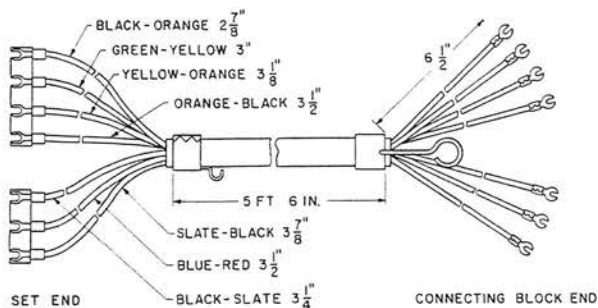
P10B



W50A



T7A



## CORDS

## Patching and Test

Code	Comcode	Fig. No.	Outer Covering	Extended Length (Feet)	Color	Arranged for Plug
P1A	100 148 626	—	Textile	1	Slate	1B or 1C
P1A	100 148 642	—	Textile	2	Slate	1B or 1C
P1A	100 148 675	—	Textile	4	Slate	1B or 1C
P1A	100 148 709	—	Textile	6	Slate	1B or 1C
P1B	100 148 733	—	Textile	1	Slate	(a) 347 type
P1B	100 148 766	—	Textile	2	Slate	(a) 347 type
P1B	100 148 808	—	Textile	3	Slate	(a) 347 type
P1B	100 148 832	—	Textile	4	Slate	(a) 347 type
P1B	100 148 865	—	Textile	6	Slate	(a) 347 type
P1D	100 148 899	—	—	6	Black	(b) 310 type
P2A	100 149 152	1	Textile	1/2	Red or Green	347 type
P2A	100 149 186	1	Textile	1	Red or Green	347 type
P2A	100 149 210	1	Textile	2	Red or Green	347 type
P2A	100 149 251	1	Textile	3	Red or Green	347 type
P2A	100 149 301	1	Textile	4	Red or Green	347 type
P2A	100 149 343	1	Textile	6	Red or Green	347 type
P2B	100 149 384	1	Textile	1	Green	310 or 257 type
P2B	100 149 426	1	Textile	2	Green	310 or 257 type
P2B	100 149 483	1	Textile	3	Green	310 or 257 type
P2B	100 149 525	1	Textile	4	Green	310 or 257 type
P2B	100 149 566	1	Textile	6	Green	310 or 257 type
P2AA	100 149 814	1	Textile	1	Slate	241 type
P2AA	100 149 848	1	Textile	2	Slate	241 type
P2AA	100 149 871	1	Textile	3	Slate	241 type
P2AA	100 149 954	1	Textile	4	Slate	241 type
P2AA	100 149 988	1	Textile	6	Slate	241 type
P2AA	100 150 010	1	Textile	15	Slate	241 type
P2AH	100 150 101	1	Textile	10	Slate	309, 310
P2AK	100 150 127	1	Waterproof Jacket	8	Black	347 type
P2AL	100 150 150	1	Textile	1	Green	327 type
P2AL	100 150 176	1	Textile	1	Red	327 type
P2AL	100 150 192	1	Textile	1	Slate	327 type
P2AL	100 150 218	1	Textile	1	Black	327 type
P2AL	100 150 234	1	Textile	2	Green	327 type
P2AL	100 150 259	1	Textile	2	Red	327 type
P2AL	100 150 275	1	Textile	2	Slate	327 type
P2AL	100 150 291	1	Textile	2	Black	327 type
P2AL	100 150 317	1	Textile	3	Green	327 type
P2AL	100 150 333	1	Textile	3	Red	327 type
P2AL	100 150 358	1	Textile	3	Slate	327 type
P2AL	100 150 374	1	Textile	3	Black	327 type
P2AL	100 150 390	1	Textile	4	Green	327 type
P2AL	100 150 416	1	Textile	4	Red	327 type
P2AL	100 150 432	1	Textile	4	Slate	327 type
P2AL	100 150 457	1	Textile	4	Black	327 type

## CORDS

## Patching and Test

Code	Comcode	Fig. No.	Outer Covering	Extended Length (Feet)	Color	Arranged for Plug
P2AL	100 150 473	1	Textile	6	Green	327 type
P2AL	100 150 499	1	Textile	6	Red	327 type
P2AL	100 150 515	1	Textile	6	Slate	327 type
P2AL	100 150 531	1	Textile	6	Black	327 type
P2AL	100 150 556	1	Textile	8	Green	327 type
P2AL	100 150 572	1	Textile	8	Red	327 type
P2AL	100 150 598	1	Textile	8	Slate	327 type
P2AL	100 150 614	1	Textile	8	Black	327 type
P2AM	100 150 754	1	Textile	8	Brown	309, 327 type
P2AT	100 150 861	2	Textile	6	—	358A, 466B Jack
P2AT	100 150 879	2	Textile	10	—	358A, 466B Jack
P2AU	100 150 887	2	Textile	5/16	—	466B Jack
P2AW	100 150 895	2	Textile	1/2	—	358A
P2AW	100 150 903	2	Textile	1-1/2	—	358A
P2AW	100 150 911	2	Textile	3	—	358A
P2AW	100 150 929	2	Textile	6	—	358A
P2AW	100 150 937	2	Textile	10	—	358A
P2BJ	100 151 091	2	Textile	2	—	358A
P2BJ	100 151 109	2	Textile	4	—	358A
P2BJ	100 151 117	2	Textile	6	—	358A
P2BJ	100 151 125	2	Textile	8	—	358A
P2BM	100 863 919	3	Textile	3	Black	310, KS-14520
P2BM	100 151 216	3	Textile	13	Black	310, KS-14520
P2BN	100 151 224	3	Textile	13	Black	327A, KS-14520
P2BS	100 151 273	4	Vinyl	1	Black	End A — KS-14317 End B — 358A
P2BT	100 151 281	4	Vinyl	1	Black	End A — KS-14317
P2BT	100 151 299	4	Vinyl	5	Black	End B — KS-14317
P2BT	100 151 307	4	Vinyl	50	Black	
P2BU	100 151 323	4	Vinyl	600	Black	End A — KS-14317 End B — KS-14982
P2CD	100 151 430	5	Waterproof Jacket	1/2	Black	Jack End — 477A Jack Plug End — 310
P2CW	100 151 752	6	Textile	8	Black	End A — Red and Black Plug Tips
P2CY	100 151 778	7	Neoprene	5/16	Black	End A — 407A End B — H.B. Jones P-202 CCT
P3A	100 152 008	1	Textile	3	Green	(a) 310
P3D	100 152 065	2	Textile	3/4	Slate	309
P3D	100 152 081	2	Textile	3	Slate	309
P3D	100 152 107	2	Textile	6	Slate	309
P3D	100 152 156	2	Textile	8	Slate	309
P3D	100 152 172	2	Textile	8	Red-Green	309

(a) One end arranged for connections to the tip, ring, and sleeve of a single plug and the other end for connection to the rings of three plugs.



## CORDS

## Patching and Test

Code	Comcode	Fig. No.	Outer Covering	Extended Length (Feet)	Color	Arranged for Plug
P3E	100 152 214	2	Textile	1	Slate	291B or 310
P3E	100 152 248	2	Textile	2	Slate	291B or 310
P3E	100 152 305	2	Textile	3	Slate	291B or 310
P3E	100 152 347	2	Textile	4	Slate	291B or 310
P3E	100 152 479	2	Textile	8	Slate	291B or 310
P3E	100 152 503	2	Textile	8	Green	291B or 310
P3E	100 152 537	2	Textile	10	Slate	291B or 310
P3E	101 477 271	2	Textile	12	Slate	291B or 310
P3E	100 152 594	2	Textile	15	Slate	291B or 310
P3E	100 152 636	2	Textile	20	Slate	291B or 310
P3E	100 152 669	2	Textile	25	Slate	291B or 310
P3F	100 152 693	2	Textile	4	Slate	309, 310
P3F	100 152 719	2	Textile	4	Red	309, 310
P3F	100 152 735	2	Textile	4	Black	309, 310
P3F	100 152 750	2	Textile	4	Green	309, 310
P3F	100 152 776	2	Textile	6	Slate	309, 310
P3F	100 152 800	2	Textile	6	Red	309, 310
P3F	100 152 834	2	Textile	6	Black	309, 310
P3F	100 152 867	2	Textile	6	Green	309, 310
P3F	100 152 891	2	Textile	8	Slate	309, 310
P3F	100 152 925	2	Textile	8	Red	309, 310
P3F	100 152 958	2	Textile	8	Black	309, 310
P3F	100 152 982	2	Textile	8	Green	309, 310
P3F	100 153 014	2	Textile	8	Red-Green	309, 310
P3K	100 153 329	2	Textile	6	Black	310
P3K	100 153 345	2	Textile	12	Black	310
P3L	100 153 360	2	Textile	6	Black	309, 310
P3L	100 153 386	2	Textile	12	Black	309, 310
P10B	101-146 496	—	Vinyl	6	Gray	KS-19087 L1 KS-19087 L1
T7A	100 161 454	—	Vinyl	5-1/2	Black	—
T7A	100 161 470	—	Vinyl	5-1/2	Ivory	—
T7A	100 161 496	—	Vinyl	5-1/2	Green	—
T7A	100 161 512	—	Vinyl	5-1/2	Red	—
T7A	100 161 538	—	Vinyl	5-1/2	Yellow	—
T7A	100 161 553	—	Vinyl	5-1/2	White	—
T7A	100 161 595	—	Vinyl	5-1/2	Light beige	—
T7A	100 161 629	—	Vinyl	5-1/2	Light gray	—
W1T	100 162 866	—	Textile	3	Black	—
W1T	100 162 874	—	Textile	5	Black	—
W16C	100 984 624	—	Textile	10	Black	(a)
W21D	101 146 520	—	Nylon	10	Black	—
W50A	100 167 683	—	Vinyl	7/12	Black	KS-16690 L3 KS-16689 L2

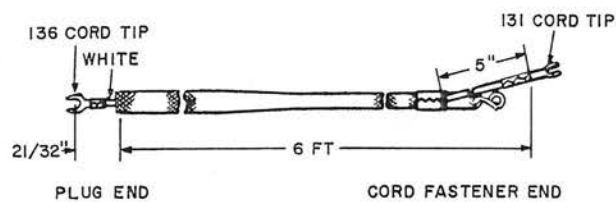
(a) Connector end equipped with a KS-16370 L2 Connector Terminal Strip end equipped with number 105 Cord Tips.



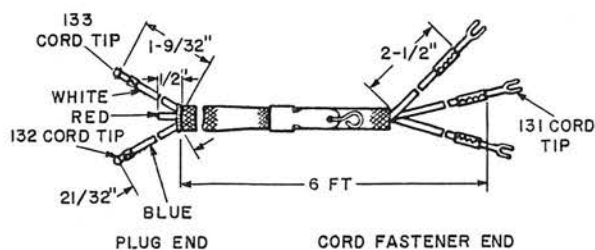
## CORDS

### Switchboard

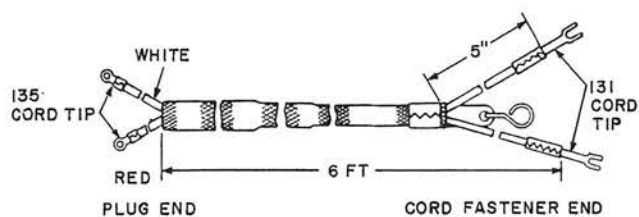
S1 Type



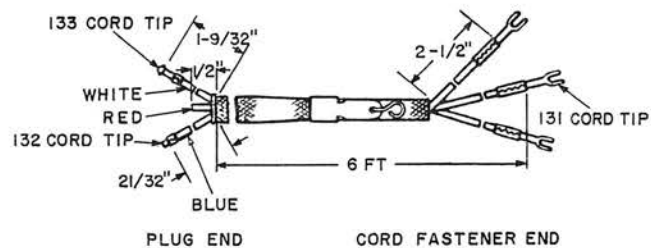
S3A



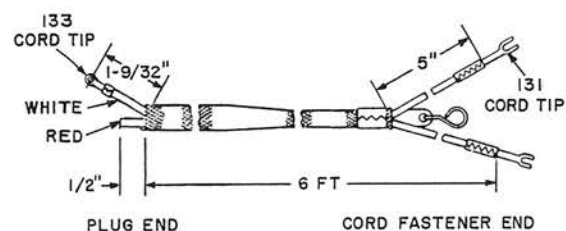
S2A



S3B



S2B



## CORDS

## Switchboard

Code	Comcode	Outer Covering	Extended Length (Feet)	Color	Arranged for Plug
S1A	100 157 619	Textile	4	Slate	1B or 1C
S1A	100 157 643	Textile	6	Slate	1B or 1C
S1B	100 157 700	Textile	6	Slate	310
S1C	100 157 726	Textile	6	Slate	347 type, 236B
S2A	100 157 791	Textile	3	Slate	347 type
S2A	100 157 858	Textile	3	Red	347 type
S2A	100 157 825	Textile	3	Green	347 type
S2A	100 157 882	Textile	3	Black	347 type
S2A	100 157 916	Textile	4	Slate	347 type
S2A	100 157 973	Textile	4	Red	347 type
S2A	100 157 940	Textile	4	Green	347 type
S2A	100 158 005	Textile	4	Black	347 type
S2A	100 158 047	Textile	6	Slate	347 type
S2A	100 158 070	Textile	6	Red	347 type
S2A	100 158 104	Textile	6	Green	347 type
S2A	100 158 138	Textile	6	Black	347 type
S2A	100 158 161	Textile	8	Slate	347 type
S2A	100 158 195	Textile	8	Red	347 type
S2A	100 158 229	Textile	8	Green	347 type
S2A	100 158 252	Textile	8	Black	347 type
S2B	100 158 286	Textile	4	Slate	359A, 382A, 383A, 310
S2B	100 158 336	Textile	4	Red	
S2B	100 158 385	Textile	4	Green	
S2B	100 158 435	Textile	6	Slate	
S2B	100 158 484	Textile	6	Red	
S2B	100 158 534	Textile	6	Green	
S2B	100 158 583	Textile	8	Slate	
S2B	100 158 633	Textile	8	Red	
S2B	100 158 682	Textile	8	Green	
S2B	100 158 732	Textile	10	Slate	
S2B	100 158 781	Textile	10	Red	
S2B	100 158 831	Textile	10	Green	
S3A	100 159 151	Textile	2-1/2	Slate	263A, 309
S3A	100 159 177	Textile	2-1/2	Red	263A, 309
S3A	100 159 193	Textile	2-1/2	Green	263A, 309
S3A	100 159 219	Textile	2-1/2	Black	263A, 309
S3A	100 159 243	Textile	4-1/2	Slate	263A, 309
S3A	100 159 268	Textile	4-1/2	Red	263A, 309
S3A	100 159 284	Textile	4-1/2	Green	263A, 309
S3A	100 159 300	Textile	4-1/2	Black	263A, 309
S3A	100 159 334	Textile	6	Slate	263A, 309
S3A	100 159 383	Textile	6	Red	263A, 309
S3A	100 159 433	Textile	6	Green	263A, 309
S3A	100 159 482	Textile	6	Black	263A, 309
S3A	100 159 532	Textile	8	Slate	263A, 309
S3A	100 159 573	Textile	8	Red	263A, 309
S3A	100 159 615	Textile	8	Green	263A, 309
S3A	100 159 656	Textile	8	Black	263A, 309

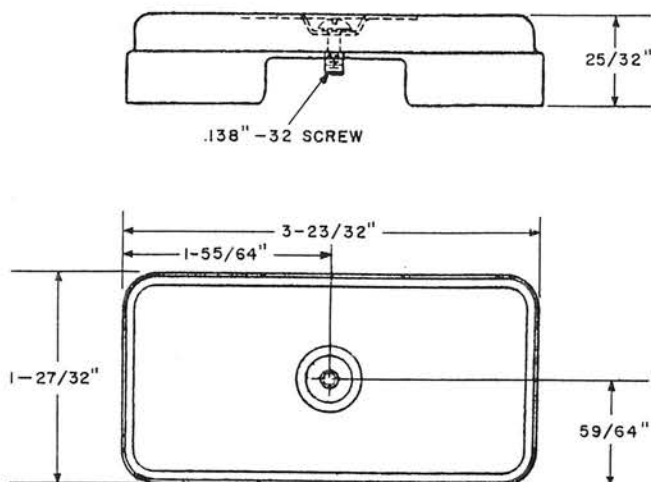
## CORDS

## Switchboard

Code	Comcode	Outer Covering	Extended Length (Feet)	Color	Arranged for Plug
S3A	100 159 706	Textile	9	Slate	263A, 309
S3A	100 159 730	Textile	9	Red	263A, 309
S3A	100 159 755	Textile	9	Green	263A, 309
S3A	100 159 771	Textile	9	Black	263A, 309
S3A	100 159 797	Textile	10	Black	263A, 309
S3B	100 159 839	Textile	4	Slate	291, 310, 338A, 378A, 382A, 383A
S3B	100 159 888	Textile	4	Red	
S3B	100 159 912	Textile	4	Green	
S3B	100 159 946	Textile	4	Black	
S3B	100 159 987	Textile	5	Slate	
S3B	100 160 019	Textile	5	Red	
S3B	100 160 050	Textile	5	Green	
S3B	100 999 267	Textile	5	Black	
S3B	100 160 092	Textile	6	Slate	
S3B	100 160 142	Textile	6	Red	
S3B	100 160 191	Textile	6	Green	
S3B	100 160 258	Textile	6	Black	
S3B	100 160 308	Textile	7	Slate	
S3B	100 160 340	Textile	7	Red	
S3B	100 160 373	Textile	7	Green	
S3B	100 160 381	Textile	8	Slate	
S3B	100 160 423	Textile	8	Red	
S3B	100 160 456	Textile	8	Green	
S3B	100 160 498	Textile	8	Black	
S3B	100 160 530	Textile	10	Slate	

## COVERS

101A

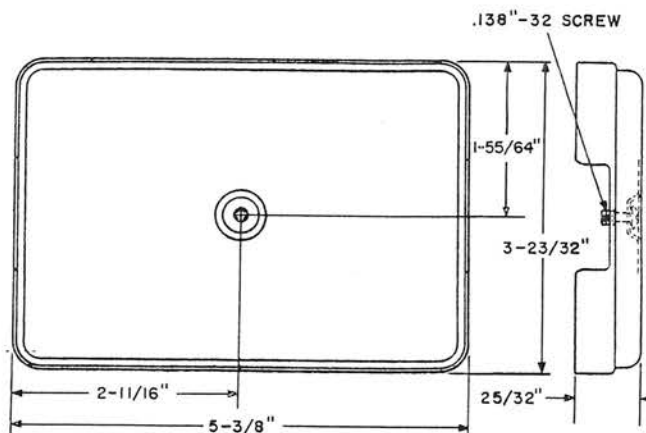


A metal cover furnished in colors listed in table and equipped with a captive mounting screw. Color must be specified on order.

Intended for use with one 44A Connecting Block.

Code No.	Comcode	Color
101A-49	100 169 697	Light olive gray
101A-50	100 169 705	Ivory

101C

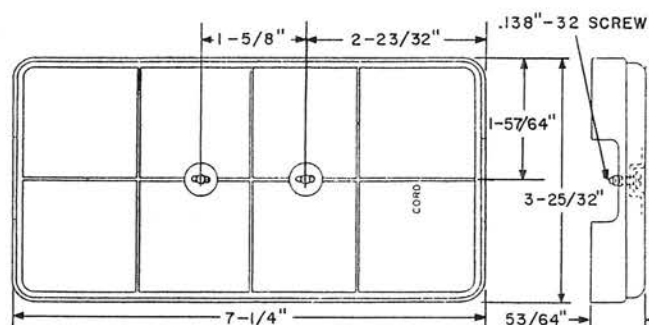


A metal cover furnished in colors listed in table and equipped with a captive mounting screw and a screw for cord attachments. Color must be specified in order.

Intended for use with two or three 44A Connecting Blocks.

Code No.	Comcode	Color
101C-49	100 169 713	Light olive gray
101C-50	100 169 721	Ivory

101D



A plastic cover furnished in colors listed in table and equipped with a captive mounting screw and a screw for cord attachment. Color must be specified on order.

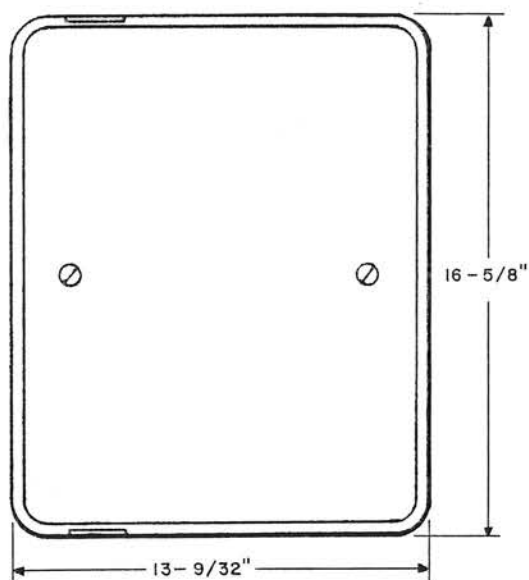
Intended for use with four 44A Connecting Blocks.

Code No.	Comcode	Color
101D-49	100 169 739	Light olive gray
101D-50	100 169 747	Ivory

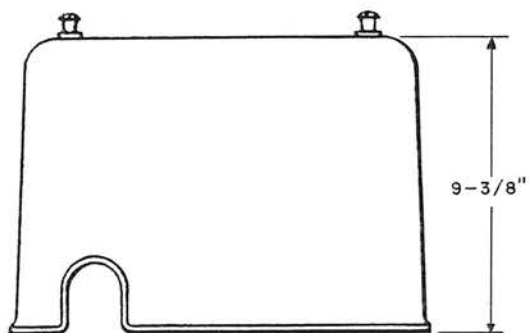
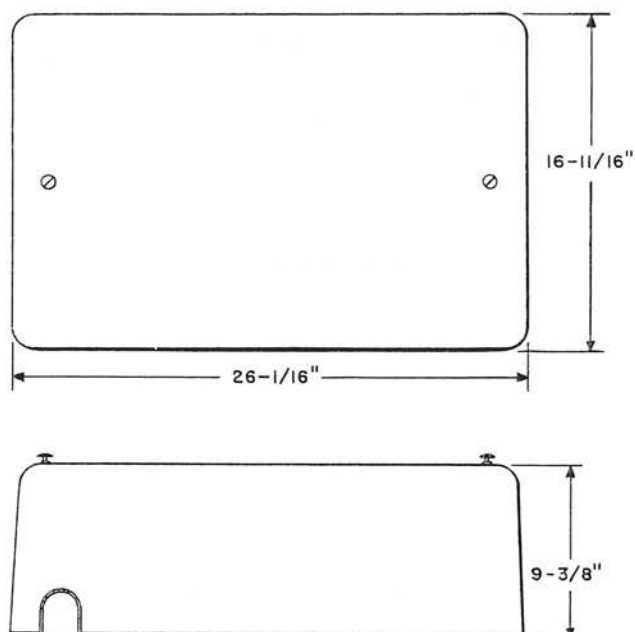


## COVERS

116A



117A



A cover of molded insulating material with a light olive gray wrinkle enamel finish. Has a bottom cable opening and is furnished with a noise suppression blanket.

Used as cover for 16C Apparatus Mounting.

Comcode: 100 169 960

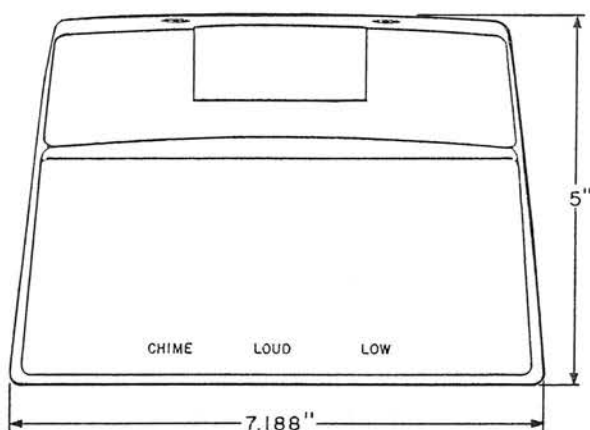
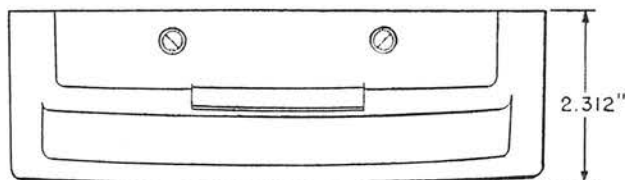
Light olive gray molded cover of insulating material having top and bottom cable openings. Arranged to cover one or two 15A Apparatus Mountings when mounted on a 173A Backboard. Provided with two cover supports and eight round head machine screws for assembly to the apparatus mountings, and with a dust guard and two round head wood screws for covering one cable opening.

Intended for use in the 1A1 Key Telephone System.

Comcode: 100 169 945

## COVERS

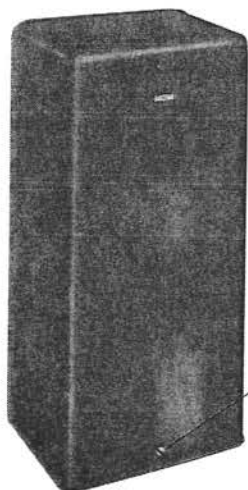
## 125AW-50



Plastic ivory covers each arranged to mount on an F1A Ringer. Bottom surface is slotted to permit sufficient gong sound output and recessed to permit access to the signal lever. Captive mounting screws are furnished.

Comcode: 100 170 026

## ED-69462-50, Group 2 and NP



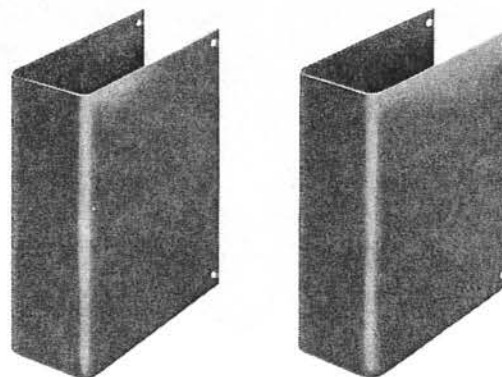
SIMMONS  
NO. 7 O H  
STUD

A glass fiber cover which is 14-3/8 inches wide by 28-1/4 inches high by 9-1/2 inches deep.

Designed for use with the ED-69462-50, Group 1 Base Plate Assembly.

Comcode: 600 017 172

## ED-95023-70, Groups 4 and 5



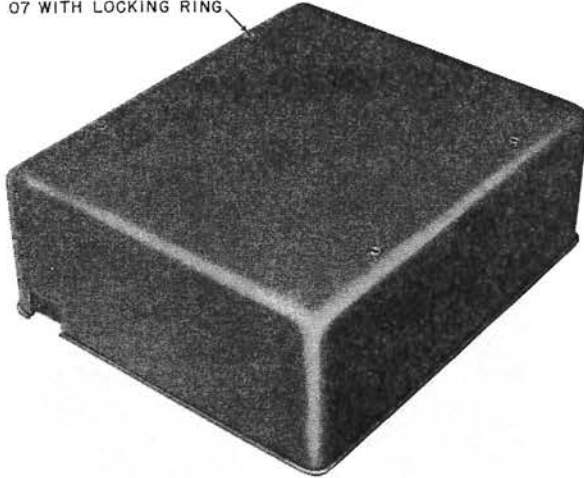
ED-95023-70, Groups 4 and 5, consist of two baked gray enamel finished metal covers used to conceal exposed portion of metal stand where appearance is important. Each cover has four 0.191 inch diameter mounting holes and eight number 8-32 round head machine screws are furnished with each group. The group required must be specified on the order.

Group	Description
4	Covers for use with the metal stand ED-95023-70, Group 10. Overall dimensions are 8-11/16 inches long by 10 inches high with a 3-3/16 inch inside width. Comcode: 600 017 206
5	Covers for use with the metal stand ED-95023-70, Group 3. Overall dimensions are 4-3/4 inches long by 10 inches high with a 3-3/16 inch inside width. Comcode: 600 016 422

## COVERS

ED-69368-50, Group 2 and NP

SIMMONS STUD OH NO.  
07 WITH LOCKING RING

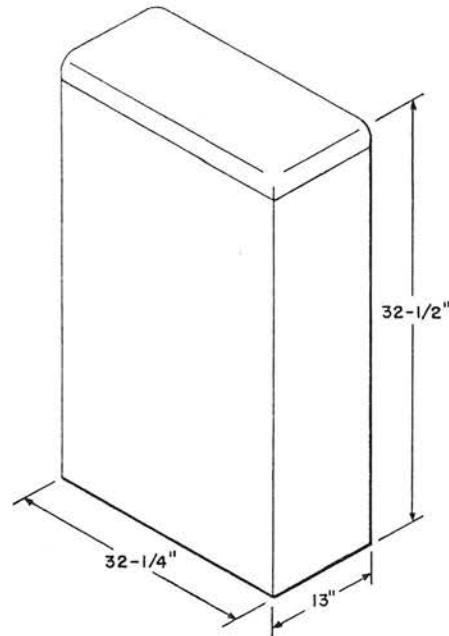


A metal cover with a light olive gray wrinkled enamel finish. Dimensions are 30-7/16 inches long by 25-11/16 inches wide by 11-11/16 inches high.

Designed to enclose one 26A Apparatus Mounting on a ED-69368-50, Group 3 Backboard.

Comcode: 600 016 281

ED-69448-50, Group 1



A metal cover assembly consisting of a cover, side assembly, base plate assembly, ramp assembly, bracket, and two bracket assemblies; all are shipped separately. Has a gray textured vinyl finished top and beige-gray wrinkle baked enamel finished sides.

Used for floor mounted 26A Apparatus Mounting.

Comcode: 600 017 214

## DIALS

## 6 Type

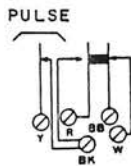
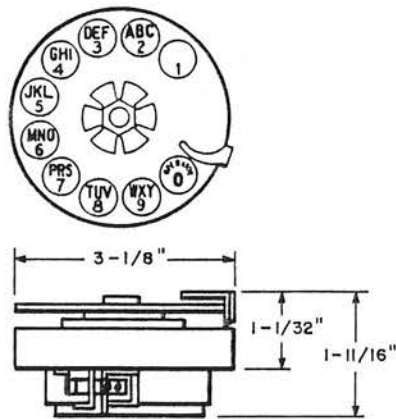


Fig. 1

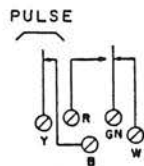


Fig. 2

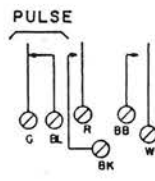


Fig. 3

Each consists of a rotary mechanism actuated by a finger wheel which when wound up and released causes a pair of pulsing contacts to interrupt the line current and operate the central office selecting equipment in accordance with the digit or letter dialed. Operation of the finger wheel also causes the opening and closing of other contacts, thus providing for the necessary changes required in the station circuit in which the dial is used. These contacts remain in their changed positions and do not return to normal until the finger wheel has returned to normal. The mechanism is protected by a plastic cover.

**6A and 6D type:** When used under certain conditions, it is necessary to strap the BB and R terminals of the dial with a P-290076 Strap. This strap is not furnished with the dial and must be ordered separately.

**6F and G:** Arranged to mount by means of a 52D and a 64A Dial Adapter on 32A or similar type dial mountings and on all number 6000 type except 6000G, H, and J.

Also arranged to mount on 6000G, H, and J Dial Mountings by means of a 62B Dial Adapter.

**6A-3:** Forms a part of the 1011GW Hand Set.

**6D-3:** Forms part of the 211MR-3 and 212MR-3 Hand Telephone Sets.

**6D-41:** Forms part of the 751A Apparatus Unit.

**6E:** Arranged to mount by means of a 52D and a 64A Dial Adapter on 32A or similar type dial mountings and on all number 6000 type except 6000G, H, and J. Also arranged to mount on 6000G, H, and J Dial Mountings by means of a 62B Dial Adapter. Intended for use in PBX and central office switchboards for local and intertoll dialing.

**6E-41:** Intended for use in the number 520 type PBX.

**6F:** Intended for use in PBX and central office switchboards with circuits arranged for high speed dialing in panel and crossbar dial telephone systems.

**6F-43:** Intended for use with number 6044 type dial mountings as part of 608A PBX.

**6G:** Intended for use in number 555 type PBX switchboards.

**6J-3:** Forms part of the 211PR type hand telephone sets.

**6J-41:** Forms part of the 750A Apparatus Unit.

**6K-41:** Intended for use with 112A Key Equipment.

**6L-41:** Forms part of the number 630 and 631 type telephone sets.

**6P-43:** Intended for use with number 6044 type dial mountings as part of 608A PBX.

**6R-3:** Intended for use with PBX systems and order turret.

**6S-3:** Forms part of 525BW Telephone Set.



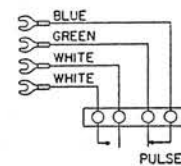
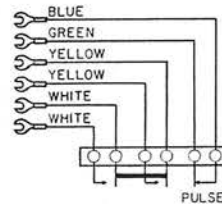
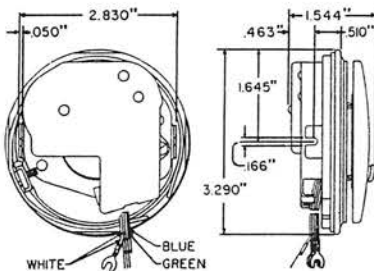
## DIALS

## 6 Type (Continued)

Code No.	Comcode	Color of Case	Type Finger Wheel	Pulsing Rate (Line Current Interruptions per Second)	Percent Break (% of Pulse Interval During Which Contacts Are Open)	Schematic Fig. No.	Number Plate
6A-3	100 170 828	Black	(b)	10	61 $\pm$ 3	1	164A
6D-3	100 170 844	Black	(d)	10	61 $\pm$ 3	1	164A
(a)(c) 6D-41	100 170 851	Gray	(e)	10	61 $\pm$ 3	1	164A
(a)(c) 6E	100 170 869	Black	(b)	10	64 $\pm$ 2	2	164A
(a)(c) 6E-41	100 170 877	Gray	(d)	10	64 $\pm$ 2	2	164A
(a)(c) 6F	100 170 885	Black	(b)	20	64 $\pm$ 2	2	164A
(a)(c) 6F-43	100 170 893	Gray Beige	(d)	20	64 $\pm$ 2	2	164A
(a)(c) 6G	100 170 901	Black	(b)	20	64 $\pm$ 2	1	164A
(f) 6J-3	100 170 927	Black	(b)	10	61 $\pm$ 3	3	164A
(f) 6J-41	100 170 935	Gray	(e)	10	61 $\pm$ 3	3	164A
(f) 6K-41	100 170 943	Gray	(e)	10	61 $\pm$ 3	3	164B
(g) 6L-41	100 170 950	Gray	(d)	10	61 $\pm$ 3	3	164D
(a)(c) 6P-43	100 170 984	Gray Beige	(d)	10	61 $\pm$ 3	2	164A
(a)(c) 6R-3	100 171 008	Black	(b)	10	61 $\pm$ 3	1	164A
(f) 6S-3	100 171 016	Black	(b)	10	61 $\pm$ 3	3	164B

- (a) Has precision gear train.  
 (b) Has a black metal finger wheel.  
 (c) Has a sloping fingerstop which increases the height from 1-11/16 inches to 1-13/16 inches.  
 (d) Has a transparent plastic finger wheel.  
 (e) Has a gray metal finger wheel.  
 (f) Provided with a card holder parts group (shipped loose).  
 (g) Has a sloping fingerstop which increases the height from 1-11/16 inches to 1-27/32 inches.

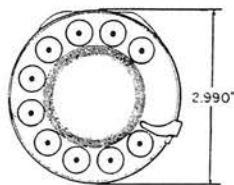
## 8 Type



8B, C, and J

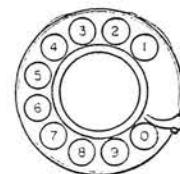
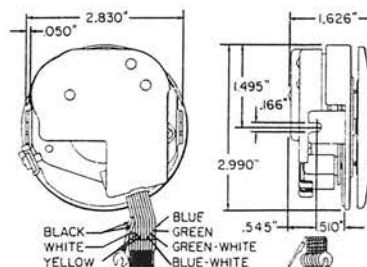
8A and F

8A, B, C, F, and J



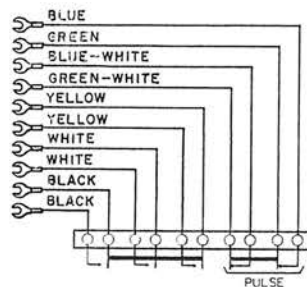
8B, F, and J

8C



8H

## DIALS



8H

Each consists of a rotary mechanism actuated by a transparent plastic finger wheel which when wound up and released causes one or two pairs of pulsing contacts to interrupt the line current and operate central office selecting equipment in accordance with the digit or letter dialed. Another pair of contacts short circuits the telephone receiver during the dialing period. Each is equipped with a plastic cover to protect the mechanism. 8B, 8C, and 8H each contain additional pairs of contacts.

A pulsing rate of 10 pulses (line current interruptions) per second is provided. A separate card holder is not required since the card holder is an integral part of the finger wheel. Terminal leads are equipped with cord tips that are arranged for number 4, 5, or 6 screws.

Intended for use with:

8A: Number 701 and 711 Type Telephone Sets.

8B: 112A Key Equipment and in the 102A equipment.

8C-58: Number 637, 638, 639, and 661 type telephone sets.

8F: Data sets number 200, 400, and 600 types.

8H: 1A1 Key Telephone Systems.

8J: Data Sets 202CW1, 202CW2, 804AW1 and 804AW2.

Code No.	Comcode	Basic Color	Characters or Dots
(a) (b) 8A	100 171 313	Clear (e)	Tan
(a) (b) 8B	100 171 321	Clear (e)	Tan
(c) 8C-58	100 171 339	White (e)	Black
(a) (d) 8F	100 171 362	Clear (e)	Gray
(c) 8H	100 171 388	White (e)	Black
(a) (d) 8J	100 171 396	Clear (e)	Gray

- (a) Has facilities for illuminating the number plate for night viewing.
- (b) Has a gold colored metal fingerstop.
- (c) Has a bright metal fingerstop.
- (d) Has a clear anodized aluminum fingerstop.
- (e) Number plate has a white background.

9 Type

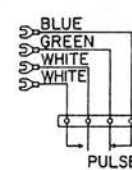
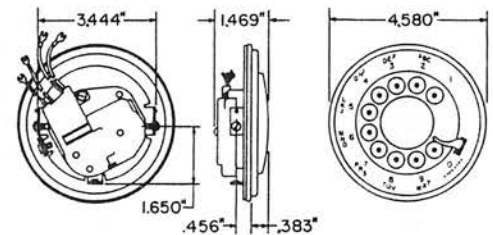


Fig. 1

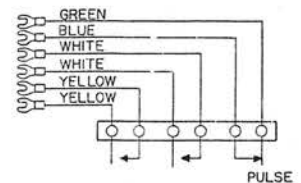


Fig. 2

Each consists of a rotary mechanism actuated by a transparent plastic finger wheel which when wound up and released causes a pair of pulsing contacts to interrupt the line current and operate central office selecting equipment in accordance with the digit or letter dialed. Each is equipped with a plastic dust cover to protect the mechanism.

A separate card holder is not required since the card holder is an integral part of the finger wheel. Terminal leads are equipped with cord tips that are arranged for number 4, 5, or 6 screws.

A pulsing rate of 10 pulses (line current interruptions) per second is provided.

9C Type: Used with number 500 and 501 and similar type telephone sets.

9H Type: Used with number 500 type telephone sets.

9K Type: Used with number 500 type telephone sets and 46 A Dial Mounting.

9L Type: Has digits shown on number plate only. Used with number 500 type telephone sets.

9M Type: Same as 9C type except equipped with 16 inch long leads having a maximum contact resistance of 0.170 ohm. Used with number 525 type telephone sets.

9N Type: Same as 9H type except is equipped with a modified dust cover. For use with the 568HN type telephone sets and Data Auxiliary Sets 817A1.



## DIALS

## 9 Type (Continued)

Code No.	Comcode	Fig. No.	Basic Color	Characters
9C-3	100 171 446	1	Black	White
9C-50	100 171 453	1	Ivory	Black
9C-51	100 171 461	1	Green	White
9C-53	100 171 479	1	Red	White
9C-54	100 171 487	1	Brown	White
9C-56	100 171 495	1	Yellow	Black
9C-58	100 171 503	1	White	Black
9C-60	100 171 529	1	Light beige	Black
9C-61	100 171 537	1	Light gray	Black
9H-3	100 171 594	2	Black	White
9H-50	100 171 602	2	Ivory	Black
9H-51	100 171 610	2	Green	White
9H-53	100 171 628	2	Red	White
9H-54	100 171 636	2	Brown	White
9H-56	100 171 644	2	Yellow	Black
9H-58	100 171 651	2	White	Black
9H-60	100 171 677	2	Light beige	Black
9H-61	100 171 685	2	Light gray	Black
9K-3	100 171 719	2	Black	White
9K-58	100 838 424	2	White	Black
9L-3	100 171 727	2	Black	White
9M-3	100 171 735	1	Black	White
9N-3	101 092 187	2	Black	White
9N-51	101 366 565	2	Green	White
9N-58	101 092 195	2	White	Black
9N-60	101 366 573	2	Light beige	Black
9N-61	101 092 203	2	Light gray	Black

Consists of a rotary mechanism actuated by a white plastic (Implex) fingerwheel which, when wound up and released, causes the pulsing contacts to interrupt the line current and operate central office selecting equipment in accordance with the digit or letter dialed. The number plate is metal with ceramic coating and the characters are black with a white background. Plastic gears and bearings are utilized and the governor is of a small high speed design. Bearing lubrication is omitted for improved cold weather operation.

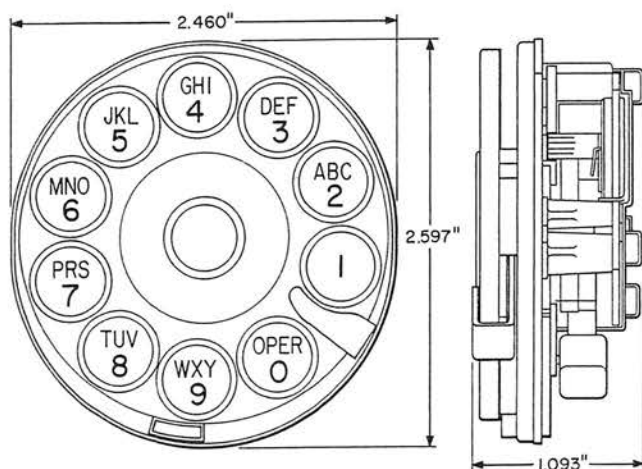
The fingerwheel has finger holes on a 10-1/3 division spacing instead of the standard 12. The fingerstop moves during dialing through an arc of 52 degrees and then returns to its normal position at the end of rundown. No facilities are provided for off-normal switching.

The pulse rate is 10 line current interruptions per second. Has 61 per cent break of pulse interval during which contacts are open.

The frame plate has four 0.125"-40 threaded mounting holes which permit positioning the dial in the hand set for either left or right handed dialing. Intended for use in the 1013AW and 1014AW Hand Sets.

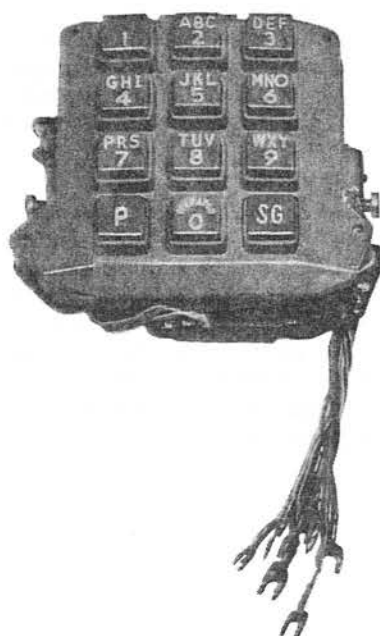
Comcode: 101 234 698

11A



## DIALS

22E3



A multifrequency TOUCH-TONE dial having 12 push buttons and a medium gray cover plate. Each of the buttons, when operated, generates a dual frequency signal distinctive to that button. Overall dimensions are 3.480 inches high by 3.421 inches wide by 1.760 inches deep.

Ten buttons are for normal "letter-number" dialing. The special service buttons, one designated "P" and the other "SG", are respectively located in the lower left-hand and right-hand corners of the button array. Leads are provided to permit use with 3B Speakphone, telephone sets having a polarity guard and surge protector, G6-( ) and G8-( ) type hand sets, and telephone sets wired for two- and four-wire operation. An appended switch is operated by depression of the "SG" special service button.

Thirteen spade-tipped leads are provided for connection between the dial and the telephone set.

Intended for use in SCAN, 1616 type telephone sets, and is also used in the 1568HTW-3 Telephone Set.

Replaces the 22A Dial.

Comcode: 101 146 553

26G



A combination TOUCH-TONE dial and a card reading mechanism for multifrequency dialing manually or from a coded card. One P-24E238 Card Set is furnished.

Manual dialing is accomplished by depressing buttons which operate pairs of coil tap switches and a common switch to generate double frequency signals. Card dialing is accomplished by inserting a precoded card into a card reading mechanism. A start bar operates the dial common switch and releases the gear train mechanism to raise the card. As the card moves up, card hole sensors operate coil tap switches to generate the double frequency signals.

Overall dimensions are 4.052 inches high by 5.930 inches long by 3.479 inches wide.

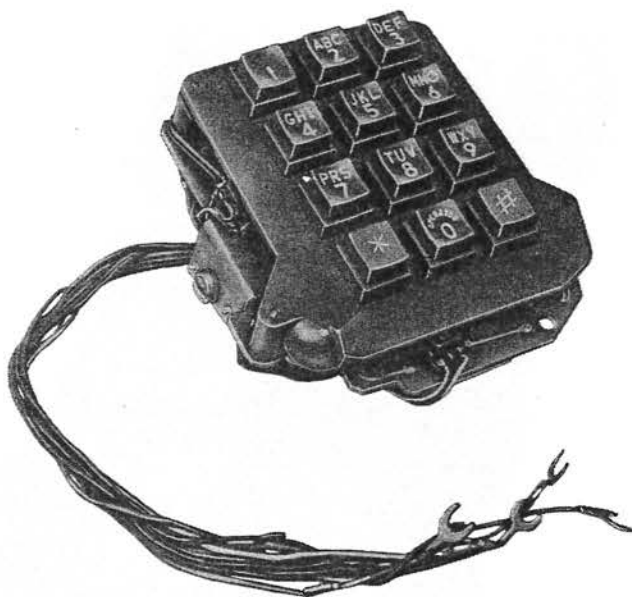
Used in the 557A and B PBX and is recommended in place of the 26E Dial.

Comcode: 100 172 055



## DIALS

## 35 Type



Each is a 12-button TOUCH-TONE dial. Ten buttons are used in a number-letter dialing and two are used to give special service connection and are identified by an asterisk and a pound symbol. Overall dimensions are approximately 3.425 inches by 3.531 inches by 1.790 inches.

Leads are provided to permit their use with telephone sets having a polarity and surge protector with G6- and G8-type hand sets and with telephone sets wired for two-wire and four-wire operation.

**35A3A:** Eight spade-tipped leads are provided for connection between the dial and telephone.

Used in general purpose TOUCH-TONE number 2500 series desk type and number 2554 series wall type telephone sets.

Comcode: 101 024 065

**35C3A:** Eleven spade-tipped leads are provided for connection between the dial and the telephone set. Used in the number 1035 type dial.

Comcode: 101 024 081

**35D3A:** Eleven spade-tipped leads are provided for connections between the dial and the telephone set and nine additional leads are provided for connection to a card reader. Used in the 36E Dial for TOUCH-TONE card dialer telephone sets with 3B Speakerphone.

Comcode: 101 126 076

**35E4A:** Eight spade-tipped leads are provided to connect the dial to the telephone set. Used in a standard telephone set using a 4010D Network or equivalent. Components are arranged specifically to meet the physical requirements of apparatus employing the 1702 type telephone set component layout. Has translucent type buttons, illuminated by a lamp in the telephone set. Used initially in 11G and H Apparatus Units and the 2712B type telephone sets.

Comcode: 101 126 084

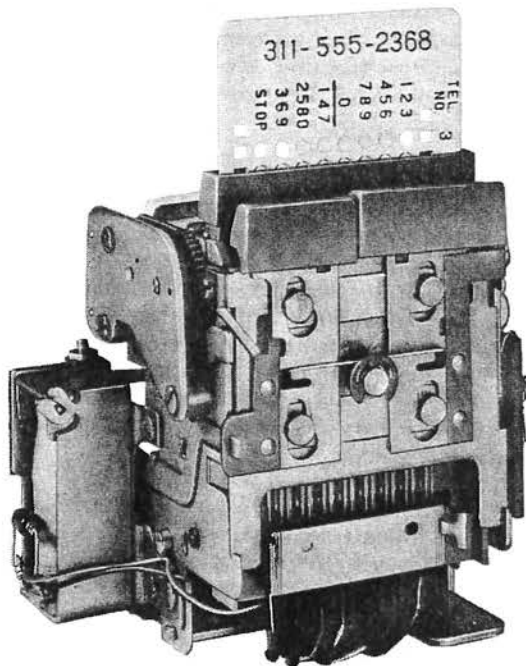
**35H3A:** Same as 35A3A except provides circuitry for operation in PBX Switchboards. The common switch provides one make and one break function used in the dial circuit plus two makes and two breaks for external switching. Nine electrical connections are required between the dial and the PBX Switchboard. These are terminated in a male nine-pin KS-19088L5 connector.

Used in the 50 type Dial Mounting on PBX Switchboards.

Comcode: 101 248 284

## DIALS

41B



An electromechanical device which, when incorporated into a 660AW or 662AW type telephone set, permits an automatic dialing function. The telephone numbers of frequently called stations are stored in a repertory of punched cards (P-24E238), the blanks of which are furnished as part of the telephone set. Overall dimensions are 4.250 inches wide by 3.145 inches deep by 4.018 inches high.

When a card is inserted into the dial mechanism and the operation started by manually depressing the START button, the punchings control a series of coded electrical breaks and makes of the line current. These dial pulses transmit the card number information to the central office at the rate of 10 pulses per second.

The dial requires 14 to 21 volts ac for proper operation. Refer to table A and B for selection of power supplies which are not furnished and must be ordered separately. When wiring keyless stations, the dials may be paralleled. For key stations, it is recommended that individual power supply leads be run to each station.

Comcode: 100 172 121

TABLE A

Maximum Distance Between Group of  
Dials and Power Supply

Type of Power Supply	Capacity of Power Supply	ABAM Cable	ABMM Cable	JKT Wire
101G or J	10 dials	4300 ft.	2600 ft.	1300 ft.
KS-16886	5 dials	3500 ft.	2100 ft.	1000 ft.
2075A	3 dials	4300 ft.	2600 ft.	1300 ft.
2012B	2 dials	4300 ft.	2600 ft.	1300 ft.

TABLE B

Maximum Distance Between Dial  
and Power Supply (1 Pair)

Type of Power Supply	Number of Dials Connected in Parallel	ABAM Cable	ABMM Cable	JKT Wire
101G or J	5 dials	800 ft.	500 ft.	250 ft.
	3 dials	1500 ft.	1000 ft.	500 ft.
KS-16886	5 dials	800 ft.	500 ft.	250 ft.
	3 dials	1500 ft.	1000 ft.	500 ft.
2075A	3 dials	2000 ft.	1200 ft.	600 ft.
2012B	2 dials	2500 ft.	1500 ft.	750 ft.



## DIALS

## 66 Type



The 66 type dial is a 16 pushbutton multifrequency dialing device. Ten of the pushbuttons, from one to zero, are used for station-to-station calling and the remaining six are used to provide special service signals. Each of the 16 pushbuttons, when operated, generates a double frequency signal distinctive to that button. Overall dimensions are 4.150 inches by 3.397 inches by 1.765 inches. The mounting holes on the mounting bracket are 3.818 inches center to center.

**66A3A:** This dial is designed for use in a standard telephone set circuit using a 425E Network or equivalent. The necessary switching for use with speakerphone is provided. Eleven spade-tipped leads extend from the dial to connect to telephone set terminals. Flat tabs extend from each side to permit front access to dial mounting screws. The right hand column of special service pushbuttons are red and have snap-on caps which may be removed and replaced with caps having other designations. All other buttons are medium gray including the STAR and A special service buttons which also have snap-on caps. Used in the 3568HTW-3 Telephone Set and 3640A1A and 3641A1A type telephone sets for the AUTOVON project.

Comcode: 100 172 162

**66A4B:** Same as 66A3A Dial except that the buttons on this dial are illuminated by a pair of lamps mounted on the underside of the dial. The special service buttons in the right hand column are the red translucent type. The other pushbuttons are the white translucent type. The 13 spade-tipped leads extend from the dial to connect to telephone set terminals. Used in the AUTOVON project.

Comcode: 100 172 170

**66B3A:** Same as 66A3A Dial except this dial is designed to use in the 67A Dial in the 3666A1A Card Dialer for the AUTOVON project. It has 11 spade-tipped leads extending from the dial to connect to the telephone set terminals and 10 other tinned leads are brought out from the dial for connection to the card reader.

Comcode: 100 172 188

**66C3A:** Same as 66A3A Dial except this dial is designed for use in the Dial Restoration Panel for the AUTOVON project. Each pushbutton operates two electrically independent make contacts corresponding to the row and column position of the button. Eight additional make contacts are provided which operate when the frequency signal switches are operated. Only six of these are wired for use. An additional make contact is provided on the common switch. Twenty connections are brought out from the dial to the set in a 20-pin KS-19080L2 Connector.

Comcode: 100 172 196

**66B4B:** This dial is similar to the 66B3A Dial except that a pair of lamps, mounted on the underside of the dial, illuminate the 16 pushbuttons. Spade-tipped leads from the lamp sockets provide connection to the lighting circuit.

The right hand row of pushbuttons are a red translucent type. All other pushbuttons, including the A and STAR special service buttons, are a white translucent type. Buttons are not equipped with snap-on caps.

This dial is used in the 67B Card Dialer which is used in the 3666A1B Telephone Set where a set with an illuminated card dialer is desired.

Comcode: 101 092 211

**66D4B:** This dial is similar to the 66A3A Dial except that nine leads extend from the dial and are terminated in a 9-pin connector to provide connection to PBX switchboard in the AUTOVON project. It is intended to mount in a 50B Dial Mounting. A pair of lamps are mounted on the underside of the dial to provide illumination for the 16 pushbuttons. Two spade-tipped leads extend from the dial for connection to the lamp power circuit.

The right hand row of pushbuttons are a red translucent type. All other pushbuttons, including the A and STAR special service buttons, are a white translucent type. The buttons are not equipped with snap-on caps.

Comcode: 101 146 645

## DIALS

67A and 67B



67A: A combination of a manual 16 button TOUCH-TONE dial and a card reader mechanism which permits multifrequency dialing performed either manually or from a coded card. Manual dialing is accomplished by sequentially pushing buttons on the manual TOUCH-TONE dial corresponding to the desired button. Card dialing is accomplished by inserting a precoded card into the card reading mechanism and depressing the START bar. Provisions have been made for manual dialing from a stop position. In the event that the card reader mechanism fails during card dialing, the dial can be returned to the manual dialing mode by operating the switchhook. Switching is provided for use with speakerphone.

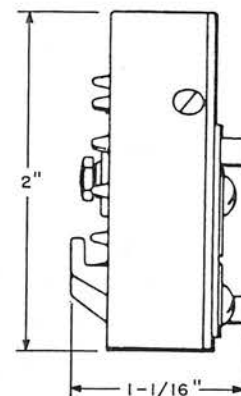
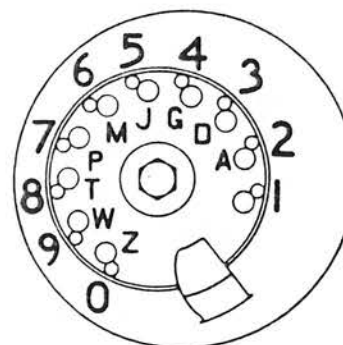
Uses a 66B3A manual TOUCH-TONE dial which consists of a 4 by 4 array of 16 buttons. Ten number letter buttons are used for standard dialing and six buttons designated FO, F, I, P, A and an open star are used for special service signaling. The overall dimensions are 5.950 inches long by 4.210 inches wide by 4.052 inches high. The dial uses a P-29E161 card which has a storage capacity of 16 digits and provides for encoding the standard 10 number letter codes as well as the six special service codes. The 67A Dial is used in the 3666A1A Telephone Set for the AUTOVON project.

Comcode: 100 172 212

67B: Same as the 67A Dial except it uses the 66B4B Dial which provides the features necessary to illuminate the buttons.

Comcode: 101 146 637

103A

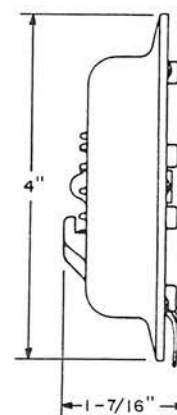
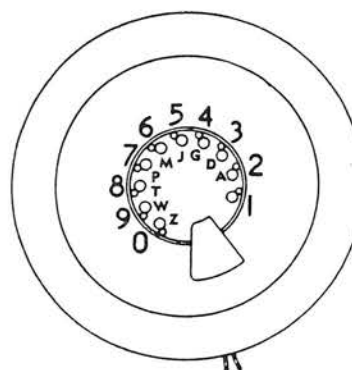


Provided with a finger wheel which when rotated causes a pair of contacts to make and break, thus permitting impulses to be sent into the dial system offices.

Intended for use in the 1011BW Hand Set which is used by linemen.

Comcode 100 172 279

104A



Provided with an insulated black case and an insulated finger wheel. The finger wheel when rotated causes a pair of contacts to make and break thus permitting impulses to be sent into the dial system offices. Two black terminal leads approximately 9 inches long connected to the contact spring are furnished.

Used on 107B Test Set.

Comcode: 100 172 287



## DIALS

1008BW



Consists of an 8B Dial (Rotary) in a special molded housing containing termination for a D10R type cord which is included and is used to connect 1008BW Dial to an adjacent telephone set.

Used in conjunction with a console telephone set in AUTOVON service.

1066 Type



**1066A3AW-61:** Consists of a 66A3A Dial, a D14M-61 Cord, and a P-90D012 Guard Assembly which are mounted on a metal base and are housed in a plastic housing. Overall dimensions are approximately 4.600 inches long by 4.080 inches wide by 2.670 inches deep. Available in light gray (-61) only. Used with a variety of station equipment in AUTOVON.

Comcode: 101 128 452

**1066A4BW-61:** Same as 1066A3AW-61 except it is equipped with a 66A4B Dial which provides illuminated buttons.

Comcode: 101 128 478

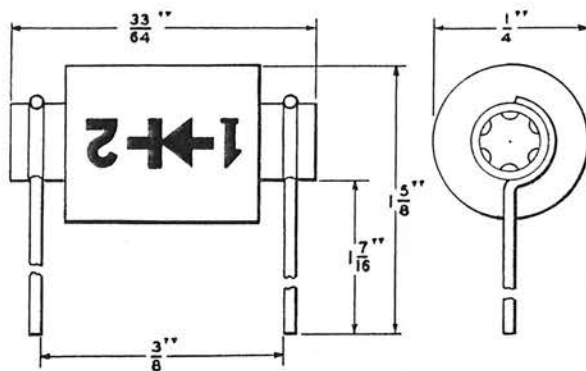
**1066D4BW-61:** Similar to 1066A4BW-61 except it is equipped with a 66D4B Dial and an M12M-61 Cord having a connector which is used to connect the dial to a key telephone system console in AUTOVON.

Comcode: 101 001 220

Code No.	Comcode	Color
1008BW-3	101 092 237	Black
1008BW-51	101 092 245	Green
1008BW-53	101 092 252	Red
1008BW-56	101 092 260	Yellow
1008BW-58	101 092 278	White
1008BW-60	101 001 204	Light beige
1008BW-61	101 138 246	Light gray

## DIODES

## 400 Type



Semiconductor type, point contact germanium crystal rectifiers.

Code No.	Comcode	(b) Reverse Peak Voltage (Volts)	Max Average Rectified Current (Milliamps.)	Min Forward Current at 1.0 volt DC at 25° C (Milliamps.)	Max Reverse Current at 50 Volts DC at 25° C (Milliamps.)
400A	100 172 733	60	35	5.0	(a) 0.9
400E	100 172 741	140	30	3.0	0.5
400F	100 172 758	60	30	3.0	(a) 0.9
(*)400G	100 172 766	60	30	3.0	1.0
(†)400H	100 172 774	60	35	5.0	(a) 0.9
400J	100 172 782	140	40	5.0	0.4

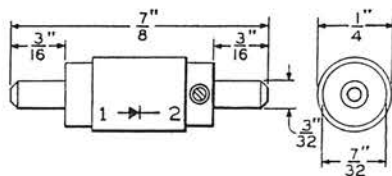
(\*) Has special ac impedance characteristics.

(†) With 0.5 milliamperes dc flowing from terminal 1 to terminal 2, the voltage across the diode at 25° C will be 0.32 volts maximum, 0.28 volts minimum.

(a) Maximum reverse current at 5 volts dc at 25° C is 0.02 milliamperes.

(b) If this voltage is exceeded the diode will be permanently damaged.

## 405 Type



Semiconductor type, point contact silicon diodes enclosed in a ceramic case having metal terminals.

405B: Intended for use in the 40 megacycle shifter of the TD-2 Radio System where a pair has a maximum conversion loss of 11.0 db at 4000 megacycles.

Comcode: 100 172 873

405C: Intended for use as a rectifier of microwave frequencies in the RF sweep oscillator of the TD-2 Radio System.

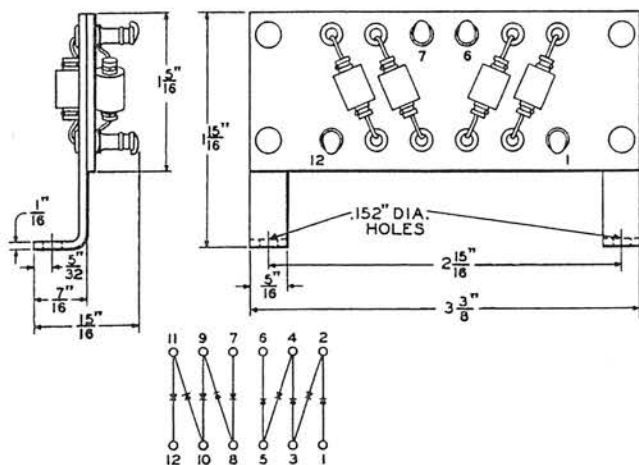
Comcode: 100 172 881

405D: Intended for use as a rectifier in the pilot distributing and emergency alarm panels in the L3 Carrier Terminal.

Comcode: 100 172 899

## DIODES

## 410A

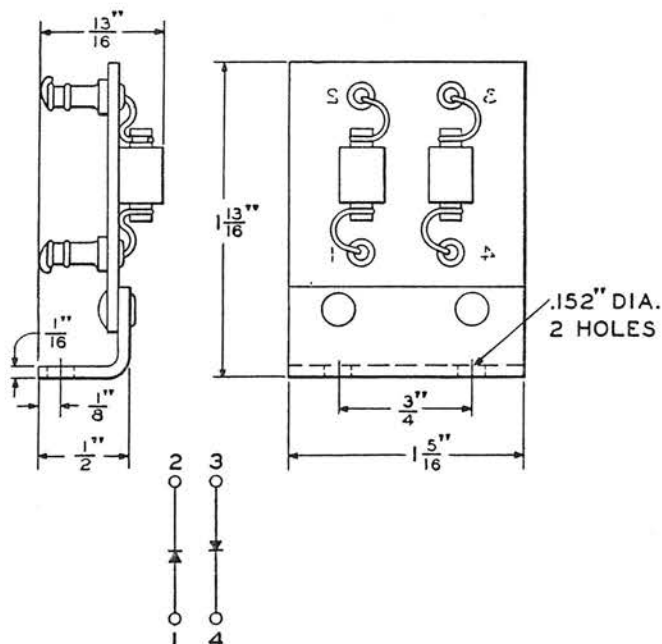


Multiple semiconductor type, consists of 10 selected number 400 type diodes mounted on a plate of insulating material assembled on two metal mounting brackets.

Used in the radio transmitter of the LD-T2 Radio System.

Comcode: 100 172 998

## 411A

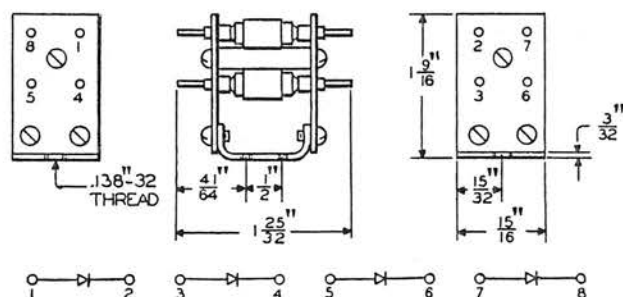


Multiple semiconductor type, consists of two selected number 400 type diodes mounted on a plate of insulating material assembled on a metal mounting bracket.

Used in the radio transmitter of the LD-T2 Radio System.

Comcode: 100 173 004

## 414A



Multiple semiconductor type, consists of four arms, each arm having a single number 405 type diode, assembled between terminal plates which are supported by a metal bracket containing two mounting holes.

As furnished, is equipped with wires wrapped around the four terminals at each end for protection against accidental burnout during installation. These wires should be removed only after the diode has been installed.

Used in the transmission measuring set in the L3 Carrier Telephone System.

Comcode: 100 173 020

	(a) Maximum Spread in Forward Current between Arms (Milliamps DC)	(b) Maximum Reverse Current per Arm (Microamps DC)	(a) Maximum Spread in Reverse Current between Arms (Microamps DC)
(a) Forward Current per Arm (Milliamps DC)	38 to 94	2.5	500
			80

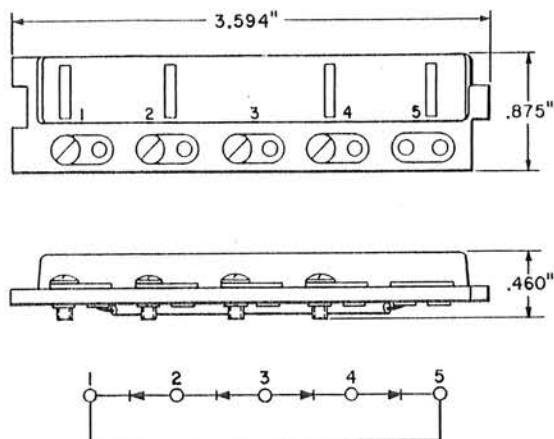
(a) At 25° C and with 1.33 volts dc across each arm.

(b) At 25° C and with 2 volts dc across each arm.



## DIODES

## 419A



Multiple semiconductor type, consists of four diodes assembled and wired to a terminal block of insulating material.

Mounts on the dial bracket of number 532 and 533 type telephone sets.

Absolute Maximum Ratings 55° C:

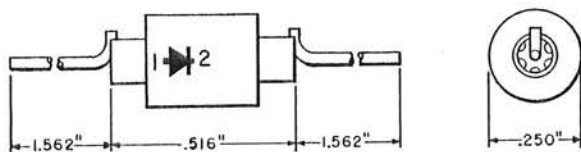
Used as a polarizing network to provide polarity of supply voltage for the 151A Amplifier.

Comcode: 100 173 079

Between  
Terminals

Inverse voltage, peak	(2-4)	200 volts
Max DC output current	(1-3)	100 ma
Continuous reverse working voltage	(2-4)	65 volts

## 441 Type



Semiconductor type, point contact germanium diodes in case of insulating material.

441A: Used in the O1, ON, N1, and T1 Carrier Telephone Systems.

Comcode: 100 173 889

441F and H: Used in the O1, ON, and N1 Carrier Telephone Systems.

Comcode: 100 173 897 and 100 173 905, respectively.

441J: Used in number 400 type key telephone units.

Comcode: 100 173 913

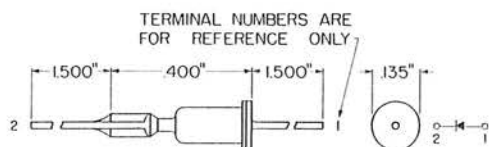
## Electrical Characteristics at 25° C:

	441A	441F	441H	441J
Minimum breakdown voltage	60	60	60	140 Vdc
Maximum reverse current at 50 Vdc	0.85	0.85	0.85	0.40 mAdc
Maximum reverse current at 5 Vdc	20.0	20.0	20.0 uAde	—
Minimum forward current at 1 Vdc	5.0	3.0	5.0	5.0 mAde
Forward voltage at 0.5 mAde	—	—	284 to 326 mVdc	—



## DIODES

## 446F



A hermetically sealed silicon diffused junction diode. Used in the number 101 Electronic Switching System.

Comcode: 100 174 010

## Maximum ratings at 25°C

Power dissipation	.4 watt (a)
Reverse current	.4 mA <sub>dc</sub>
Forward current	.4 A <sub>dc</sub>
Peak forward surge current	3.0 A
Storage temperature	200°C

## Electrical characteristics

Maximum saturation voltage	2.0 uA <sub>dc</sub> (b)
Breakdown voltage	400 to 950 V <sub>dc</sub> (c)
Maximum forward voltage	1.0 V <sub>dc</sub> (d)

(a) Derate at 2.28 mW/°C rise

(b) At 320 V<sub>dc</sub>

(c) At 10 uA<sub>dc</sub>

(d) At 0.40 A<sub>dc</sub>

Each consists of a pair of silicon diffused-junction planar diodes matched for forward impedance and enclosed in a two-lead encapsulation.

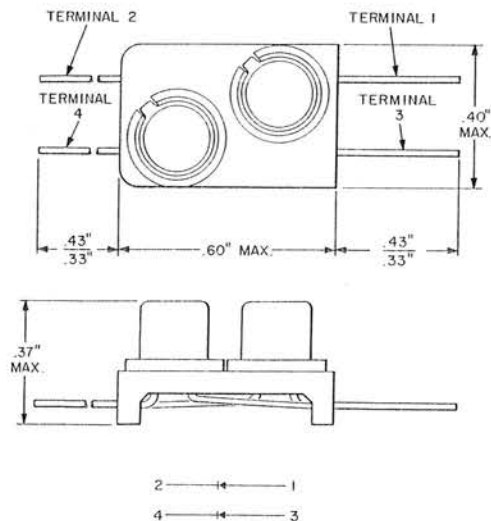
484A: Intended for use as a compressor pair to replace the 434B Diode (pair II) in the compandors in the N2 and N3 Carrier Systems.

Comcode: 100 853 514

484B: Intended for use as an expander pair to replace the 434B Diode (pair I) in the compandors in the N2 and N3 Carrier Systems.

Comcode: 100 853 522

## 484A and B



## DIODES

## Maximum Ratings Absolute Values

(T<sub>A</sub> = 25°C unless otherwise specified)

P Power dissipation

I<sub>F</sub> Forward current

if(surge) Forward surge current

T<sub>stg</sub> Storage temperature

(\*) Derating factor

## Electrical Characteristics at 25°C

BV(Max) Maximum breakdown voltage

(I<sub>R</sub> = 5 mA<sub>dc</sub>)V<sub>F</sub>(Max) Maximum forward voltage(I<sub>F</sub> = 100 mA<sub>dc</sub>)z<sub>f</sub>(Max) Maximum small signal forward impedance(I<sub>F</sub> = 50 uA<sub>dc</sub>)z<sub>f</sub>(Min) Minimum small signal forward impedance(I<sub>F</sub> = 50 uA<sub>dc</sub>)z<sub>f</sub> ratio(Min) Minimum small signal forward impedance ratio(I<sub>F</sub> = 10 uA<sub>dc</sub> and 50 uA<sub>dc</sub>)(I<sub>F</sub> = 10 uA<sub>dc</sub> and 300 uA<sub>dc</sub>)z<sub>f</sub> ratio(Max) Maximum small signal forward impedance ratio(I<sub>F</sub> = 10 uA<sub>dc</sub> and 50 uA<sub>dc</sub>)(I<sub>F</sub> = 10 uA<sub>dc</sub> and 300 uA<sub>dc</sub>)e<sub>n</sub>(Max) Maximum noise voltage (I<sub>F</sub> = 2.5 uA<sub>dc</sub>),BW = 200-3500 Hz, R<sub>p</sub> = 17000 ohmsz<sub>1</sub> — z<sub>2</sub>(Max) Maximum impedance difference(I<sub>F</sub> = 10 uA<sub>dc</sub>)(I<sub>F</sub> = 2 uA<sub>dc</sub>)

(a) Applies to the individual diode.

(b) See Note 1.

(c) Applies to the diode assembly.

(d) See Notes 1 and 3.

(e) Applies to the individual diode and the assembly.

(f) See Notes 1, 2, and 3.

(g) See Note 3.

(h) See Notes 1 and 4.

484A

(\*) (a) 100.0

(a) 100.0

(a) 0.5

(a) —65 to +100

(a) 1.33

484B

(\*) (a) 100.0 mW

(a) 100.0 mA<sub>dc</sub>

(a) 0.5 amp

(a) —65 to +100°C

(a) 1.33 mW/°C

(a) 8.0

(a) 8.0 V<sub>dc</sub>

(a) 1.0

(a) 1.0 V<sub>dc</sub>

{ (a) (b) 935

(a) (b) 935 ohms

{ (c) (d) 1870

(c) (d) 1870 ohms

{ (a) (b) 865

(a) (b) 865 ohms

{ (c) (d) 1730

(c) (d) 1730 ohms

(e) (f) 4.8

(e) (f) 4.8

(e) (f) 5.8

(e) (f) 5.8

(e) (f) 5.2

(e) (f) 5.2

(e) (f) 6.2

(e) (f) 6.2

(e) (g) 20

(e) (g) 20 uV<sub>rms</sub>

(c) (h) 500 ohms

—

(c) (h) 2000 ohms

—

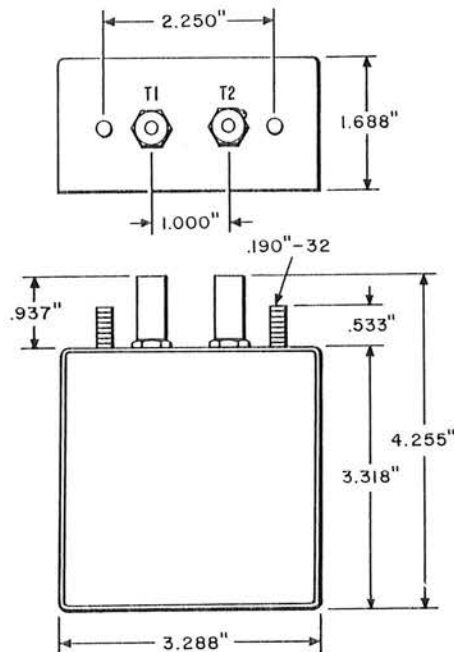
## Notes:

1. The signal voltage across a single diode shall be 6.0 ±5 mV at frequency of 1 kHz.
2. The impedance ratio is the ratio of the small-signal forward impedance, at the first specified current, to the small-signal forward impedance, at the second specified current.
3. The diodes are connected in series for this test.
4. The impedance difference is the difference between the small-signal forward impedance of the two diodes of the pair.



## EQUALIZERS

## 352C



Consists of component apparatus mounted on a printed wiring board and assembled in a metal case. Terminated in two 217A Terminals.

An unbalanced 75 ohm, constant resistance equalizer that equalizes the loss characteristics of 520 feet of number 724 Cable over the frequency range of 0 to 10 MHz.

Used initially as a wire link between L Multiplex and Microwave Radio Systems—J68903A gain and equalization panel.

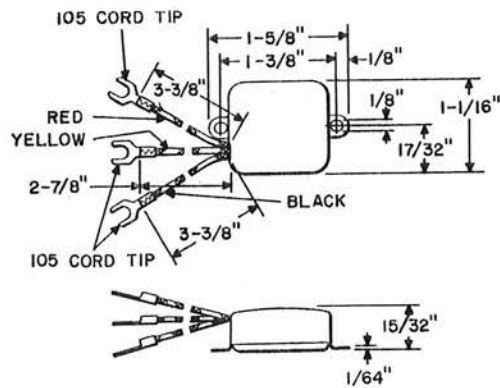
Comcode: 101 144 079



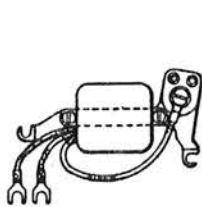


## FILTERS

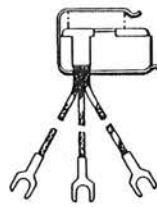
## 61 Type



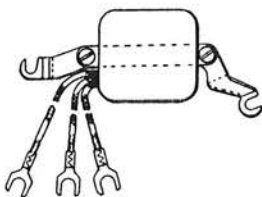
## 61A



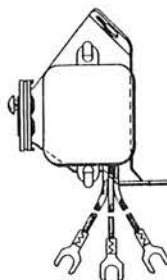
61L



61M



61N



61P

61A: Small three terminal filter unit assembled in a metal case equipped with mounting lugs. For use in station circuits to suppress radio frequency induction due to dialing.

Comcode: 100 182 138

61L: Consists of a 61A Filter mounted on a metal bracket. Used in number 300 or similar type telephone sets.

Comcode: 100 182 203

61M: Consists of a 61A Filter mounted on a metal spring clip. Used in G-type hand set mountings.

Comcode: 100 182 211

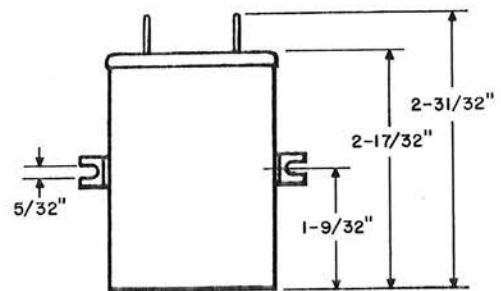
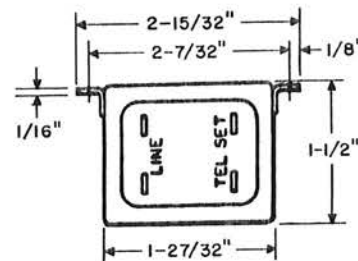
61N: Consists of a 61A Filter mounted on a metal bracket. Used in B- and D-type hand set mountings.

Comcode: 100 182 229

61P: Consists of a 61A Filter mounted on a metal bracket. Used in Number 302 or similar type telephone sets.

Comcode: 100 182 237

## 98A



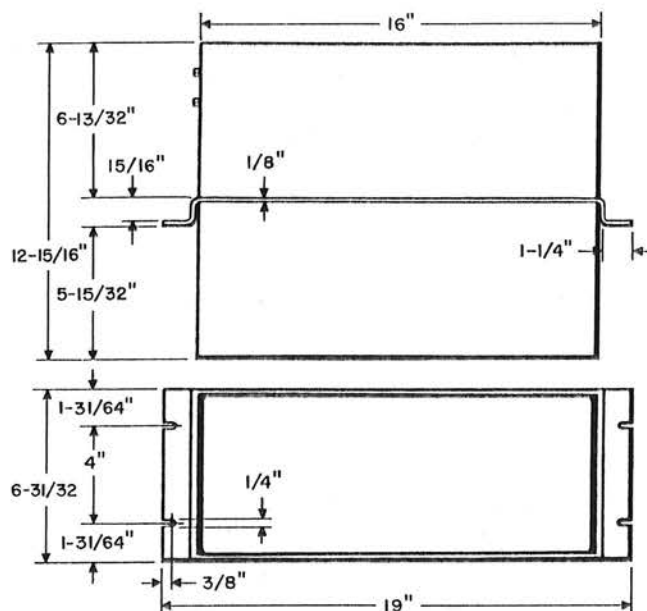
Consists of loading coil and capacitors potted in metal case. Passes frequencies below 3000 Hz and is designed to operate between 600-ohm line and subscriber set.

Used at intermediate bridge points in circuits equipped for carrier telephone operation.

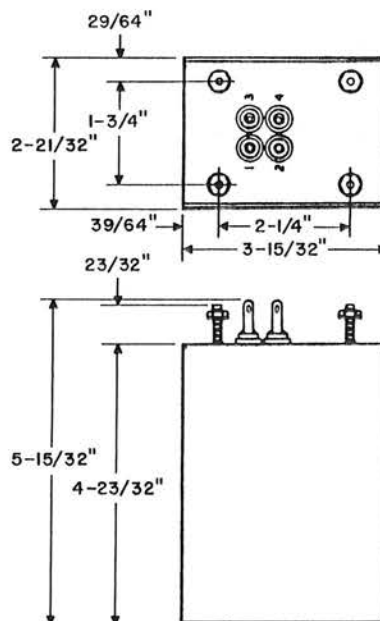
Comcode: 100 182 633

## FILTERS

121A



124 Type



A balanced structure consisting of low-pass line filter designed to pass frequencies below 5000 Hz; high-pass filter to pass frequencies above 6500 Hz; and balancing filter used in voice repeaters to simulate impedance of line filter. Low-pass filter intended to operate between 600 ohm impedances; high-pass intended to operate between 570 ohms line end and 600 ohms drop end.

Used at terminals and repeaters of carrier type telephone systems in separating program or voice channel from carrier system channels.

Comcode: 100 183 052

Unbalanced band-pass filters consisting of inductors and capacitors enclosed in a metal can. Arranged to pass a band of frequencies about 140 Hz wide with its mid-frequency located as shown in table.

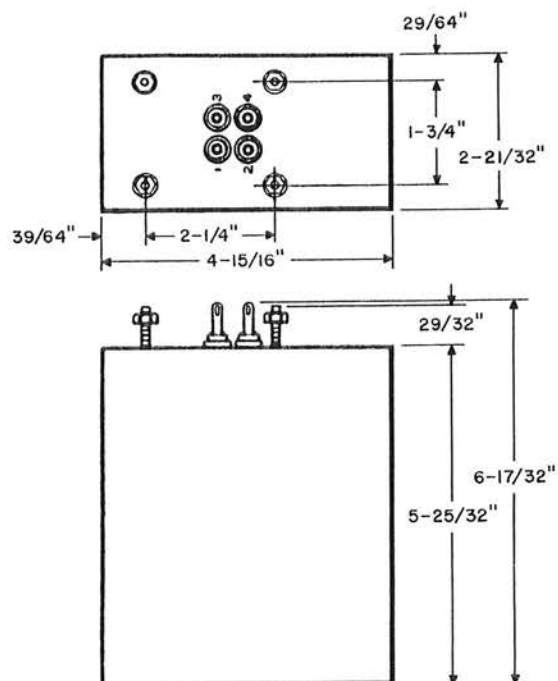
Closest recommended mounting centers are 3-17/32 inches by 2-23/32 inches.

For use as sending filters at the terminals of voice frequency carrier telegraph systems.

Code No.	Comcode	Midfrequency (Hz)
124A	100 183 078	425
124B	100 183 086	595
124C	100 183 094	765
124D	100 183 102	935
124E	100 183 110	1105
124F	100 183 128	1275
124G	100 183 136	1445
124H	100 183 144	1615
124J	100 183 151	1785
124K	100 183 169	1955
124L	100 183 177	2125
124M	100 183 185	2295
124N	100 183 193	2465
124P	100 183 201	2635
124R	100 183 219	2805
124S	100 183 227	2975
124T	100 183 235	3145
124U	100 183 243	255

## FILTERS

125 Type



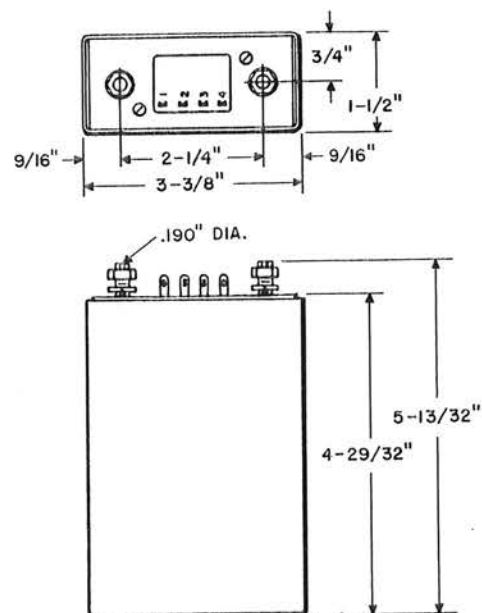
Unbalanced band-pass filters consisting of inductors and capacitors enclosed in a metal can. Arranged to pass a band of frequencies about 110 Hz wide with its mid-frequency located as shown in table.

Closest recommended mounting centers are 5 inches by 2-23/32 inches.

For use as receiving filters at the terminals of voice frequency carrier telegraph systems.

Code No.	Comcode	Midfrequency (Hz)
125A	100 183 250	425
125B	100 183 268	595
125C	100 183 276	765
125D	100 183 284	935
125E	100 183 292	1105
125F	100 183 300	1275
125G	100 183 318	1445
125H	100 183 326	1615
125J	100 183 334	1785
125K	100 183 342	1955
125L	100 183 359	2125
125M	100 183 367	2295
125N	100 185 375	2465
125P	100 183 383	2635
125R	100 183 391	2805
125S	100 183 409	2975
125T	100 183 417	3145
125U	100 183 425	255

128 Type



Balanced low-pass filters. Each filter consists of capacitors and inductors enclosed in metal can.

Closest recommended mounting centers are 1-3/4 inches by 3-1/2 inches.

128A, B, and C: Used with telephone repeaters.

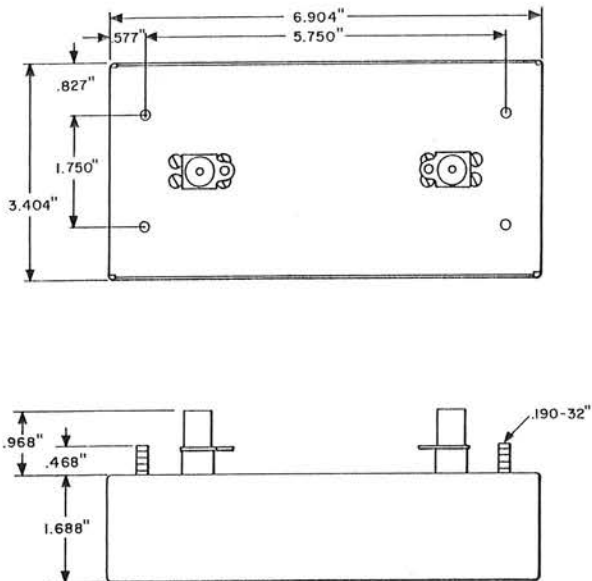
128D and E: Used in ac key pulsing receiver in crossbar toll office.

Code No.	Comcode	Impedance (Ohms)	Transmit Frequencies (Hz)
128A	100 183 441	600	Up to 3300
128B	100 183 458	600	Up to 2350
128C	100 183 466	600	Up to 2750
128D	100 183 474	600	600 to 1900
128E	100 183 482	635	Above 600



## FILTERS

695A



Unbalanced high-pass filter intended to operate between sending and receiving resistances of 75 ohms.

Consists of inductors, capacitors, and resistors mounted on a printed wiring board and enclosed in a metal container.

Intended to suppress the frequencies from 200 kc to 296 kc by more than 35 db, pass from 308 kc to 8 megacycles with less than 0.2 db distortion, and attenuate frequencies below 200 kc by more than 20 db.

Input and output connections are made through 358A Coaxial Plugs.

Comcode: 100 838 531

733 Type

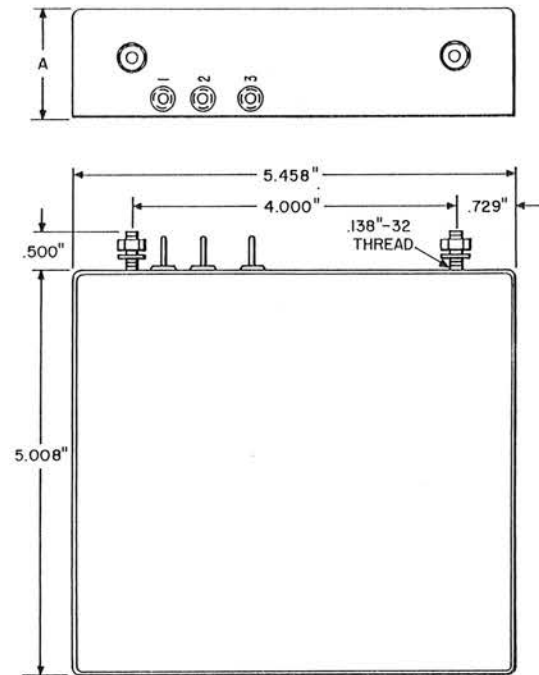


FIG. 1

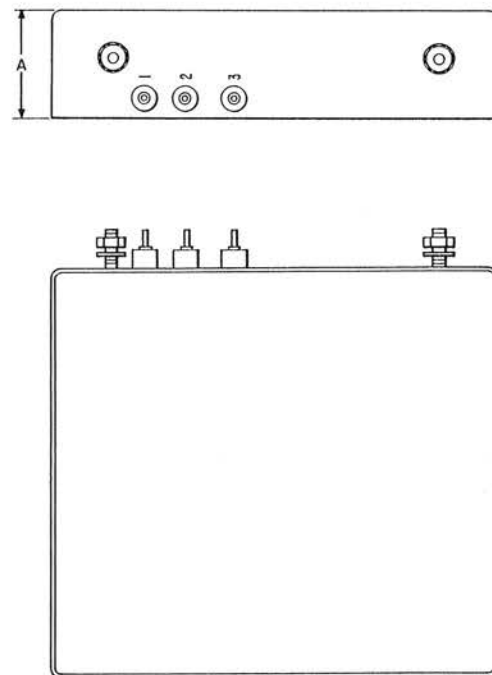


FIG. 2

(OTHERWISE SAME AS FIG. 1)

## FILTERS

Each consists of component apparatus assembled in a metal can.

**733A:** Unbalanced band elimination filter intended to operate between sending and receiving impedances of 600 ohms. Provides 60 db suppression at 2300 Hz and less than 4 db passband loss below 2200 Hz and above 2400 Hz.

Terminals 1 and 2 are input terminals and 2 and 3 are output terminals.

Closest recommended mounting centers are 1.563 inches by 5.563 inches.

**733B:** Same as 733A except that it provides 60 db suppression at 2125 Hz and less than 4 db passband loss below 2025 Hz and above 2225 Hz.

**733C:** Same as 733A except that it provides 30 db suppression between 1930 and 1980 Hz and has less than 4 db suppression below 1825 Hz and above 2975 Hz. Terminal 1 is input, 2 is ground, and 3 is output.

**733D:** Same as 733A except it is an unbalanced frequency shaping network intended to operate between 600 ohm terminations.

Provides 9.02 db loss at 100 Hz and has a nominal minimum loss of 1.56 db at 2500 Hz and a loss of 17.90 db at 5000 Hz.

Terminals 1 and 3 are input terminals and 2 and 3 are output terminals. Terminal 3 is ground but is not connected to the can.

Closest recommended mounting centers are 5.531 inches by 1.475 inches.

**733E:** Same as 733A except it is a high-pass filter intended to operate between sending and receiving impedances of 75 ohms. Provides a cutoff frequency at 58.6 kHz and a flat loss characteristic of  $\pm 0.05$  db from 60 to 1052 kHz.

Code No.	Comcode	Fig. No.	Dimension A (Inches)
733A	100 193 408	1	1.349
733B	100 193 416	1	1.349
733C	101 007 243	1	1.365
733D	101 004 455	1	1.349
733E	101 004 463	2	1.365

733A, B, and C used initially in the Sage AUTOVON System.

733D used initially in J94001W Noise Amplifier Rectifier.

733E used initially in Long Lines as filter in the wire line entrance link.

## 768A

Consists of component apparatus mounted on a printed wiring board. Overall dimensions are approximately 5.70 inches long by 4.50 inches high by 0.813 inches wide.

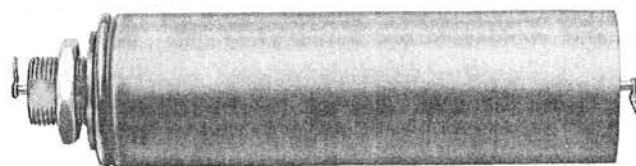
An unbalanced structure intended to operate between input and output impedances of 6000 ohms. Input connected to 900 ohms balanced line through 6000:900 line transformer. Two output connections operate into 6000 ohm unbalanced loads. A low-pass filter in parallel with a high-pass filter at one end with crossover frequency of 1610 Hz.

Replaces the CJ3 Circuit Pack.

Used initially in Data Set 103EW1.

Comcode: 101 200 996

## KS-20161



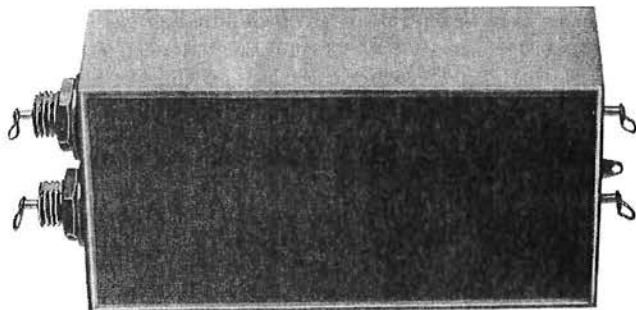
A single-lead filter designed to pass telephone signaling frequencies. It has a D.C. voltage rating of 600 volts maximum with a D.C. working current rating of 350 M.A. maximum. The maximum D.C. resistance is 4.0 ohms. The unit is tubular and is stud mounted. Overall dimensions are 1.375 inches in diameter by 5.25 inches long, excluding the terminals.

Intended solely for specially engineered lines — not for general telephone use.

Comcode: 400 346 649

## FILTERS

## KS-20162



A balanced two-lead filter designed for transmission circuits and capable of passing telephone voice frequencies. It has a D.C. voltage rating of 600 volts maximum and a D.C. working current rating of 160 M.A. maximum. The maximum D.C. resistance is 12 ohms. The insertion loss is as follows:

Frequency (Hz)	Insertion Loss (db)
1,000	.25 maximum
3,000	.60 maximum
5,000	1.50 maximum

This filter is rectangular and is stud mounted. Overall dimensions are 1.25 inches by 2.50 inches by 5.25 inches long, excluding the terminals.

Intended solely for specially engineered lines — not for general telephone use.

Comcode: 400 346 656

## FUSES

## Tubular

7A and 7T

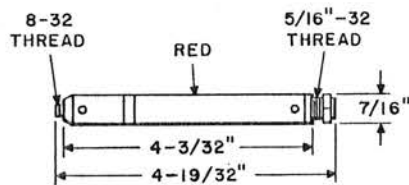


Fig. 1

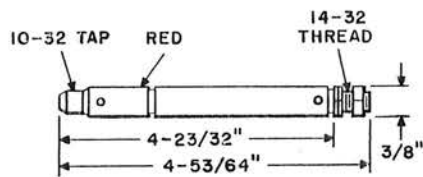
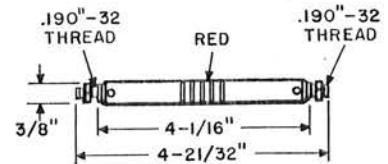


Fig. 2

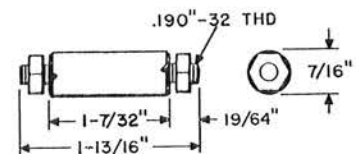
A tubular type fuse, operates in less than 5 minutes on a 50 percent increase over rated capacity. See table at end of fuse descriptions for capacities obtained and operating current values. Fig. 1 shows 7A Fuse and Fig. 2 shows 7T Fuse.

11C



A tubular type fuse with fuse wire enclosed in asbestos sleeving. See table at end of fuse descriptions for capacities obtainable and operating current values. May be obtained in rated capacities of 1 through 8 amperes. However unless specified on order 7 amperes will be furnished.

60 Type



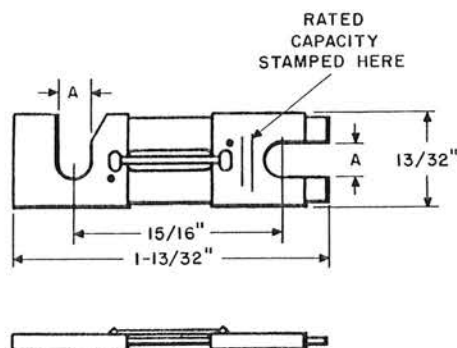
A tubular type fuse having the element enclosed in a sleeve of insulating material. See table at end of fuse descriptions for capacities obtainable and operating current values.

60D: Used with LA and LB type fuse chambers.

60E: Used in battery feeder circuits in connection with LA and LB type cable terminals.

## Non-Alarm

24 Type

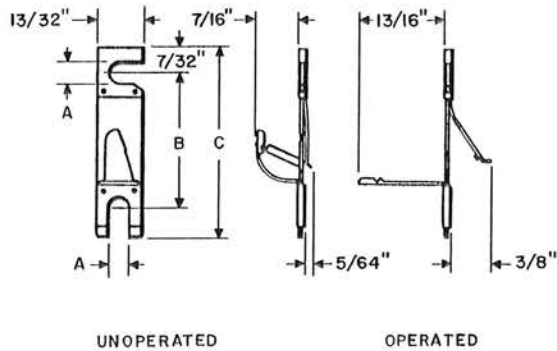
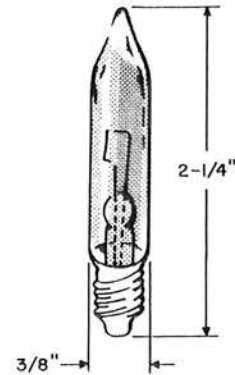


A non-alarm fuse that mounts on 1-inch centers. See table at end of fuse descriptions for capacities obtainable and operating current values.



## FUSES

### Indicator Alarm

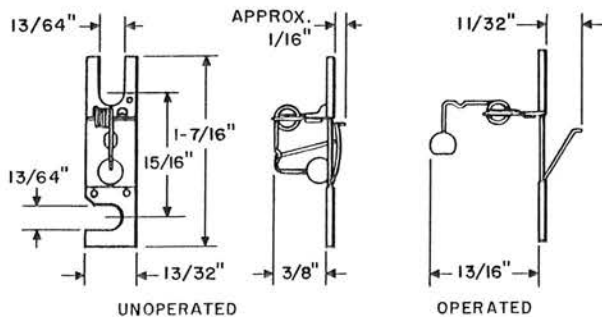
**35 Type****59A**

An indicator alarm type fuse with tinned finish terminals. See table at end of fuse descriptions for capacities obtainable and operating current values.

35J, P, and S: Fuse wire enclosed in glass tube to prevent side flash.

A vacuum type fuse arranged to screw into a miniature lamp receptacle. See table at end of fuse descriptions for capacities obtainable and operating current values.

For use in the protection of thermocouples.

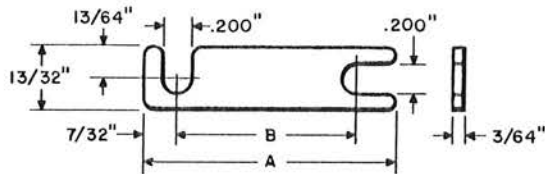
**44C**

An indicator alarm type fuse mounting on 1-inch centers with tinned finish terminal. See table at end of fuse descriptions for capacities obtainable and operating current values.

## FUSES

## Dummy

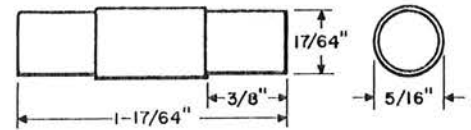
63A and 64A



A dummy fuse composed of black insulating material. The A dimension for 63A and 64A is 1-43/64 inches and 1-13/64 inches respectively. The B dimension for 63A and 64A is 1-3/8 inches and 15/16 inch respectively.

Intended for use in fuse panels.

72A

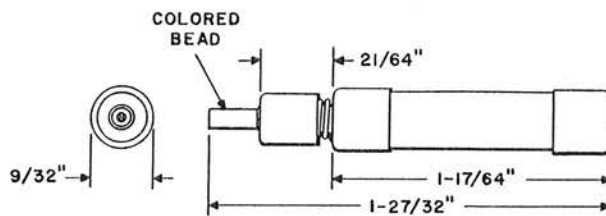


Composed of black insulating material.

Intended to retain the fuse cap of 18A Fuse Blocks in place while the fuse blocks are being handled or shipped in equipment.

## Alarm and Indicator

70 Type



Each consists essentially of a tube of insulating material containing a fusible element which is attached to a metal cap at one end and to a coil spring and metal cap at the other end. A colored bead is attached to one end of the coil spring. When the fuse operates, the spring is released forcing the cap on the spring against the alarm terminal of the fuse block. See table at end of fuse descriptions for capacities obtainable and operating current values.

For use in circuits operating on voltages up to 300 volts.

Code No.	Comcode	Rated Capacities (Ampere)	Operates on in Less Than (Minutes)	Color Insulating Strip	Size of Screws Slotted For	Dimensions (Inches)			Mounting Centers (Inches)
						A	B	C	
Tubular Type (a) 7A	100 202 589	1	1-1/2	5	—	—	—	—	—
	100 202 597	2	3	5	—	—	—	—	—
	100 202 605	3	4-1/2	5	—	—	—	—	—
	100 202 613	4	6	5	—	—	—	—	—
	100 202 621	5	7-1/2	5	—	—	—	—	—
	100 863 737	7	10-1/2	5	—	—	—	—	—
	100 202 753	7	10-1/2	5	—	—	—	—	—
	100 202 779	1	1-1/2	5	—	—	—	—	—
	100 202 787	2	3	5	—	—	—	—	—
	100 202 795	3	4-1/2	5	—	—	—	—	—
7T 11C	100 202 803	4	6	5	—	—	—	—	—
	100 202 811	5	7-1/2	5	—	—	—	—	—
	100 202 829	6	9	5	—	—	—	—	—

## FUSES

Code No.	Comcode	Rated Capacities (Ampere)	Amps	Operates on in Less Than (Minutes)	Color of Insulating Strip	Size of Screws Slotted For	Dimensions (Inches)			Mounting Centers (Inches)
							A	B	C	
11C	100 863 745	7	10-1/2	5	—	—	—	—	—	—
	100 202 837	8	12	5	—	—	—	—	—	—
60D	100 203 207	.350	.500	3-1/2	—	—	—	—	—	—
60E	100 203 215	1.250	1.80	3-1/2	—	—	—	—	—	—
Non-Alarm										
24B	100 202 852	3	4-1/2	1	—	6	5/32	—	—	15/16
24C	100 202 878	2	3	1	—	10	13/64	—	—	15/16
24D	100 202 886	3/4	1-1/4	1	—	6	5/32	—	—	15/16
24E	100 202 894	1/2	1	1	—	10	13/64	—	—	15/16
24F	100 202 902	5	7-1/2	1	—	6	5/32	—	—	15/16
24G	100 202 910	1-1/3	2	1	—	10	13/64	—	—	15/16
Indicator Alarm										
(b) 35A	100 202 928	1-1/3	2	1-1/2	White	10	13/64	1-3/16	1-43/64	1-1/4
(b) 35C	100 202 951	2	3	3	Orange	10	13/64	1-3/16	1-43/64	1-1/4
(b) 35F	100 202 985	1/2	3/4	1-1/2	Red	10	13/64	1-3/16	1-43/64	1-1/4
(b) 35G	100 202 993	3	4-1/2	5	Blue	6	5/32	1-3/16	1-43/64	1-1/4
(b) 35H	100 203 009	5	7-1/2	1-1/2	Green	6	5/32	1-3/16	1-43/64	1-1/4
(c) 35J	100 203 017	1/2	3/4	1-1/2	Red	10	13/64	1-3/16	1-43/64	1-1/4
(d) 35K	100 203 025	1-1/3	2	3	White	10	13/64	1-3/16	1-43/64	1-1/4
(d) 35L	100 203 033	2	3	3	Orange	10	13/64	1-3/16	1-43/64	1-1/4
(d) 35M	100 203 041	3	4-1/2	5	Blue	6	5/32	1-3/16	1-43/64	1-1/4
(d) 35N	100 203 058	5	7-1/2	3	Green	6	5/32	1-3/16	1-43/64	1-1/4
(c) 35P	100 203 066	3/4	1-1/8	1-1/2	Brown	10	13/64	1-3/16	1-43/64	1-1/4
(b) (e) 35R	100 203 074	.180	.270	1-1/2	Yellow	10	13/64	1-3/16	1-43/64	1-1/4
(e) 35S	100 203 082	1/4	3/8	1-1/2	Violet	10	13/64	1-3/16	1-43/64	1-1/4
(b) 35T	100 203 090	.650	1.10	3	Brown	10	13/64	1-3/16	1-43/64	1-1/4
44C	100 203 140	.500	.950	5	—	10	—	—	—	—
59A	100 203 181	.005	.011	60	—	—	—	—	—	—
Alarm and Indicator										
70A	100 203 322	1-1/3	2	1-1/2	White	—	—	—	—	—
70B	100 203 330	2	3	1-1/2	Orange	—	—	—	—	—
70C	100 203 348	3	4-1/2	1-1/2	Blue	—	—	—	—	—
70D	100 203 355	5	7-1/2	1-1/2	Green	—	—	—	—	—
70E	100 203 363	.180	.270	1-1/2	Yellow	—	—	—	—	—
70F	100 203 371	1/4	3/8	1-1/2	Violet	—	—	—	—	—
70G	100 203 389	1/2	3/4	1-1/2	Red	—	—	—	—	—
70H	100 203 397	3/4	1-1/8	1-1/2	Brown	—	—	—	—	—
70K	100 203 405	1/4	3/8	5	Violet, White Stripes	—	—	—	—	—
70P	100 203 413	1/10	1/5	5	Gray, White Stripes	—	—	—	—	—

(a) Capacity must be specified.

(b) For use in circuits operating on voltages up to 90 volts.

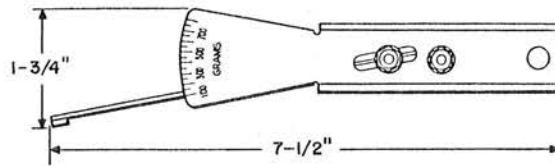
(c) For use in circuits operating on 90-160 volts.

(d) For use in circuits operating on 90-150 volts.

(e) For use in circuits operating on voltages up to 160 volts of current is limited as covered in the standard equipment information on fuse boards.

## GAUGES

62B

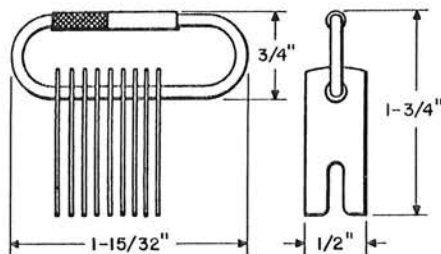


Consists of handle on which indicating spring is mounted. Both sides of handle have scale graduated in 50 gram steps from 0 to 700 grams.

Used to measure spring tension in grams.

Comcode: 100 204 213

66D

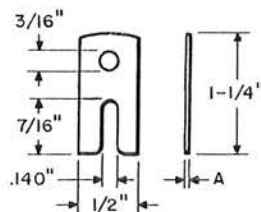


Consists of 67A through 67P Gauges assembled on a holding ring.

Used to measure the armature travel of relays.

Comcode: 100 204 239

67 Type



Components of 66D Gauge. Individual gauges of thickness are indicated in table.

Code No.	Comcode	Thickness (Inches)
67A	100 204 247	.015
67B	100 204 254	.020
67C	100 204 262	.025

68 Type

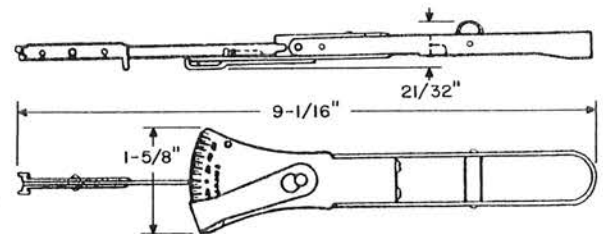


Fig. 1

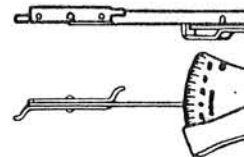


Fig. 2

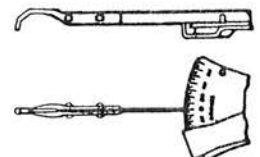


Fig. 3

A frame on which indicating spring, folding handle, and adjustable tension attachment are assembled. Folding handle, when closed, serves as protector for indicating spring, and adjustable tension attachment sets indicating spring at initial tension. Scale graduated in 5 gram steps: 70-0-70 grams.

68B, C, and D are the same except for the gauge point. See Fig. 1, 2, and 3 respectively.

68B: Measures tension of multiple brush springs, sequence switch brush springs, and commutator brush springs.

Comcode: 100 204 387

68C: For checking relay spring tensions.

Comcode: 100 204 395

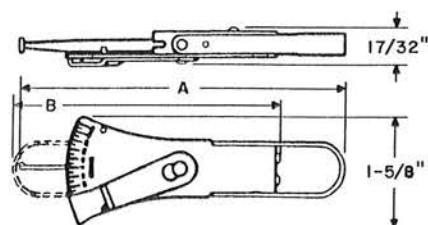
68D: Measures tensions of multiple brush springs.

Comcode: 100 204 403

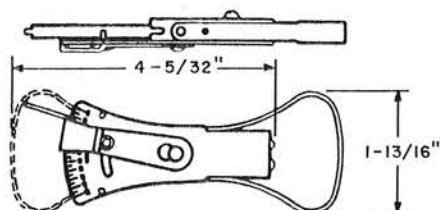


## GAUGES

70 Type



70D, F, H, and J



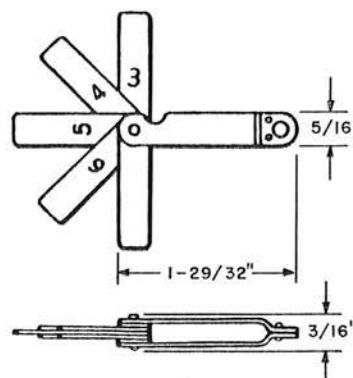
70G

A frame on which indicating spring, folding handle, and adjustable tension attachment are assembled. Folding handle, when closed, serves as protector for indicating spring. Adjustable attachment sets indicating spring at initial tension. Scale is stamped on both sides.

Used to measure tension of relay springs.

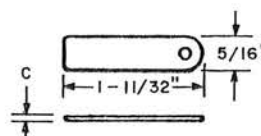
Code No.	Comcode	Graduations Each (Grams)	Range (Grams)	Dimensions (Inches)	
				A	B
70D	100 204 411	5	50-0-50	5-7/32	4 9/32
70F	100 204 452	1	10-0-10	5-7/32	4-9/32
70G	100 204 460	5	50-0-50	—	—
70H	100 204 478	2	0-30	5-7/32	4-9/32
70J	100 204 486	5	0-150	5-15/16	4-25/32

74D



Consists of 75B through 75N Gauges mounted in holder. Individual gauges are readily removable and replaceable.  
Comcode: 100 863 760

75 Type

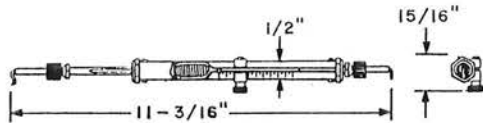


Components of 74D Gauge. Individual gauges of thickness are indicated in table.

Code No.	Comcode	Dimension C Thickness (Inches)
75B	100 204 528	.003
75C	100 204 536	.004
75D	100 204 544	.005
75E	100 204 551	.006
75F	100 204 569	.002
75G	100 204 577	.012
75H	100 204 585	.018
75J	100 204 593	.007
75K	100 204 601	.009
75L	100 204 619	.011
75M	100 204 627	.010
75N	100 204 635	.008

## GAUGES

## 79B and C



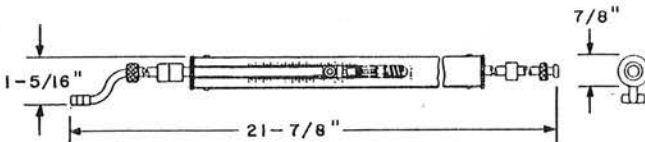
79B: A spiral spring tension and pressure gauge calibrated for 1000 grams in 25 gram steps. For use in adjusting and testing on number 200 type selectors.

Comcode: 100 204 684

79C: Same as 79B Gauge except calibrated for 200 grams in 5 gram steps. Can be obtained with an additional (longer) Finger (P-11B374) when specified on order.

Comcode: 100 204 692

## 79F

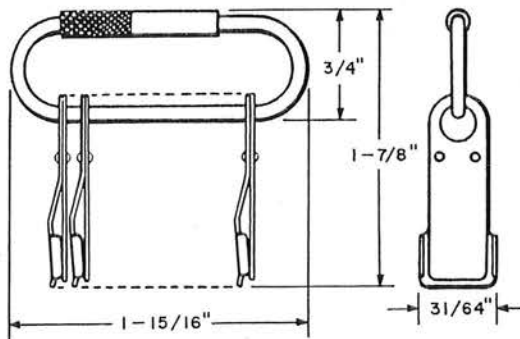


A spiral spring tension and pressure gauge calibrated for 6000 grams in 50 gram steps. Can also be obtained with a Finger (P-10A878) when specified on order.

Used in checking key lever and plunger installation and maintenance. May be used in horizontal, vertical, or inclined positions.

Comcode: 100 204 700

## 99A

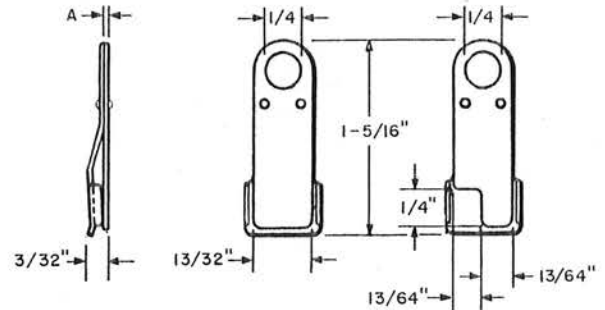


Consists of 100A through 100H and 101A through 101E Gauges assembled on a holding ring.

For use in adjusting the armature air gaps of B- and G-type relays.

Comcode: 100 205 160

## 100 and 101 Type



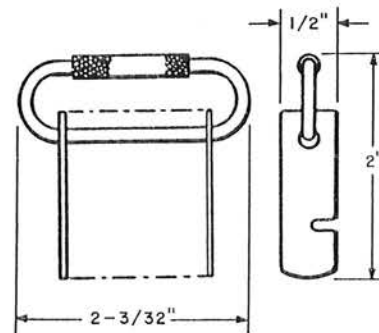
## 100 Type

## 101 Type

Components of 99A Gauge. Individual gauges of thickness are indicated in table.

Code No.	Comcode	Dimension A (Inches)
100A	100 205 178	.005
100B	100 205 186	.010
100C	100 205 194	.015
100D	100 205 202	.020
100E	100 205 210	.025
100F	100 205 228	.030
100G	100 205 236	.035
100H	100 205 244	.040
101A	100 205 251	.030
101B	100 205 269	.035
101C	100 205 277	.040
101D	100 205 285	.050
101E	100 205 293	.060

## 131A



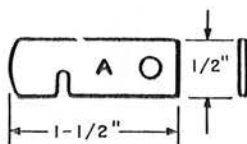
Consists of one each of 132A through 132AJ Gauges assembled on holding ring.

Used in adjusting armature travel and for spring gauging of U, Y, and UN type relays.

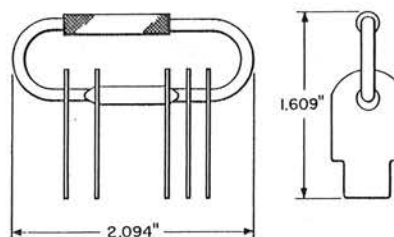
Comcode: 100 205 665

## GAUGES

132 Type



185A and B



Components of 131A Gauge. Individual thickness of gauges is indicated in table.

Code No.	Comcode	Thickness (Inches)
132A	100 205 673	.008
132B	100 205 681	.010
132C	100 205 699	.013
132D	100 205 707	.015
132E	100 205 715	.017
132F	100 205 723	.020
132G	100 205 731	.023
132H	100 205 749	.026
132J	100 205 756	.029
132K	100 205 764	.032
132L	100 205 772	.035
132M	100 205 780	.038
132N	100 205 798	.041
132P	100 205 806	.044
132R	100 205 814	.047
132S	100 205 822	.050
132T	100 205 830	.053
132U	100 205 848	.056
132W	100 205 855	.059
132Y	100 205 863	.062
132AA	100 205 871	.065
132AB	100 205 889	.068
132AC	100 205 897	.071
132AD	100 205 905	.074
132AE	100 205 913	.018
132AF	100 205 921	.004
132AG	100 205 939	.006
132AH	100 205 947	.040
132AJ	100 205 954	.060

185A: Consists of one each of the 186A through 186E gauges, assembled on a metal key ring.

Used in gauging the armature gap adjustment of the number 286 type relays.

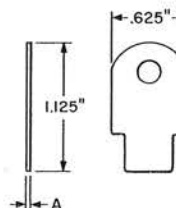
Comcode: 100 206 945

185B: Consists of one each of the 186F through 186J gauges, assembled on a metal key ring.

Used in gauging the armature travel of the BF, BG, BJ, and BL type relays.

Comcode: 101 153 104

186 Type



Metal feeler gauges. Forms a part of 185A or 185B gauges.

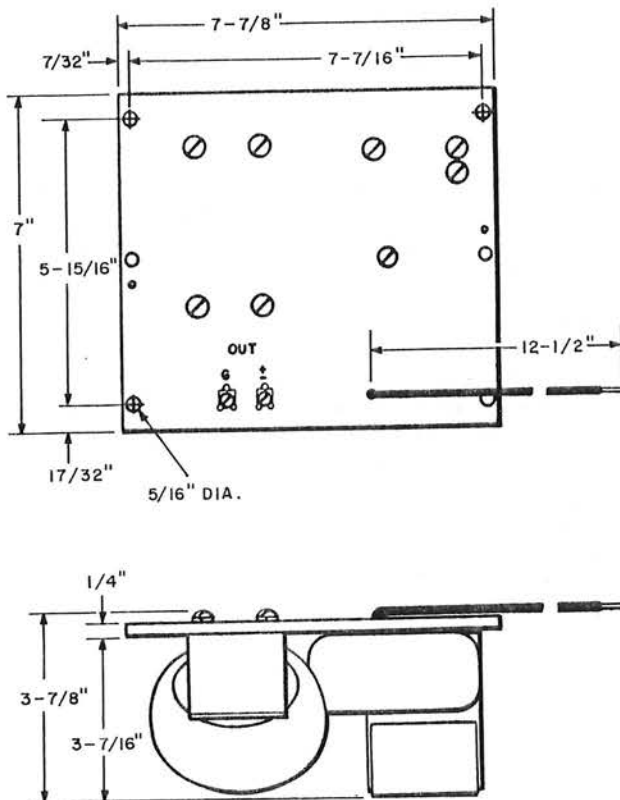
Code No.	Comcode	Thickness (Inches)
186A	100 206 952	.002
186B	100 206 960	.006
186C	100 206 978	.008
186D	100 206 986	.020
186E	100 206 994	.022
186F	101 153 112	.023
186G	101 429 710	.030
186H	101 324 499	.033
186J	101 324 606	.040



## GENERATORS

## Frequency

107B



Consists of a harmonic generating transformer, a capacitor, an inductor, and a combined tuning, isolating, and load transformer mounted on a panel of insulating material. Flexible terminal leads are provided for input connections.

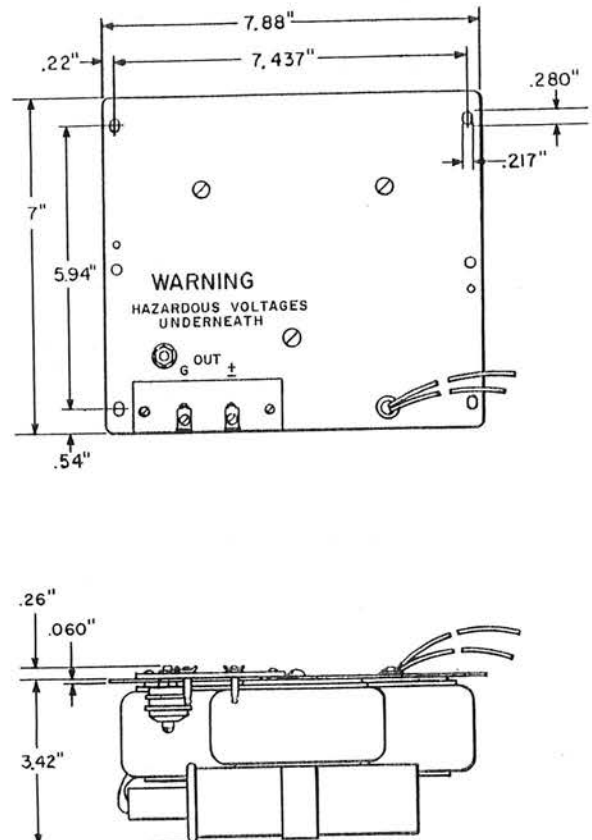
Closest recommended mounting centers are  $7\frac{1}{32}$  inches by  $7\frac{29}{32}$  inches.

With 105 to 125 volts, 60 Hz, applied to the input, the generator will deliver 20 Hz power at the output terminals. The voltage at the output terminals will remain between 75 and 90 volts for variations of line voltage within the rating and for values of load impedances above 1600 ohms at 60 percent lagging power factor and above 3600 ohms at unity power factor.

Used in supplying 20 Hz ringing power in the 1A and 1A1 Key Telephone System and in other packaged power supplies.

Comcode: 100 207 166

107D



Consists of a harmonic generating transformer, a linear inductor, a dual section capacitor, a varistor, and a combined tuning, isolating, and load transformer mounted on a metal panel. Flexible terminal leads approximately 18 inches long are provided for input connections.

Closest recommended mounting centers are 7.031 inches by 7.906 inches.

With 105 to 125 volts, 60 Hz, applied to the input, the frequency generator will deliver 20 Hz power at the output terminals. The voltage at the output terminals will remain between 75 and 100 volts for loads consisting of eight B1A Ringers or six B1A Ringers with series capacitor. Heavier loads than those referred to above may be connected but the output voltage may drop below 75 volts.

Used in supplying 20 Hz ringing power in the 6A Key Telephone System, 756A PBX, and in other packaged power supplies.

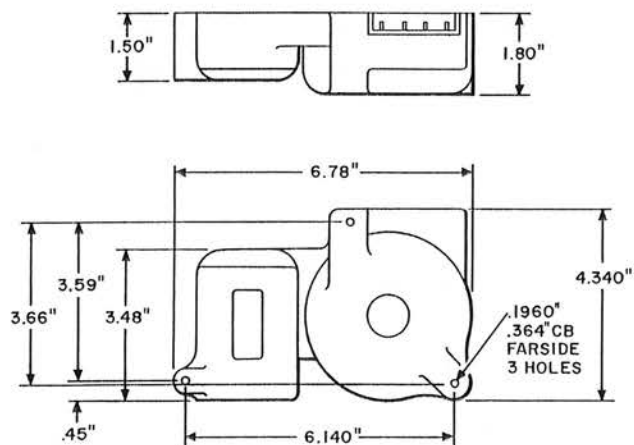
Comcode: 100 207 174



## GENERATORS

## Frequency

113A



Consists of a subharmonic generating transformer, capacitor, diode, and resistor. The parts are enclosed in an

epoxy filled plastic case. Input and output leads extend from solder type terminals recessed in the case. It is arranged to be an integral part of the 20AW1 Power Unit which may be mounted within a cover on system framework or wall mounted within a ventilated cabinet. It weighs approximately 3 pounds.

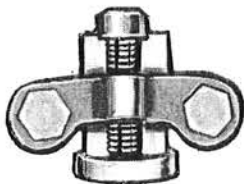
With 105 to 109 volts, 60 Hz, applied to the input leads, this frequency generator will deliver 30 Hz power to a suitable load connected to the output leads. The output voltage will be in the range of 110 to 125 volts for loads consisting of 16 high impedance ringers or 6 high impedance ringers with capacitors of 16 high impedance ringers with series diodes. Heavier loads than those specified may be connected but the output voltage may drop below 110 volts. The generator is self-protecting, i.e., a short circuit across the output leads results in a 60 Hz input current which is less than the normal operating current. The 30 Hz output voltage is immediately restored upon removal of the fault.

Used to furnish 30 Hz ringing voltage in key telephone systems and in package power supplies.

Comcode: 101 153 153

## HANGERS

50A



Consists of a keeper equipped with a cap screw, a clamp, and two mounting screws. Two hangers are required to suspend one complete splice closure consisting of two splice cases.

For use in mounting 20C and 20D type splice cases on strands of any diameter.

Comcode: 100 208 024



## HEADBANDS

11A

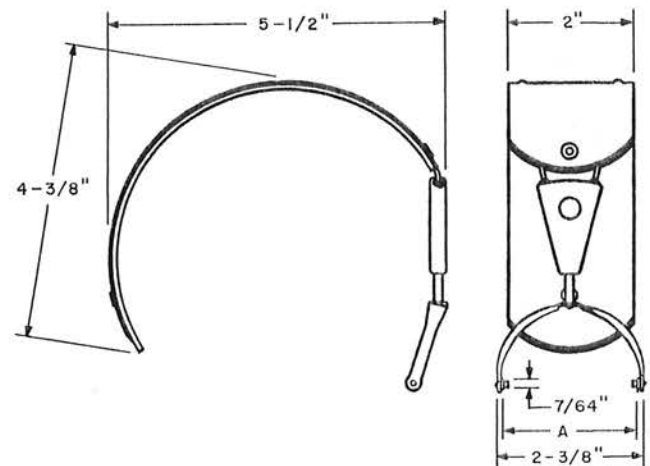
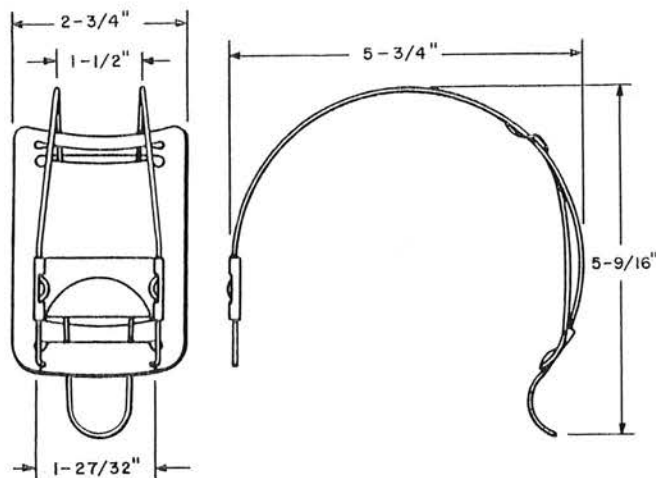


Fig. 2

A one piece nickel finished wire headband which holds 716A or similar type receiver. P-240421 Pad is furnished as part of a headband. P-10E121 Pad furnished only when specified on order.

Comcode: 101 314 243 E/W P-240421 Pad  
101 314 250 E/W P-10E121 Pad

15 Type

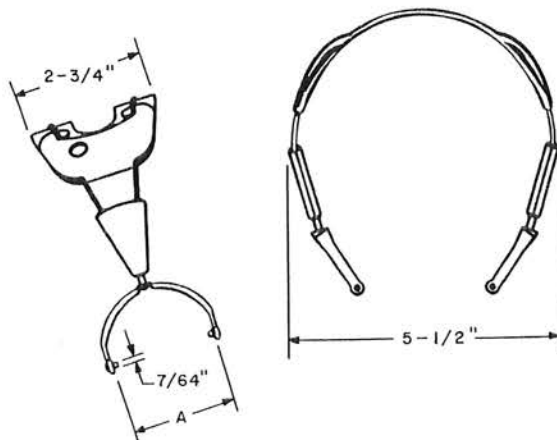


Fig. 1

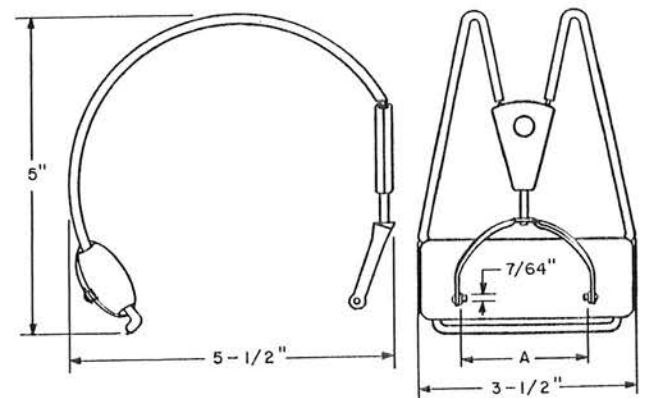


Fig. 3

Lightweight, adjustable, wire headbands each equipped with a pad.

15A: Equipped with a synthetic rubber pad P-240421. Can also be obtained with a simulated leather, multiple layer pad P-10E121 instead of pad P-240421 when specified on the order. Arranged for a single 723A or similar type receiver. Forms a part of number 52 type head set.

15B: Arranged for two 723A or similar type receivers. Forms part of the 1020A and B Head Sets.

15C: Arranged for a single 723A or similar type receiver. Forms part of the 53DRW Head Telephone Set.

15E: Arranged for two 716A or similar type receivers.

15F and G: Have a plastic coated wire frame and are equipped with a foam plastic pad.

15F: Intended for use with number 52 type head telephone sets.



## HEADBANDS

## 15 Type (Continued)

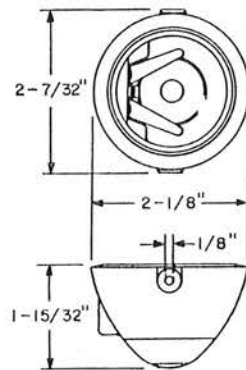
15G: Arranged for a single 716A or similar type receiver.

Code No.	Comcode	Fig. No.	Dimension A (Inches)
15A	101 212 470	1	2-9/64
15B	100 208 073	1	2-9/64
15C	100 208 081	2	2-9/64
15E	100 208 099	1	1-3/4
15F	100 208 107	3	2-9/64
15G	100 208 115	3	1-3/4

## HOLDERS

## Receiver

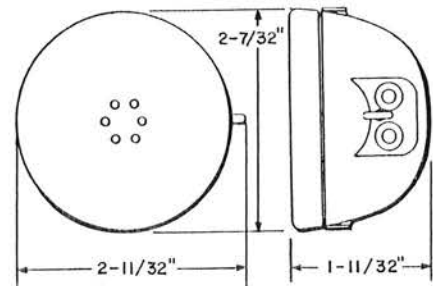
10A



Black plastic case arranged to accommodate an HC3 or HC4 Receiver Unit. Provisions are made for attaching a transmitter arm and a headband to the receiver holder. Necessary receiver cap is furnished with the number 52 type head telephone sets of which this receiver holder forms a part.

Comcode: 100 208 446

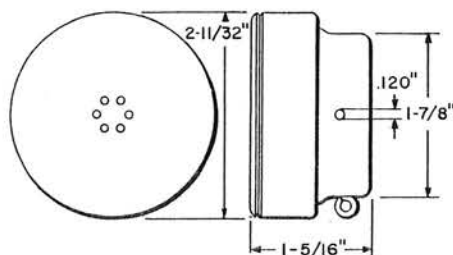
12A



Molded plastic receiver holder. Primarily a component of 723A Receiver. Will house an HC3 Receiver Unit. Arranged for use with number 15 type headband. Will accommodate cords with number 130 Cord Tips.

Comcode: 100 208 495

11A



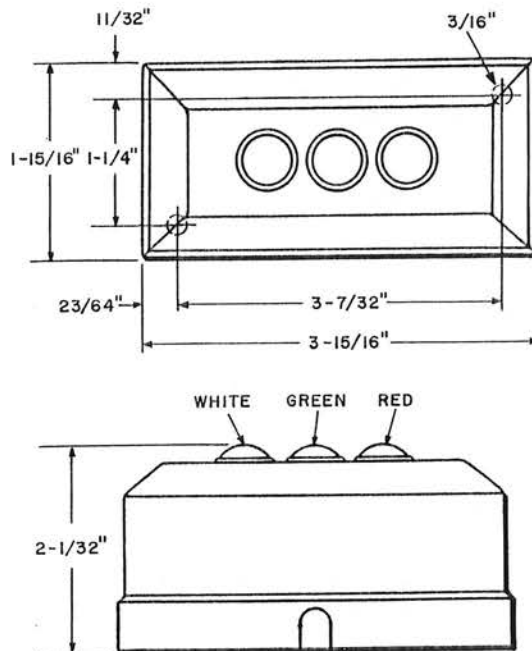
Black plastic case and cap arranged for HA type receiver unit. Forms a part of 716A, B, or C Receiver. Provisions are made for attachment of 11A Headband.

Comcode: 100 208 461



## INDICATORS

14BW-49



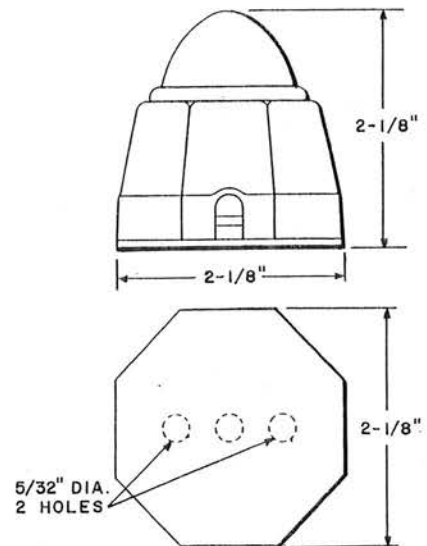
Three lamp indicator equipped with colored lamp caps. Housing is made of insulating material and has a light olive gray finish.

Arranged for fixed mounting by means of wood screws (not furnished), or for mounting without fastening on a horizontal surface. A pad for mounting without fastening is furnished.

Used to mount standard switchboard lamps for use as visual indicators of line or busy signals, or both. May be used with either D4BD-49 Cord or concealed wiring. Lamps and cords must be ordered separately.

Comcode: 101 826 667

15 Type



Single lamp indicator equipped with a beehive lens colored as indicated below. Housing is of insulating material and has a light olive gray finish.

Arranged for fixed mounting by means of wood screws (not furnished) or for mounting without fastening on a horizontal surface. A pad for mounting without fastening is furnished.

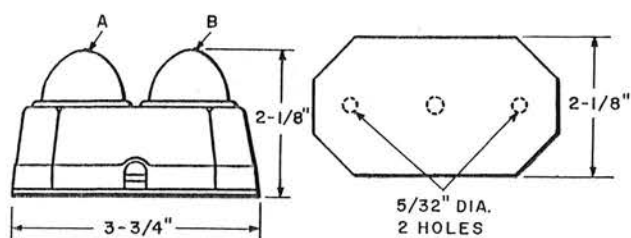
Arranged to mount a standard switchboard lamp for use as a visual telephone signal. May be used with a D3BU or D3BP-49 Cord or concealed wiring. Lamps and cords must be ordered separately.

Code No.	Comcode	Color of Lens
15D-49	100 210 152	White
15E-49	100 210 160	Ruby
15F-49	100 210 178	Green
15G-49	100 210 186	Amber



## INDICATORS

17 Type



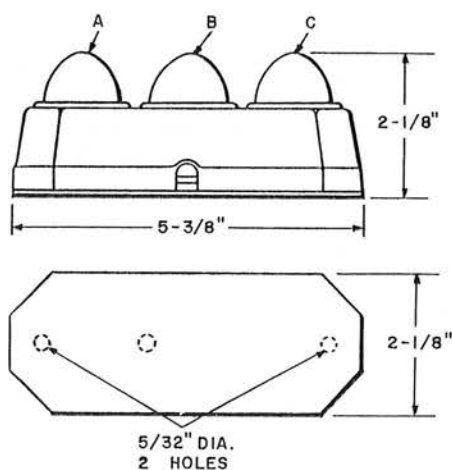
Two lamp indicator equipped with beehive lenses colored as indicated below. Housing is of insulating material and has a light olive gray finish.

Arranged for fixed mounting by means of wood screws (not furnished) or for mounting without fastening. A pad for mounting without fastening is furnished.

Arranged to mount standard switchboard lamps for use as a visual telephone signal where two signals are required. May be used with a D3BU or D4BD-49 Cord or concealed wiring. Lamps and cords must be ordered separately.

Code No.	Comcode	Color of Lens	
		A	B
17C-49	100 210 202	Green	Ruby
17D-49	100 210 210	White	Ruby
17E-49	100 210 228	Ruby	Ruby
17F-49	100 210 236	White	Amber

18 Type



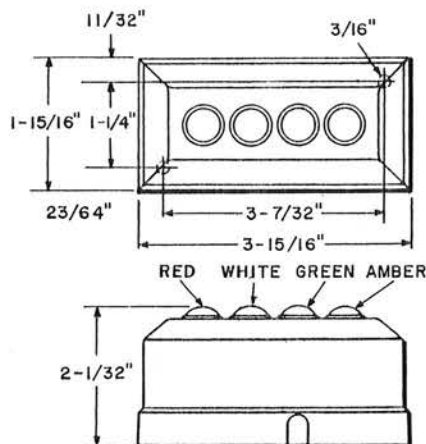
Three lamp indicator equipped with beehive lenses colored as indicated below. Housing is of insulating material and has a light olive gray finish.

Arranged for fixed mounting by means of wood screws (not furnished) or for mounting without fastening on a horizontal surface. A pad for mounting without fastening is furnished.

Arranged to mount standard switchboard lamps for use as a visual telephone signal where three signals are required. May be used with D4BD-49 Cord or concealed wiring. Lamps and cords must be ordered separately.

Code No.	Comcode	Color of Lens		
		A	B	C
18B-49	100 210 244	White	Green	Ruby
18C-49	100 210 251	Green	Amber	Ruby

## INDICATORS

**20BW-49**

Single lamp indicator equipped with a 358A Electron Tube, in series with a KS-13490L1 (8200 ohm) resistor, and having a clear beehive lens. Housing is of insulating material.

Arranged for fixed mounting by means of wood screws (not furnished) or for mounting without fastening on a horizontal surface. A pad for mounting without fastening is furnished.

For use as a visual ringing signal and intended to operate directly on ringing voltage. May be used with a D3AK-49 Cord or concealed wiring. Tubes and cords must be ordered separately.

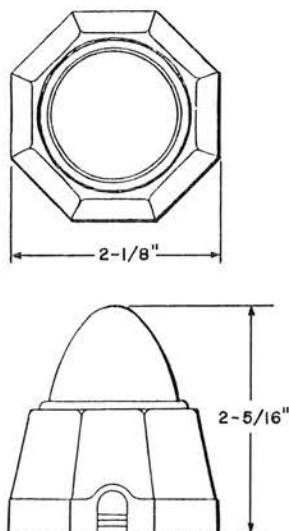
Comcode: 100 210 301

Four lamp indicator equipped with colored lamp caps. Housing is of insulating material and has a light olive gray finish.

Arranged for fixed mounting by means of wood screws (not furnished) or for mounting without fastening on a horizontal surface. A pad for mounting without fastening is furnished.

Arranged to mount standard switchboard lamps for use as a visual indicator of line or busy signals, or both. Also arranged to mount in 755A PBX as a visual indicator of trunk signals. May be used with D6W-49 Cord or concealed wiring. Lamps and cords must be ordered separately.

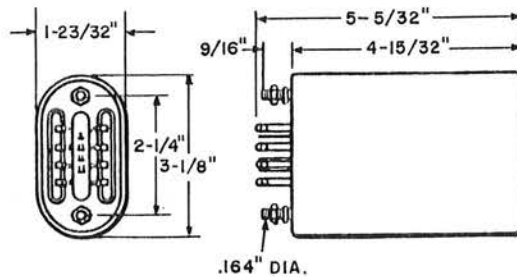
Comcode: 101 847 119

**21C-49**



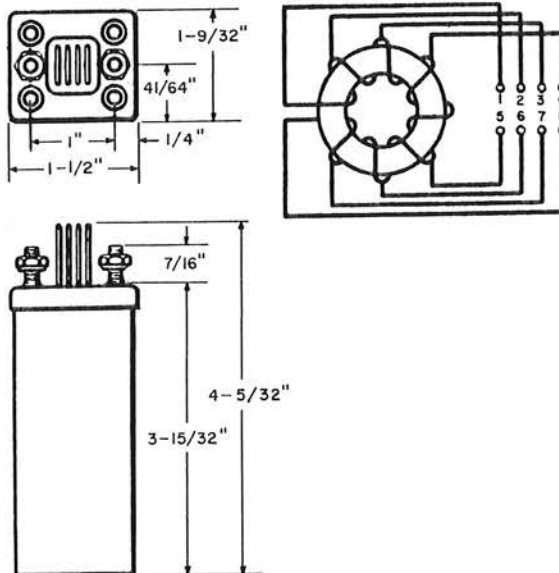
## INDUCTORS

149 Type



Consists of a shell type coil with silicon steel core potted in metal case. Closest recommended mounting centers are 1-3/4 inches by 3-3/16 inches. For electrical characteristics, see table at end of inductor descriptions.

251A and B

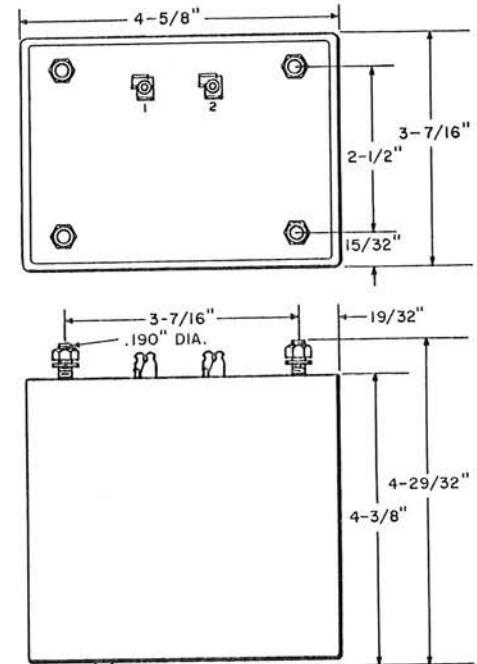


Toroidal type coils having permalloy core; enclosed in metal case. Closest recommended mounting centers are 1-9/16 inches by 1-3/8 inches.

Used in telephone repeaters.

For electrical characteristics, see table at end of inductor descriptions.

275A



Consists of windings on a silicon steel core potted in a metal case. The closest recommended mounting centers are 3-11/16 inches by 4-7/8 inches.

For use in battery supply filters.

For electrical characteristics, see table at end of inductor descriptions.

302 Type

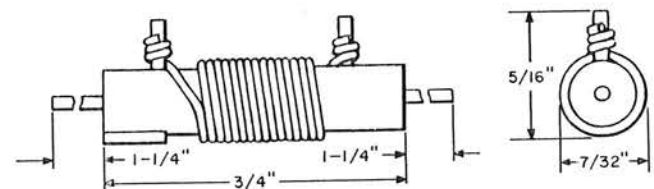


Fig. 1

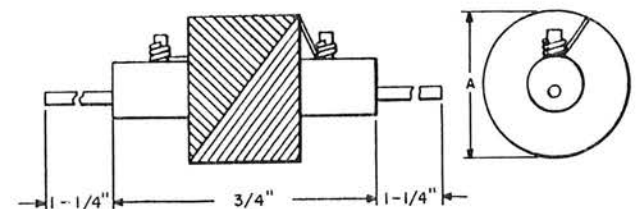


Fig. 2



## INDUCTORS

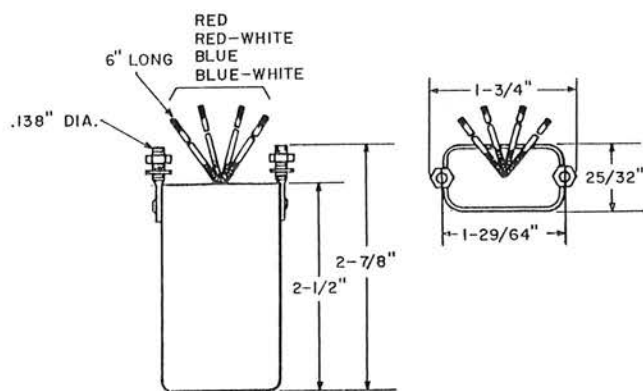
## 302 Type (Continued)

Consists of a winding on a core of insulating material equipped with tinned axial terminal leads. Wiring is coated with an insulating material.

See Fig. 1 for 302A through 302DA and Fig. 2 for 302DB through 302DP.

For electrical characteristics, see table at end of inductor descriptions.

## 321A



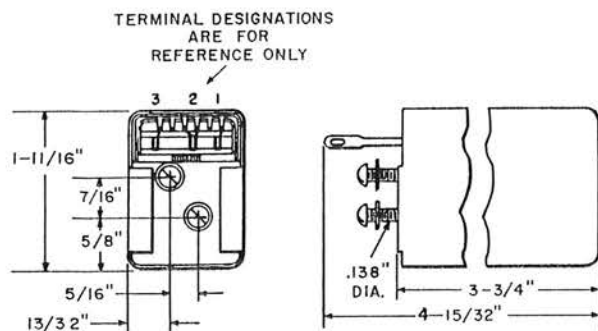
Consists of a toroidal type coil having a permalloy powder core, and a capacitor potted in a metal case. The capacitor (5100 mmf) is connected between terminal leads red and blue-white.

Closest recommended mounting centers are 7/8 inch by 1-7/8 inches.

For use as an oscillator coil in the 50BW Recorder Connector.

For electrical characteristics, see table at end of inductor descriptions.

## 333 Type



Shell type coils each having a silicon steel core and assembled in a metal case provided with a magnetic shield.

Normally intended to mount on 1-1/4 inch horizontal centers and 1-3/4 inch vertical centers. Mounting screw and washers are furnished with 333A and B but not with 333C.

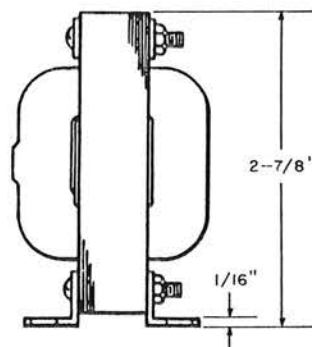
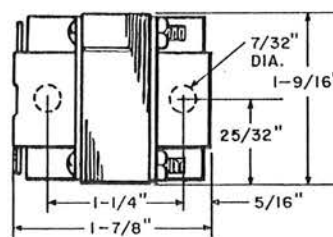
Terminal 2 is a center tap on winding 1-3.

333A and 333B: Each forms a part of the 108C Protector.

333C: Similar to 333A except has a lower interwinding capacitance. Forms a part of the 108C Protector.

For electrical characteristics, see table at end of inductor descriptions.

## 336A



Consists of a winding on a silicon steel core clamped between metal brackets which provide means for mounting.

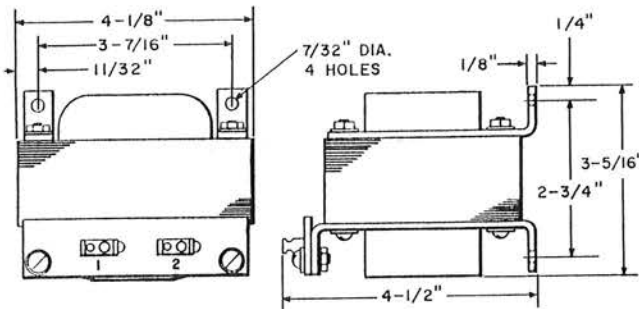
Closest recommended mounting centers are 1-11/16 inches by 2 inches.

Used in 101G Power Plant.

For electrical characteristics, see table at end of inductor descriptions.

## INDUCTORS

## 1016A and B



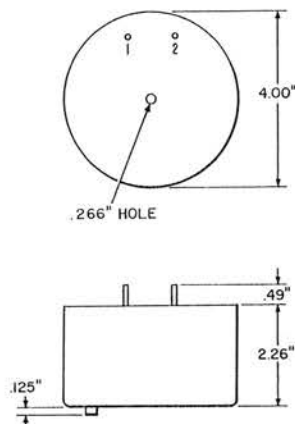
Each consists of a winding on a silicon steel core clamped between metal brackets which provide means for mounting.

Closest recommended mounting centers are 3-3/8 inches by 4-1/2 inches.

Used in 101G Power Plant of 6A Key Telephone Systems and 756A PBX.

For electrical characteristics, see table at end of inductor descriptions.

## 1079B



Consists of a winding on two moly-permalloy power cores encapsulated in epoxy. Arranged to mount by means of a 0.266 inch clearance hole through the center of the inductor. Mounting hardware is not furnished.

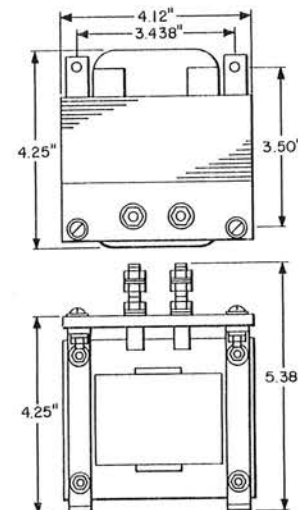
Nominal inductance is 60 mh with 775 volts, 20 kHz across winding (1-2) and with 0.5 ampere through the winding.

Approximate dc resistance of winding (1-2) is 2 ohms and is not intended to be operated at more than 1600 volts peak to ground.

Closest recommended mounting center is 4.12 inches.

Initially used in the J87289AL4 Carrier Power Supply.

## 1081B



Consists of a winding on a grain oriented silicon steel core clamped between metal brackets which provides a means for mounting.

Nominal inductance is 280 mh with 0.3 volt, 40 kHz and 50 amperes dc across winding (1-2). With 0.5 volt, 10 kHz and 12 amperes dc across winding (1-2), the inductance is approximately 310 mh.

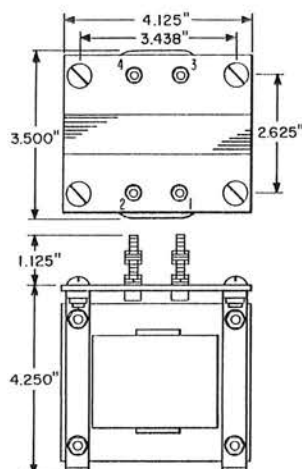
Approximate dc resistance of winding (1-2) is 0.004 ohm and is intended to be operated at ground potential.

Closest recommended mounting centers are 4.50 inches by 4.38 inches.

Used initially in J87289AL4 Carrier Power Supply.

## INDUCTORS

1092A



Consists of winding on grain oriented silicon steel core clamped between brackets which provides a means for mounting.

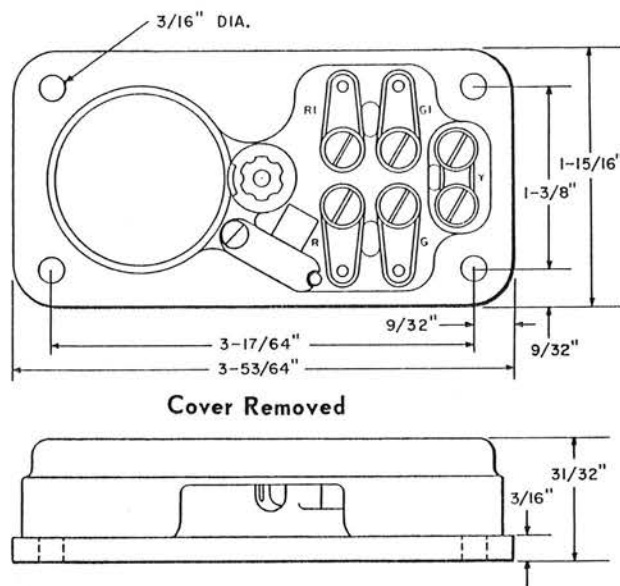
Nominal inductance is 75 uh with 0.6 volt, 40 kHz across windings (1-2) and (3-4). With 0.5 volt, 10 kHz across windings (1-2) and (3-4), the nominal inductance is 79 uh. With 50 amperes dc flowing through windings (1-2) and (3-4) connected in opposition, the net dc effect is zero.

Approximate dc resistance of windings (1-2) and (3-4) is 0.0015 ohm. Windings (1-2) and (3-4) are intended to be operated at ground potential.

Closest recommended mounting centers are 3.75 inches by 4.38 inches.

Used initially in J87289AL4 Carrier Power Supply.

1542A-49 and -50

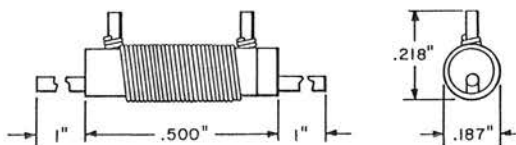


Cover Removed

Consists of an inductor and five screw type terminals assembled on a base of insulating material and equipped with a 101A type cover. 1542A-49 is light olive gray. 1542A-50 is ivory.

Used to suppress radio broadcast interference in telephone sets where it is loud enough to be objectionable.

1564 Type



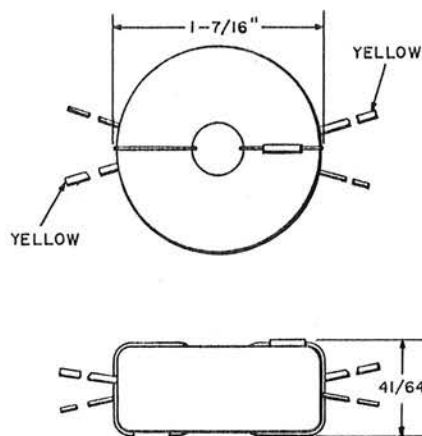
Each coil has a single layer winding on a solid core of insulating material. Equipped with tinned axial terminal leads. Winding is coated with an insulating material. Color coded on terminal 2 end of core.

For electrical characteristics, see table at end of inductor descriptions.



## INDUCTORS

## 1574A and B



1574A: Consists of two windings on a permalloy core. Provided with terminal leads approximately 6 inches long.

Intended for use in bridged station loops to reduce transmission loss when one branch is idle.

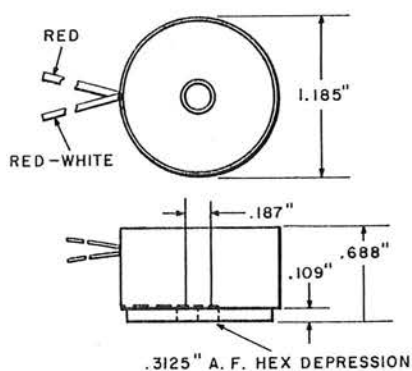
1574B: Consists of a 1574A Inductor and two KS-13490L1, 5600-ohm Resistors.

Arranged to mount in 172B, 178A, 500, 501, 550, 551, and 601A1 Coil Cases. Furnished only in coil cases.

Intended for use in station loop bridge lifting.

For electrical characteristics, see table at end of inductor descriptions.

## 1594A and B



Consists of a winding on a permalloy powder core and potted in a case of insulating material. Provided with flexible terminal leads approximately 8 inches long.

Inductance values are from 0.00200 henry to 2.23 henrys. The nominal inductance desired must be specified in the order to not more than three nor less than two significant figures.

Closest recommended mounting centers are 1.350 inches.

Code No.	Inductance Tolerance
1594A	±2 percent
1594B	±1 percent

For electrical characteristics, see table at end of inductor descriptions.

## 1595 Type

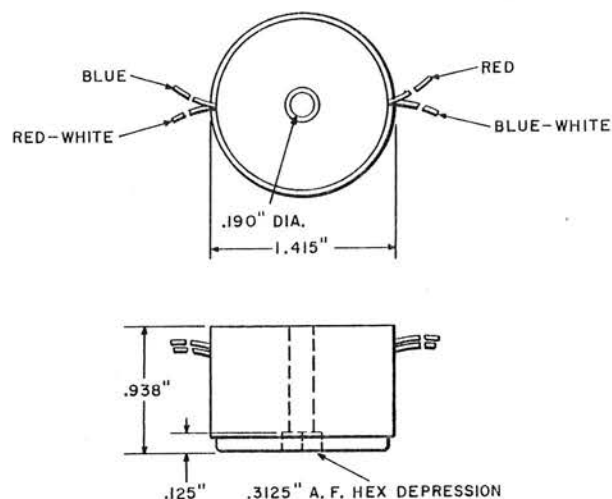


Fig. 1

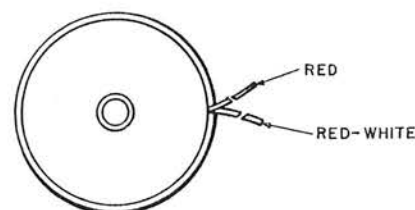


Fig. 2  
(Otherwise same as Fig. 1)



## INDUCTORS

## 1595 Type (Continued)

Consists of windings on a permalloy powder core and potted in a case of insulating material. Provided with flexible terminal leads approximately 8 inches long.

Closest recommended mounting centers are 1.576 inches.

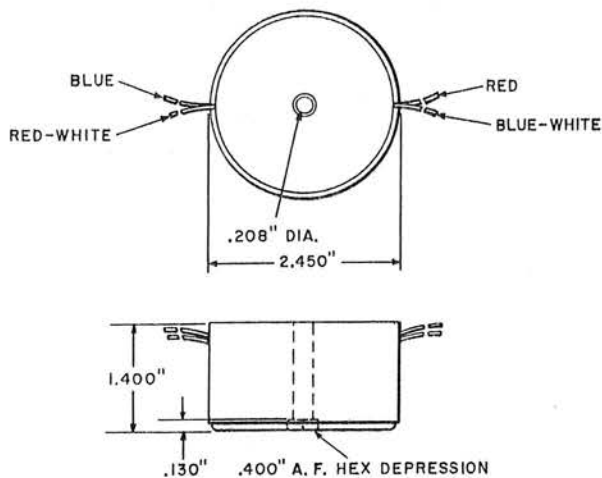
1595A, B, and C: Inductance values are from 0.0100 henry to 10.5 henrys. The nominal inductance desired must be specified in the order to not more than three nor less than two significant figures.

1595D and E: Inductance values are from 0.0100 to 17.3 henrys.

Code No.	Fig. No.	Inductance Tolerance (Percent)
1595A	1	$\pm 2$
1595B	1	$\pm 1$
1595C	2	$\pm 1$
1595D	1	$\pm 2$
1595E	1	$\pm 1$

For electrical characteristics, see table at end of inductor descriptions.

## 1596A



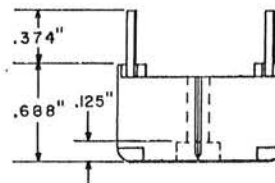
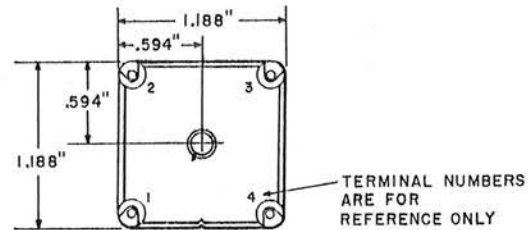
Consists of windings on a permalloy powder core and potted in a case of insulating material. Provided with flexible terminal leads approximately 8 inches long.

The closest recommended mounting centers are 2-3/4 inches.

Inductance values are from 0.0600 henry to 25.5 henrys. The inductance tolerance is  $\pm 2$  percent. The nominal inductance desired must be specified in the order to not more than three nor less than two significant figures.

For electrical characteristics, see table at end of inductor descriptions.

## 1622 Type

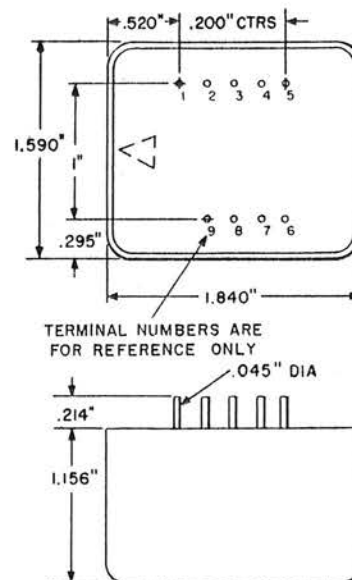


Consists of a winding or windings on a permalloy powder core and potted in a case of insulating material. Closest recommended mounting centers are 1.200 inches by 1.200 inches.

The inductance tolerance is  $\pm 1$  percent with the exception of 1622J which is  $\pm 1.5$  percent.

For electrical characteristics, see table at end of inductor descriptions.

## 1626A



Consists of windings on a permalloy core, potted in a metal can.

## INDUCTORS

Arranged to mount on printed wiring boards. The closest recommended mounting centers are 1.688 inches by 1.938 inches.

Used to operate over the voice frequency range.

For electrical characteristics, see the following table.

INDUCTOR ELECTRICAL CHARACTERISTICS TABLE

Code No.	Comcode	DC Resistance of Windings	Ohms	Inductance (Henrys)	Current Voltage	Amp	Freq Hz	Dim. A (In.)	Color Code
149B	100 211 218	(1-2)	100	30	—	.008	20	—	—
		(3-4)	100	—	—	—	—	—	—
149C	100 211 226	(1-2)	1960	120	3	—	60	—	—
		(3-4)	1960	—	—	—	—	—	—
149D	100 211 234	(1-2)	170	50	—	.006	20	—	—
		(3-4)	170	—	—	—	—	—	—
149E	100 211 242	(1-2)	44	4.3	4	—	900	—	—
		(3-4)	44	—	—	—	—	—	—
149G	100 211 259	(1-2)	116	25	—	.008	20	—	—
		(3-4)	116	—	—	—	—	—	—
149H	100 211 267	(1-2)	16.1	0.8	3	—	900	—	—
149J	100 211 275	(1-2)	68	4	3	—	900	—	—
149K	100 211 283	(1-2)	101	30	—	.020	20	—	—
		(3-4)	101	—	—	—	—	—	—
149L	100 211 291	(1-2)	170	50.5	—	.006	20	—	—
		(3-4)	160	—	—	—	—	—	—
		(3-5)	164	—	—	—	—	—	—
		(3-6)	168	—	—	—	—	—	—
		(3-7)	172	—	—	—	—	—	—
		(3-8)	176	—	—	—	—	—	—
		(3-9)	180	—	—	—	—	—	—
		(3-10)	184	—	—	—	—	—	—
		(3-11)	188	—	—	—	—	—	—
		(3-12)	192	—	—	—	—	—	—
149M	100 211 309	(1-2)	44	*	—	.005	20	—	—
		(3-4)	44	—	—	—	—	—	—
149N	100 211 317	(1-2)	2.13	0.10	—	0.4	900	—	—
149P	100 211 325	(1-2)	20,000	800	30	—	20	—	—
		(3-4)	—	—	—	—	—	—	—
149R	100 211 333	(1-2)	10	0.85	3	—	900	—	—
149S	100 211 341	(1-2)	138	20	3	0.06	200	—	—
		(3-4)	210	—	—	—	—	—	—

## INDUCTORS

Code No.	Comcode	DC Resistance of Windings	Ohms	Inductance (Henrys)	Current Voltage	Amp	Freq Hz	Dim. A (In.)	Color Code
251A	100 213 875	(1-8)	4	—	—	—	—	—	—
251B	100 213 883	(1-8)	36	—	—	—	—	—	—
275A	100 214 436	—	60	24	25	.020	60	—	—
302A	100 215 128	—	.02	.41 (uh)	—	—	—	—	—
302B	100 215 136	—	.04	.57 (uh)	—	—	—	—	—
302C	100 215 144	—	.04	.60 (uh)	—	—	—	—	—
302D	100 215 151	—	.04	.62 (uh)	—	—	—	—	—
302E	100 215 169	—	.05	.66 (uh)	—	—	—	—	—
302F	100 215 177	—	.05	.70 (uh)	—	—	—	—	—
302G	100 215 185	—	.05	.73 (uh)	—	—	—	—	—
302H	100 215 193	—	.05	.77 (uh)	—	—	—	—	—
302J	100 215 201	—	.07	.81 (uh)	—	—	—	—	—
302K	100 215 219	—	.09	1.02 (uh)	—	—	—	—	—
302L	100 215 227	—	.10	1.18 (uh)	—	—	—	—	—
302M	100 215 235	—	.13	1.26 (uh)	—	—	—	—	—
302N	100 215 243	—	.25	1.90 (uh)	—	—	—	—	—
302P	100 215 250	—	.32	2.11 (uh)	—	—	—	—	—
302R	100 215 268	—	.07	.85 (uh)	—	—	—	—	—
302T	100 215 276	—	.01	.10 (uh)	—	—	—	—	—
302U	100 215 284	—	1.60	7.2 (uh)	—	—	—	—	—
302W	100 215 292	—	.36	2.42 (uh)	—	—	—	—	—
302Y	100 215 300	—	.018	.20 (uh)	—	—	—	—	—
302AA	100 215 318	—	—	.02 (uh)	—	—	—	—	—
302AB	100 215 326	—	—	.036 (uh)	—	—	—	—	—
302AC	100 215 334	—	—	.086 (uh)	—	—	—	—	—
302AD	100 215 342	—	—	.22 (uh)	—	—	—	—	—
302AE	100 215 359	—	—	.10 (uh)	—	—	—	—	—
302AF	100 215 367	—	—	.128 (uh)	—	—	—	—	—
302AW	100 215 490	—	.14	1.58 (uh)	—	—	—	—	—
302AY	100 215 508	—	.58	3.70 (uh)	—	—	—	—	—
302BB	100 215 516	—	.008	.19 (uh)	—	—	—	—	—
302BC	100 215 524	—	2.26	8.57 (uh)	—	—	—	—	—
302BM	100 215 615	—	.009	.16 (uh)	—	—	—	—	—
302BN	100 215 623	—	.016	.32 (uh)	—	—	—	—	—
302BP	100 215 631	—	.63	4 (uh)	—	—	—	—	—
302BR	100 215 649	—	1.13	4.62 (uh)	—	—	—	—	—

## INDUCTORS

Code No.	Comcode	DC Resistance of Windings	Ohms	Inductance (Henrys)	Current Voltage	Amp	Freq Hz	Dim. A (In.)	Color Code
302BS	100 215 656	—	1.56	5.77 (uh)	—	—	—	—	—
302BT	100 215 664	—	.007	.114 (uh)	—	—	—	—	—
302CC	100 215 722	—	.066	.675 (uh)	—	—	—	—	—
302CD	100 215 730	—	.143	1.21 (uh)	—	—	—	—	—
302CE	100 215 748	—	.473	2.16 (uh)	—	—	—	—	—
302CF	100 215 755	—	.122	.872 (uh)	—	—	—	—	—
302CG	100 215 763	—	.031	.360 (uh)	—	—	—	—	—
302CH	100 215 771	—	.060	.556 (uh)	—	—	—	—	—
302CJ	100 215 789	—	.073	.807 (uh)	—	—	—	—	—
302CK	100 215 797	—	.761	3.27 (uh)	—	—	—	—	—
302CL	100 215 805	—	.533	2.59 (uh)	—	—	—	—	—
302CM	100 215 813	—	.58	2.99 (uh)	—	—	—	—	—
302CN	100 215 821	—	—	.045 (uh)	—	—	—	—	—
302CP	100 215 839	—	—	.080 (uh)	—	—	—	—	—
302CR	100 215 847	—	—	.097 (uh)	—	—	—	—	—
302CS	100 215 854	—	.024	.244 (uh)	—	—	—	—	—
302CT	100 215 862	—	—	.053 (uh)	—	—	—	—	—
302CU	100 215 870	—	1.45	6.8 (uh)	—	—	—	—	—
302CW	100 215 888	—	1.11	5.180 (uh)	—	—	—	—	—
302CY	100 215 896	—	.612	3.65 (uh)	—	—	—	—	—
302DA	100 215 904	—	2.64	10 (uh)	—	—	—	—	—
302DB	100 215 912	—	—	3620 (uh)	—	—	—	.471	—
302DC	100 215 920	—	—	3280 (uh)	—	—	—	.459	—
302DD	100 215 938	—	—	3210 (uh)	—	—	—	.459	—
302DE	100 215 946	—	—	2440 (uh)	—	—	—	.428	—
302DF	100 215 953	—	—	2400 (uh)	—	—	—	.428	—
302DG	100 215 961	—	—	2030 (uh)	—	—	—	.410	—
302DH	100 215 979	—	—	1970 (uh)	—	—	—	.410	—
302DJ	100 215 987	—	—	1110 (uh)	—	—	—	.400	—
302DK	100 215 995	—	—	1035 (uh)	—	—	—	.400	—
302DL	100 216 001	—	—	878 (uh)	—	—	—	.360	—
302DM	100 216 019	—	—	771 (uh)	—	—	—	.350	—
302DN	100 216 027	—	—	591 (uh)	—	—	—	.360	—
302DP	100 216 035	—	—	419 (uh)	—	—	—	.380	—
302DR	100 216 043	—	3	100 (uh)	—	—	—	.330	—
302DS	100 216 050	—	7.5	500 (uh)	—	—	—	.450	—



## INDUCTORS

Code No.	Comcode	DC Resistance of Windings	Ohms	Inductance (Henrys)	Current Voltage	Amp	Freq Hz	Dim. A (In.)	Color Code
302DT	100 216 068	—	5	200 (uh)	—	—	—	.400	—
302DU	100 216 076	—	1.9	50 (uh)	—	—	—	.260	—
302DW	100 216 084	—	12	1000 (uh)	—	—	—	.480	—
302DY	100 216 092	—	1.4	25 (uh)	—	—	—	.220	—
321A	100 216 977	—	350	2.534	10	—	1400	—	—
333A	100 217 132	(1-3)	445	7	3	—	60	—	—
333B	100 217 140	(1-2)	115	4	—	.050	60	—	—
333C	100 217 157	(1-3)	445	7	3	—	60	—	—
336A	100 217 181	—	3.6	.080	3	1	60	—	—
1016A	100 217 728	(1-2)	.26	.100	3	.5	60	—	—
1016B	100 217 736	(1-2)	.08	.010	3	8	60	—	—
1079B	101 405 603	(1-2)	.004	.060	.3	50	40	—	—
1081B	101 146 058	(1-2)	.004	280 (uh)	.3	50	40	—	—
		(1-2)	.004	310 (uh)	.5	12	10	—	—
		(1-2)	.0015	75 (uh)	.5	50	40	—	—
1092A	101 146 116	(3-4)	.0015	79 (uh)	.5	50	10	—	—
1564A	100 224 153	—	—	.817 (uh)	—	—	—	—	Brown
1564B	100 224 161	—	—	.607 (uh)	—	—	—	—	Red
1564C	100 224 179	—	1	2.935 (uh)	—	—	—	—	Orange
1564D	100 224 187	—	—	.873 (uh)	—	—	—	—	Yellow
1564E	100 224 195	—	—	.075 (uh)	—	—	—	—	Green
1564F	100 224 203	—	—	.155 (uh)	—	—	—	—	Blue
1564G	100 224 211	—	—	.130 (uh)	—	—	—	—	Violet
1564H	100 224 229	—	—	.090 (uh)	—	—	—	—	Gray
1564J	100 224 237	—	—	.165 (uh)	—	—	—	—	White
1564K	100 224 245	—	—	.230 (uh)	—	—	—	—	Brown-black
1564L	100 224 252	—	—	.380 (uh)	—	—	—	—	Brown-brown
1564M	100 224 260	—	—	.475 (uh)	—	—	—	—	Brown-red
1564N	100 224 278	—	—	.628 (uh)	—	—	—	—	Brown-orange
1564P	100 224 286	—	—	.423 (uh)	—	—	—	—	Brown-yellow
1564R	100 224 294	—	—	.55 (uh)	—	—	—	—	Brown-green
1564S	100 224 302	—	—	.33 (uh)	—	—	—	—	Brown-blue
1564T	100 224 310	—	—	.04 (uh)	—	—	—	—	Brown-violet
1564U	100 224 328	—	—	.03 (uh)	—	—	—	—	Brown-gray
1564W	100 224 336	—	—	.02 (uh)	—	—	—	—	Brown-silver
1564Y	100 224 344	—	—	.16 (uh)	—	—	—	—	Red-black
1564AA	100 224 351	—	—	1 (uh)	—	—	—	—	Red-brown
1564AB	100 224 369	—	—	.225 (uh)	—	—	—	—	Red-red
1564AC	100 224 377	—	—	.350 (uh)	—	—	—	—	Red-orange
1564AD	100 224 385	—	.70	2.25 (uh)	—	—	—	—	Red-yellow
(a)1564AE	100 858 836	—	—	0.780 (uh)	—	—	—	—	Red-green
(a)1564AF	100 858 844	—	—	1.500 (uh)	—	—	—	—	Red-blue

## INDUCTORS

Code No.	Comcode	DC Resistance of Windings	Ohms	Inductance (Henrys)	Current Voltage	Amp	Freq Hz	Dim. A (In.)	Color Code
(a)1564AG	100 858 851	—	—	0.290(uh)	—	—	—	—	Red-violet
(a)1564AH	100 858 869	—	—	0.098(uh)	—	—	—	—	Red-gray
(a)1564AJ	100 858 877	—	—	0.111(uh)	—	—	—	—	Red-white
(a)1564AK	100 858 885	—	—	1.188(uh)	—	—	—	—	Orange-black
(a)1564AL	100 858 893	—	—	0.700(uh)	—	—	—	—	Orange-brown
(a)1564AM	101 130 268	—	1.4	3.75 (uh)	—	—	—	—	Orange-red
(a)1564AN	101 135 184	—	1.1	3.23 (uh)	—	—	—	—	Orange-orange
(a)1564AP	101 135 192	—	—	0.858(uh)	—	—	—	—	Orange-yellow
1564AR	101 135 200	—	.8	2.55 (uh)	—	—	—	—	Orange-green
1564AS	101 135 218	—	1.1	3.06 (uh)	—	—	—	—	Orange-blue
1564AT	101 135 226	—	2.3	5.76 (uh)	—	—	—	—	Orange-violet
(b)1564AU	101 144 095	—	1.60	6.81 (uh)	—	—	—	—	Orange-gray
(b)1564AW	101 144 103	—	1.10	8.30 (uh)	—	—	—	—	Orange-white
(b)1564AY	101 144 111	—	1.30	14.0 (uh)	—	—	—	—	Yellow-black
(b)1564BA	101 144 129	—	2.00	18.7 (uh)	—	—	—	—	Yellow-brown
(b)1564BB	101 144 137	—	2.30	31.8 (uh)	—	—	—	—	Yellow-red
(b)1564BC	101 212 033	—	1.60	6.52 (uh)	—	—	—	—	Yellow-orange
1564BD	101 212 041	—	1.0	2.88 (uh)	—	—	—	—	Yellow-yellow
1564BE	101 219 517	—	—	1.230 (uh)	—	—	—	—	Yellow-green
1564BF	101 219 525	—	0.8	2.550 (uh)	—	—	—	—	Yellow-blue
1564BG	101 219 533	—	—	0.328 (uh)	—	—	—	—	Yellow-violet
1564BH	101 219 541	—	—	0.574 (uh)	—	—	—	—	Yellow-gray
1564BJ	101 222 065	—	0.5	1.80 (uh)	—	—	—	—	Yellow-white
1564BK	101 224 087	—	—	1.000(uh)	—	—	—	—	Green-black
1564BL	101 224 095	—	—	0.817(uh)	—	—	—	—	Green-brown
1574A	100 224 682	—	12	—	1	.025	400	—	—
1574B	100 224 690	—	12	—	1	.025	400	—	—
**1594A and B		—	1.1	.00500	—	—	—	—	—
		—	1.7	.00770	—	—	—	—	—
		—	2.6	.0120	—	—	—	—	—
		—	3.8	.0180	—	—	—	—	—
		—	6.2	.0290	—	—	—	—	—
		—	9.5	.0420	—	—	—	—	—
		—	14.1	.0630	—	—	—	—	—
		—	21.6	.0970	—	—	—	—	—
		—	35.4	.160	—	—	—	—	—
		—	52.8	.240	—	—	—	—	—
		—	80.2	.370	—	—	—	—	—
		—	120	.550	—	—	—	—	—
		—	194	.870	—	—	—	—	—
		—	312	1.45	—	—	—	—	—
		—	494	2.23	—	—	—	—	—
**1595A, B and C		—	2.3	.0200	—	—	—	—	—
		—	3.2	.0290	—	—	—	—	—
		—	5.2	.0480	—	—	—	—	—
		—	7.5	.0760	—	—	—	—	—

## INDUCTORS

Code No.	Comcode	DC Resistance of Windings	Ohms	Inductance (Henrys)	Current Voltage	Amp	Freq Hz	Dim. A (In.)	Color Code
**1595A, B and C		—	12.4	120	—	—	—	—	—
		—	18.8	.180	—	—	—	—	—
		—	26.8	.260	—	—	—	—	—
		—	42.9	.410	—	—	—	—	—
		—	69.3	.650	—	—	—	—	—
		—	107.5	1.08	—	—	—	—	—
		—	166	1.51	—	—	—	—	—
		—	269	2.27	—	—	—	—	—
		—	431	3.51	—	—	—	—	—
		—	708	6.02	—	—	—	—	—
		—	1090	10.5	—	—	—	—	—
**1595D and E		—	2.3	.0330	—	—	—	—	—
		—	3.2	.0479	—	—	—	—	—
		—	5.2	.0792	—	—	—	—	—
		—	7.5	.125	—	—	—	—	—
		—	12.4	.198	—	—	—	—	—
		—	18.8	.298	—	—	—	—	—
		—	26.8	.430	—	—	—	—	—
		—	42.9	.679	—	—	—	—	—
		—	69.3	1.07	—	—	—	—	—
		—	107.5	1.79	—	—	—	—	—
		—	166	2.49	—	—	—	—	—
		—	269	3.79	—	—	—	—	—
		—	431	5.80	—	—	—	—	—
		—	708	9.94	—	—	—	—	—
		—	1090	17.3	—	—	—	—	—
**1596A		—	4.08	.100	—	—	—	—	—
		—	6.50	.160	—	—	—	—	—
		—	10.24	.240	—	—	—	—	—
		—	16.39	.400	—	—	—	—	—
		—	25.88	.620	—	—	—	—	—
		—	40.8	.950	—	—	—	—	—
		—	64.4	1.50	—	—	—	—	—
		—	98.9	2.00	—	—	—	—	—
		—	147	3.20	—	—	—	—	—
		—	236	5.10	—	—	—	—	—
		—	385	8.30	—	—	—	—	—
		—	598	13.20	—	—	—	—	—
		—	932	19.3	—	—	—	—	—
		—	1322	25.5	—	—	—	—	—
1622A	100 235 126	(1-4)	527	2.23	—	—	—	—	—
1622B	100 235 134	(1-4)	494	1.79	—	—	—	—	—
1622C	100 235 142	(1-4)	189	.721	—	—	—	—	—
1622D	100 235 159	(1-4)	189	.721	—	—	—	—	—

## INDUCTORS

Code No.	Comcode	DC Resistance of Windings	Ohms	Inductance (Henrys)	Current Voltage	Amp	Freq Hz	Dim. A (In.)	Color Code
1622E	100 235 167	(1-4)	286	1.10	—	—	—	—	—
1622F	100 235 175	(1-4)	286	1.10	—	—	—	—	—
1622G	100 235 183	(1-4)	510	1.96	—	—	—	—	—
1622H	100 235 191	(1-4)	510	1.96	—	—	—	—	—
1622J	100 235 209	(1-4)	.17	.000715	—	—	—	—	—
1622K	100 235 217	(1-4)	34	.095	—	—	—	—	—
1622L	100 235 225	(1-4)	(c) 11	(c) 0.0536 $\pm 1\%$	—	—	—	—	—
1622M	100 235 233	(1-4)	(c) 4.2	(c) 0.0180 $\pm 1\%$	—	—	—	—	—
1622N	100 235 241	(1-4)	120.0	0.550 $\pm 2\%$	—	—	—	—	—
1622P	100 235 258	(1-4)	35.4	0.160 $\pm 1\%$	—	—	—	—	—
1622U	101 331 932	(1-4)	52	0.453 $\pm 1\%$	3	—	5 kHz	—	—
1622W	101 331 940	(1-4)	46	0.0379 $\pm 1\%$	3	—	5 kHz	—	—
1622Y	101 331 957	(1-4)	18	0.0158 $\pm 1\%$	3	—	5 kHz	—	—
1626A	100 236 108	(1-4)	37	2.7	3	.060	200	—	—
		(2-5)	37	—	—	—	—	—	—

\*In ordering number 149M type inductors for new equipment, no reference should be made to groups. Inductors will be shipped in pairs whenever number ordered makes it possible. In ordering inductors for replacements, group letter of inductor desired should be specified.

Group (Letter Stamped on Case)	Effective Inductance Range (Henrys)
A	6.60 to 6.77
B	6.78 to 6.95
C	6.96 to 7.12
D	7.13 to 7.30
E	7.31 to 7.47
F	7.48 to 7.65
G	7.66 to 7.82
H	7.83 to 8.00

\*\*Value must be specified in the order.

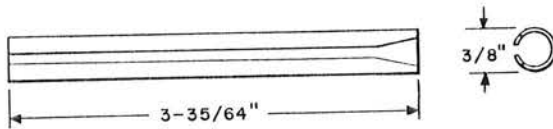
- (a) Height is .281 inch.
- (b) These inductors have a duolateral winding.  
Diameter of winding is .210, .265, .280, .260, .280, and .210, respectively.
- (c) Inductance and resistance values apply across terminals 1 and 4 with terminals 2 and 3 connected together.





## INSULATORS

102A



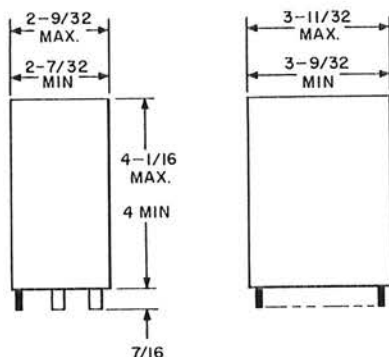
Tube made of insulating material arranged to fit over the side posts of number 18 and 19 type resistors. Intended to insulate resistors from mounting plate covers or adjacent apparatus.

Comcode: 100 272 103



## INTERRUPTERS

## KS-15900L1

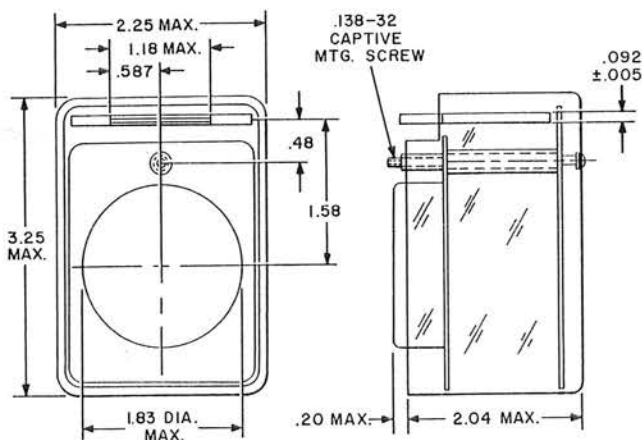


The KS-15900L1 Interrupter is an electro-mechanical plug-in device enclosed in a protective transparent case. Consists of rotating cams driven by a slow speed synchronous ac motor. The cams are designed to operate leaf springs which are equipped with electrical contacts to provide specific timing intervals. The motor is rated at 10 volts, 60 Hz, 3 watts. One set of cams is driven at a speed of 15 rpm and the other set at a speed of 60 rpm. The contact springs are of beryllium copper or phosphor bronze. The contacts have a rectangular configuration of the crossbar type with laminated contact materials. Ferrous parts have a zinc or cadmium plate finish. The complete unit operates satisfactorily under any ambient conditions within the temperature range of 10° to 50° C and a relative humidity from 40 to 90 percent.

Used as a signaling device in 1A1 and 1A2 Key Telephone Systems.

Comcode: 996 222 048

## KS-19175L1



The KS-19175L1 Interrupter is an ac motor driven spring and cam type interrupter having five sets of contacts with various interrupting intervals. It consists of

a frame on which are mounted the interrupting springs operated by nylon cams which are driven through gearing by a small synchronous type motor. The unit is enclosed in a transparent plastic cover and is provided with a double-sided printed circuit board that may be plugged into the circuit with which it is to be associated. The motor is rated at 10 volts, 60 Hz, 3 watts. The two cam shafts operate at 60 and 15 rpm respectively. Contact springs are of beryllium copper or phosphor bronze. The interrupter contacts have a rectangular configuration of the crossbar type with laminated contact materials. Ferrous parts have a zinc or cadmium plate finish. The complete unit is designed to operate satisfactorily under any ambient conditions within the temperature range of 10° to 50° C and a relative humidity from 40 to 90 percent.

Used as a signaling device in 1A2 Key Telephone Systems.

Comcode: 996 222 162

## KS-19384L2

The physical characteristics of the KS-19384L2 Interrupter are the same as the KS-15900 Interrupter.

The KS-19384L2 Interrupter is an electro-mechanical plug-in device enclosed in a protective transparent case. Consists of rotating cams driven by a slow speed synchronous ac motor. The cams are designed to operate leaf springs which are equipped with contacts to provide specific timing intervals. An inverter, mounted within the interrupter, converts 24 volts dc to 60 Hz ac to operate the ac motor. One set of cams is driven at a speed of 15 rpm and the other set at a speed of 60 rpm. The contact springs are made of beryllium copper or phosphor bronze. The contacts have a rectangular configuration of the crossbar type with laminated contact materials. Ferrous parts have zinc or cadmium plate finish. The complete unit shall operate satisfactorily under any ambient conditions within the temperature range of 10° to 50° C and a relative humidity from 40 to 90 percent. Used as a signaling device in battery powered key telephone systems.

Comcode: 996 249 454

## KS-19385L2

The physical characteristics of the KS-19385L2 Interrupter are the same as the KS-19175L1 Interrupter.

The KS-19385L2 Interrupter is an electro-mechanical, single-unit plug-in device enclosed in a transparent case. Consists of rotating cams driven by a slow speed synchronous ac motor to operate five sets of contacts with various interrupting intervals. The plug-in device is the circuit panel termination of the printed wiring board. An inverter mounted within the interrupter frame converts 24 volts dc to 60 Hz ac to energize the motor. The complete unit is designed to operate satisfactorily under any ambient conditions within the temperature range of 10° to 50° C and a relative humidity from 40 to 90 percent. Contact springs are of beryllium copper or phosphor bronze. The interrupter contacts have a rectangular configuration of the crossbar type with laminated contact materials. Ferrous parts have a zinc or cadmium plate finish.

Will mate with 907B Connector and is used to provide signaling for 1A Key Telephone Systems.

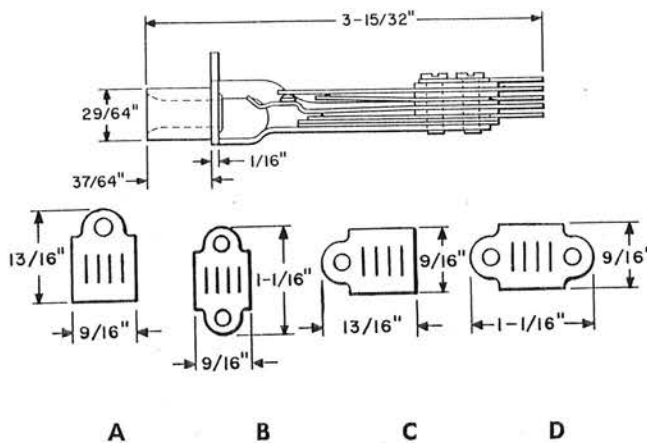
Comcode: 996 249 462





## JACKS

## Singly Mounted



Single mounted, electrically welded frame type jacks are to be mounted with springs in vertical plane as indicated in Figs. A, B, C, and D. The letters A, B, C, and D used in code numbers of the jacks indicate number of mounting lugs and their arrangement with respect to the plane of the springs. Figs. A, B, C, and D illustrate the four arrangements of lugs and springs as indicated in code numbers by the letters A, B, C, and D, respectively.

Mounting screws are furnished.

Following is a list of singly mounted jacks. The list indicates the number of springs, length, and the mounting centers. The spring combinations following the list are keyed to the respective code numbers.

Code No.	Comcode	No. of Springs	Length (In.)	Mounting Centers (In.)	
				Horizontal	Vertical
*215A(a)	100 274 455	3	3-15/32	5/8	7/8
*215C	100 274 463	3	3-15/32	7/8	5/8
*216A(a)	100 274 471	4	3-15/32	5/8	7/8
*216C	100 274 489	4	3-15/32	7/8	5/8
*216F	100 274 497	4	3-15/32	5/8	7/8
*217A(a)	100 274 505	3	3-15/32	5/8	7/8
*217C(a)	100 274 513	3	3-15/32	7/8	5/8
*217E(c)	100 274 521	3	3-15/32	5/8	7/8
*218A	100 274 539	2	3-15/32	5/8	7/8
*218C(a)	100 274 547	2	3-15/32	7/8	5/8
*218J(a)(b)	100 274 554	2	3-15/32	5/8	7/8
*221E	100 274 562	1	3-15/32	5/8	7/8
*223A(a)	100 274 570	1	3-15/32	5/8	7/8
*223C	100 274 588	1	3-15/32	7/8	5/8
*223AM(g)	101 584 225	1	3-15/32	5/8	7/8
*223CM(f)	100 274 596	1	3-27/32	7/8	5/8
*225A(a)	100 274 612	4	3-15/32	5/8	7/8
*225C(a)	100 274 620	4	3-15/32	7/8	5/8
*225CE(a)	100 274 638	4	3-15/32	7/8	5/8
*226A(a)	100 274 646	4	3-15/32	5/8	7/8
*226C(a)	100 857 408	4	3-15/32	7/8	5/8
*227A	100 274 653	4	3-15/32	5/8	7/8
*232A	100 274 687	2	3-15/32	5/8	7/8
*232C	100 274 695	2	3-15/32	7/8	5/8
*233A	100 274 703	2	3-15/32	5/8	7/8
*233C	100 274 711	2	3-15/32	7/8	5/8
*234A(d)	100 274 729	4	3-15/32	5/8	7/8
*234C(d)	100 274 737	4	3-15/32	7/8	5/8
*236A	100 274 745	5	3-15/32	23/32	7/8
*237A	100 274 760	3	3-15/32	5/8	7/8
**238A	100 274 786	2	3-23/64	5/8	7/8
**239A	100 274 810	4	3-23/64	5/8	7/8
**239C	100 274 836	4	3-23/64	7/8	5/8
**239E(e)	100 274 844	4	3-23/64	5/8	7/8
**240A	100 274 869	6	3-23/64	3/4	7/8
**240C	100 274 885	6	3-23/64	7/8	5/8
**240AM(h)	101 584 258	6	3-23/64	3/4	7/8
*241A	100 274 901	4	3-23/64	3/4	7/8
*241C	100 274 927	4	3-23/64	7/8	5/8
**241AM(i)	101 584 266	4	3-23/64	7/8	3/4
**241CM(i)	101 584 274	4	3-23/64	7/8	5/8
*242A	100 274 935	6	3-23/64	3/4	7/8*
**242B	100 274 943	6	3-23/64	3/4	1-1/8
*242C	100 274 950	6	3-23/64	7/8	5/8
*243A	100 274 976	6	3-23/64	3/4	7/8
*243B	100 274 984	6	3-23/64	3/4	1-1/8
*243C	100 274 992	6	3-23/64	7/8	5/8
*244A	100 275 007	8	3-23/64	7/8	7/8
*245A	100 275 015	8	3-23/64	29/32	7/8
*245B	100 275 031	8	3-23/64	29/32	1-1/8
*245C	100 275 049	8	3-23/64	29/32	5/8
*280A	100 275 346	7	3-23/64	7/8	7/8
*280B	100 275 353	7	3-23/64	7/8	1-1/8
*280C	100 275 361	7	3-23/64	7/8	5/8
*285A	100 275 411	6	3-23/64	13/16	7/8
*303A	100 275 825	3	3-15/32	5/8	7/8
*326A	100 275 973	5	3-23/64	13/16	7/8
*411C	100 276 997	6	3-31/64	7/8	5/8
*438C	100 277 003	6	3-15/32	7/8	5/8
*446B	100 277 078	7	3-3/8	1	1-1/8
*456D	100 277 177	6	3-23/64	1-1/8	5/8
*484C	100 277 581	4	3-15/32	7/8	5/8
*485C	100 277 599	5	3-15/32	7/8	5/8
*515A	100 278 092	9	3-23/64	1	5/8
*517A	100 278 118	6	2-1/4	7/8	1-5/8

\*Used with number 1, 144, 151, 153, 209, 241, 289, 305, 312, 324, 327, 328, and 347.

\*\*Used with number 150, 184B, 202, 213, 262B, 310, 320B, 331A, 338, and 349 type plugs.

(a) Terminal of tip spring is arranged to accommodate two 16B and S gauge wires.

(b) Same as 218A Jack except with nickel sleeve.

(c) Same as 217A Jack except with silver nickel sleeve.

(d) Normally closed contacts are not designed for use in talking circuits.

(e) Same as 239A except equipped with a silver nickel sleeve.

(f) Same as 223C except it is equipped with mechanically wrapped terminals.

(g) Same as 223A except has wire-wrap terminals.

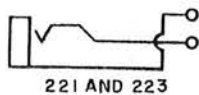
(h) Same as 240A except has wire-wrap terminals.

(i) Same as 241A and 241C, respectively, except have wire-wrap terminals.

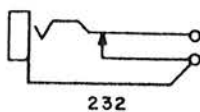
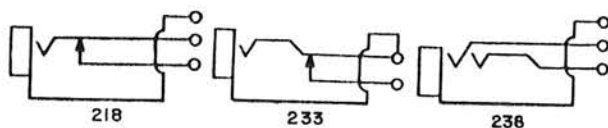
# JACKS Singly Mounted

## Spring Combinations

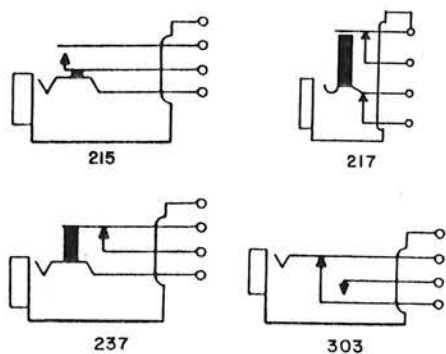
### One Spring



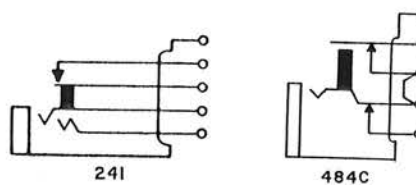
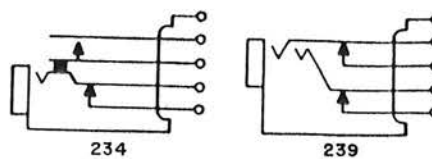
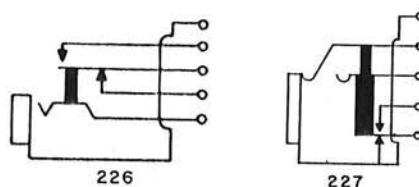
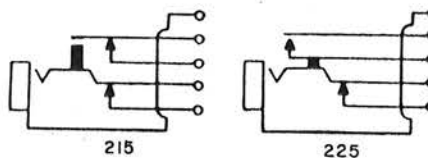
### Two Springs



### Three Springs

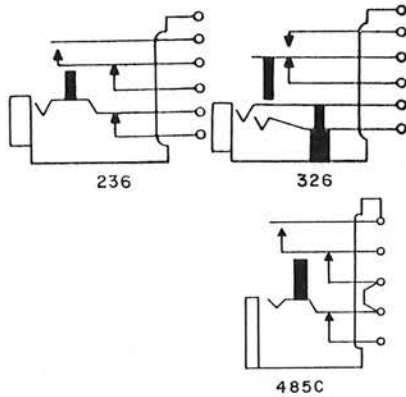


## Four Springs

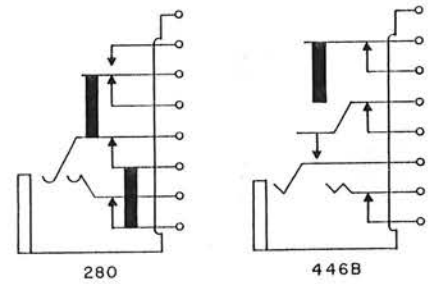


# JACKS Singly Mounted

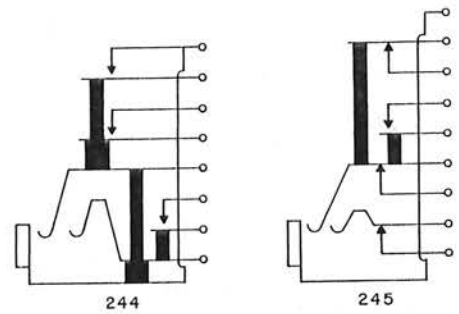
## Five Springs



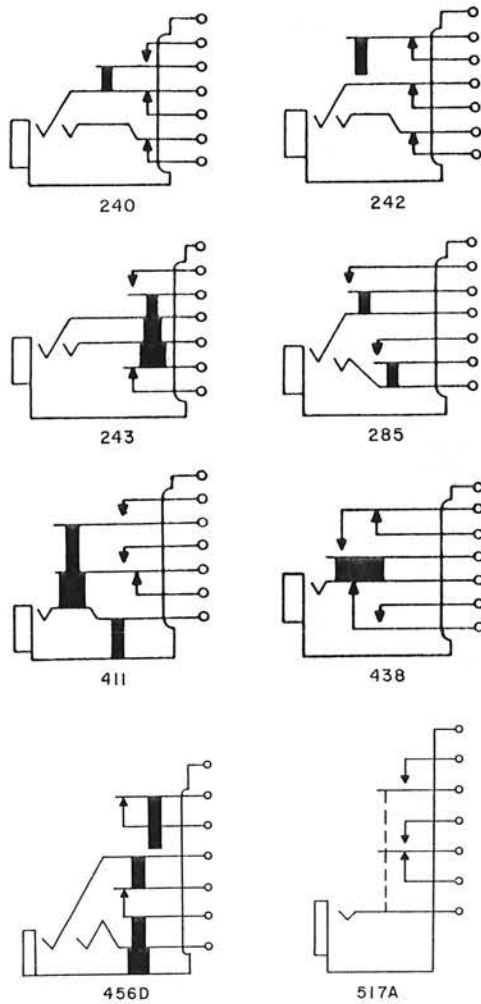
## Seven Springs



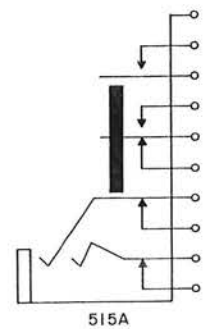
## Eight Springs



## Six Springs



## Nine Springs





## JACKS

### Singly Mounted

477 Type

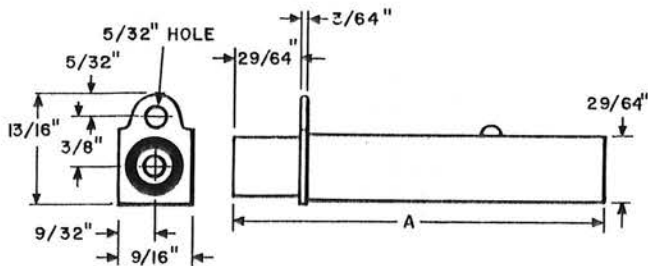


Fig. 1

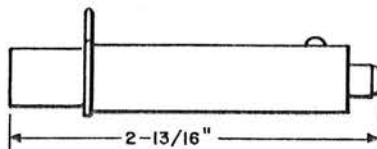


Fig. 2

Each consists of a coaxial type jack arranged for solderless shield connection to the connecting cable by means of a sleeve which is furnished loose. Tested at 2000 volts ac and provides impedance match for 75 ohm coaxial cable up to 100 mc.

Arranged for 358A and similar type plugs.

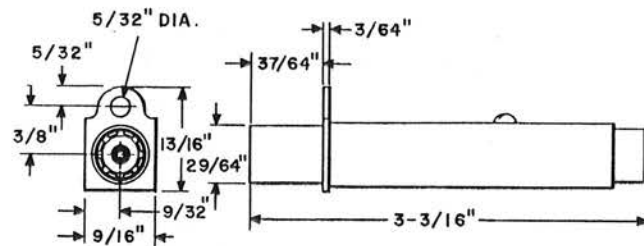
One mounting screw is furnished.

477A: Body is in fixed position in frame. Used in radio systems.

477B and C: Body rotates freely in frame thus facilitating alignment of cable. Used in carrier telephone systems.

Code No.	Comcode	Fig. No.	Dimension A (Inches)
477A	100 277 441	1	2-29/32
477B	100 277 458	1	3-1/8
477C	100 277 466	2	—

486A



A singly mounted jack, having coaxially arranged inner and outer contacts which are mounted in a tubular metal frame. Contains a 75 ohm deposited carbon rod resistance mounted coaxially with the outer housing and connected across the coaxial members.

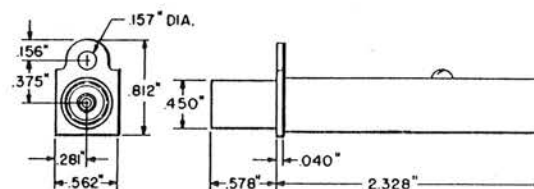
Arranged for 358A or similar type plug but not for cord or coaxial cable connections.

One round head machine screw is furnished for mounting.

For use in radio relay systems and as a termination jack in coaxial circuits.

Comcode: 100 277 607

542A



A coaxial type jack arranged for solderless shield connection to a connecting cable by means of a sleeve which is furnished loose. Tested at 2000 volts ac.

Arranged for use with 358A or similar type plug.

Mounting screws are furnished.

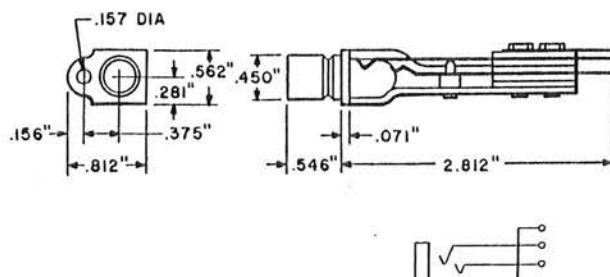
Intended for use on multiplex bay of toll system.

Comcode: 100 278 183

## JACKS

### Singly Mounted

544A

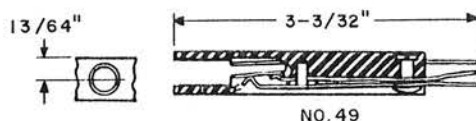


Provided with a feature for minimizing the possibility of shorting the tip and ring springs when plug is inserted. Arranged for number 310 or similar type plugs.

Intended to mount with springs in vertical plane and provided with a mounting screw.

For use in digital data system.  
Comcode: 100 278 209

### Strip Mounted



These jacks are assembled in associated jack mountings and are not furnished separately.

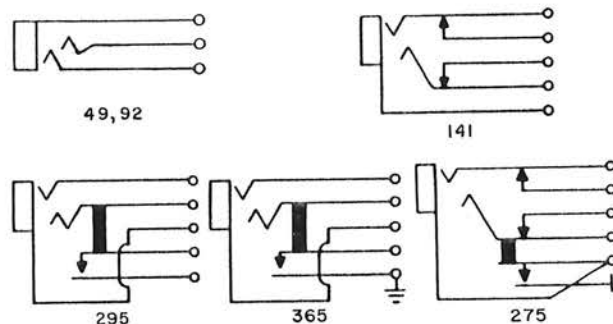
Following is a list of strip mounted jacks. The list indicates the number of springs, length, and mounting centers. The spring combinations following the list are keyed to the respective code numbers.

Code No.	Comcode	No. of Springs	Length (In.)	Used with Jack Mounting	
				Code No.	No. Per Strip
* 49	100 273 481	2	3-5/32	114	20
	100 273 572			141	10
	100 273 606			142	10
	100 273 556			168	20
** 92	101 023 844	2	3-1/8	113	20
	100 273 838			138	10
	100 273 879			139	10
	100 273 895			228	20
	100 275 155	6	3-31/64	112	20
*275	100 275 262			136	10
	100 275 312			137	10
	100 275 585	4	3-31/64	112	20
*295	100 275 643			115	20
	100 275 650			116	10
	100 275 668			136	10
	100 276 328	4	3-1/2	112	20
*365	100 276 559			136	10

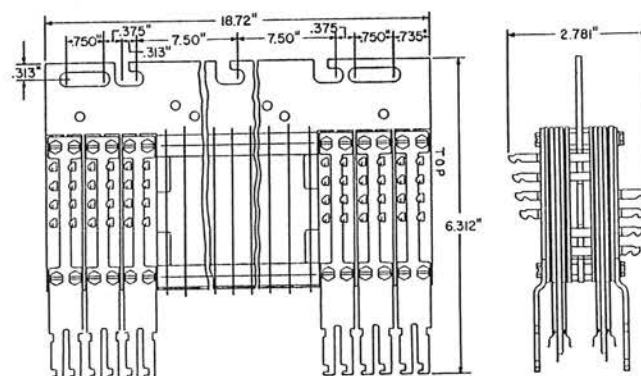
\*Used with number 310 type plugs.

\*\*Used with number 245, 277B, 309, 322, and 371B type plugs.

### Spring Combination Numbers



444C



This jack is used in central offices located in areas where incoming circuits are underground and do not require heat coil and block protection. Cable capacity is 100 pair. Jack provides a ready means of opening lines and trunks for test purposes.

## JACKS

## 444C (Continued)

Arranged for use with 301A and B and 302A Plugs.

Intended for use with 301A type connector.

Comcode: 100 277 052

## 465B, C, and E

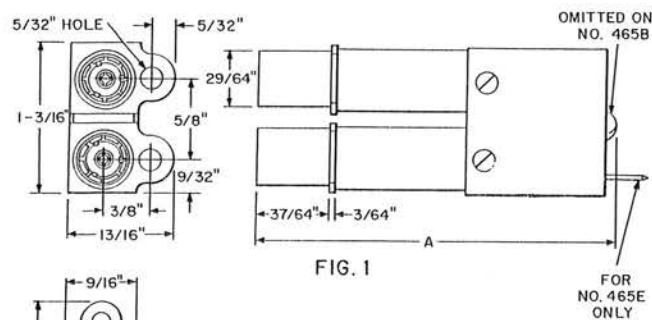
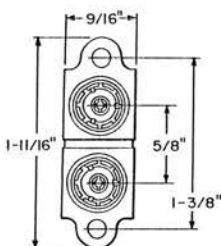


FIG. 1

FIG. 2  
OTHERWISE SAME  
AS FIG. 1

Consists of a pair of coaxial jacks held rigidly in a metal cover. Each jack has an inner contact held in a tubular shield which is the outer contact. The outer contacts of the two jacks are connected together electrically. Jacks are arranged for number 185 and 230A Jack Mountings. Two screws are provided for mounting.

465B and C: For use with the number 337 or similar type plug and KS-8086 shielded cable or number 724 Cable in carrier telephone system.

465E: Equipped with a terminal in the uncovered cable opening and a KS-15712L12 shield connector is shipped loose.

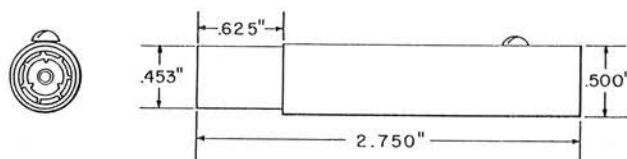
For use with 761A cable in L Carrier and L Multiplex Systems.

**Note:** The 465C and E have cable entrance holes on the same axis as the individual jack fingers while 465B has one cable entrance hole on the same axis as one of the jack fingers, and the other cable entrance hole at an angle of 45 degrees to the axis of the other jack finger as shown.

Code No.	Comcode	Fig. No.	Dimension A (Inches)	Test Voltage (AC)
465B	100 277 250	1	2.875	2000
(a) 465C	100 277 268	2	2.875	2000
(a) 465E	100 841 287	2	3.190	2000

(a) Furnished with mounting lugs positioned as in Fig. 2. Can also be obtained with mounting lugs positioned as in Fig. 1 when specified in the order.

## 466B

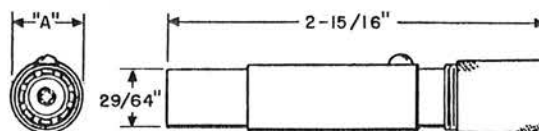


A portable patching jack having coaxially arranged inner and outer contacts. Tested at 1000 and 2000 volts ac.

Used with KS-8086 or number 724 cable and with 337A and B and 342A and B Plugs in the type L Carrier Telephone System.

Comcode: 100 277 284

## 479A and B



Coaxial type jacks. The right end, as viewed in the illustration, has an inner contact for a spring connection to the inner conductor of a .270 inch and .375 inch coaxial cable, respectively, and a gland nut for clamping to the outer conductor of the coaxial cable.

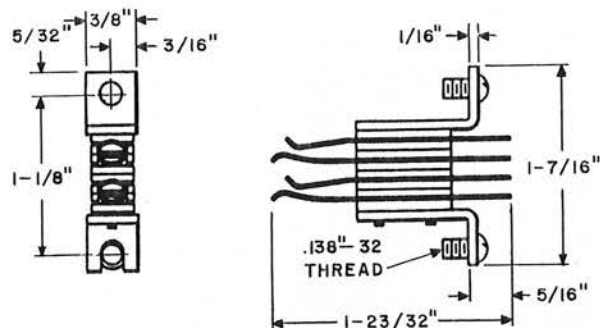
Used with number 337 type plugs for making temporary patches in coaxial units in the field.

Code No.	Comcode	Test Voltage (AC)	Dimension A (Inches)
479A	100 277 482	2000	9/16
479B	100 277 490	2000	11/16



## JACKS

506A

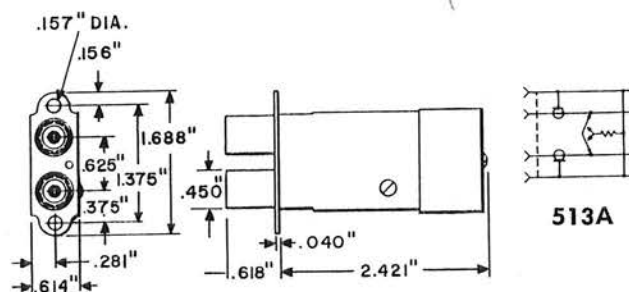


Consists of two metal brackets between which are mounted two pairs of contact springs insulated from each other. Will mount on 0.625 inch horizontal centers.

Arranged for 240A Plug for use with selector and connector shelf equipment in step-by-step telephone systems.

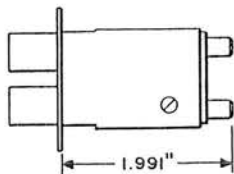
Comcode: 100 277 912

513 Type

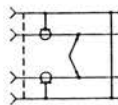


513A

513A and B



513C



513B and C

513A: Twin type jack arranged for mounting in number 230 or 231 type jack mountings and connecting to two 728A Cables by means of sleeves. Sleeves and mounting screws provided. Equipped with cable guard.

Intended for use in radio systems.

Comcode: 100 287 035

513B: Same as 513A except resistor is omitted.

Comcode: 100 278 043

513C: Same as 513A except resistor, sleeves, and cable guard are omitted.

Comcode: 100 278 050

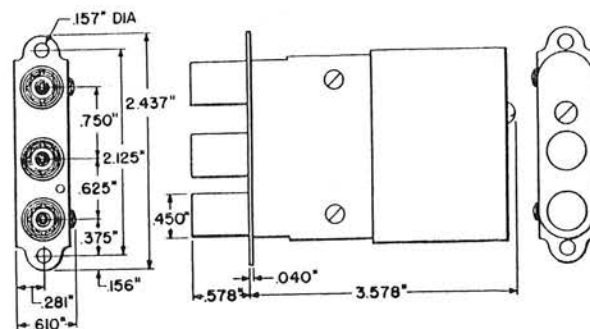
513F: Same as 513A except arranged to accept one number 724 or 728 Cable on one side and one 730A Cable on the other side.

Comcode: 101 149 987

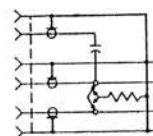
513G: Same as 513A except is arranged to accept two 730A Cables, and the cable terminals have an inside diameter of 0.152 inch and an outside diameter of 0.185 inch.

Comcode: 101 205 177

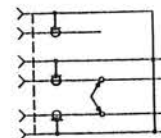
514 Type



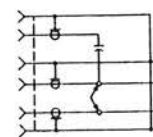
514A and B



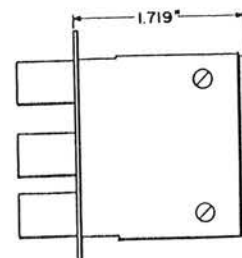
514A



514C



514B



514C



## JACKS

## 514 Type (Continued)

Upper finger serves as a monitoring jack. One end of each jack finger is arranged for use with 358A or similar type plugs. Other end of two lower fingers is arranged for solderless shield connection to two 728A Cables by means of sleeves which are furnished as loose parts with the jacks.

**514A:** Triple coaxial type jack arranged for 728A Cables by means of sleeves. Sleeves and mounting screws are provided. Equipped with cover.

Intended for use with radio systems.

**Comcode:** 100 278 068

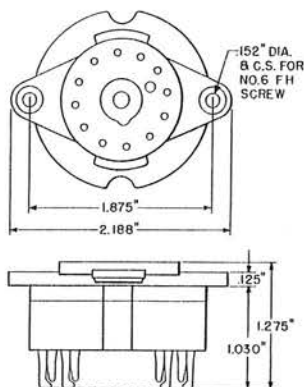
**514B:** Same as 514A except resistor is omitted.

**Comcode:** 100 278 076

**514C:** Same as 514A except resistor, capacitor, sleeves, and cover are omitted.

**Comcode:** 100 278 084

## 541A Type

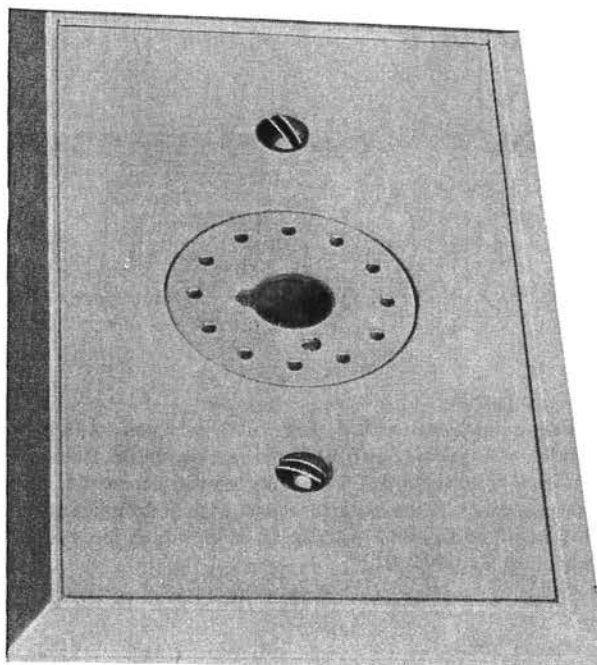


A flush-type jack consisting of a block of insulating material containing 12 contacts having clip-type terminals. Each clip terminal permits the connection of two insulated wires in multiple without removal of conductor insulation. Associated 504A type plug can be inserted in one position only.

Used with portable telephone sets having two to twelve conductor mounting cords. Forms a part of number 547 type jacks, and can be mounted on a 63A Bracket with a 16A type face plate.

Code No.	Comcode	Color
541A-49	100 278 159	Light olive gray
541A-50	100 278 167	Ivory
541A-54	100 278 175	Brown

## 547BW

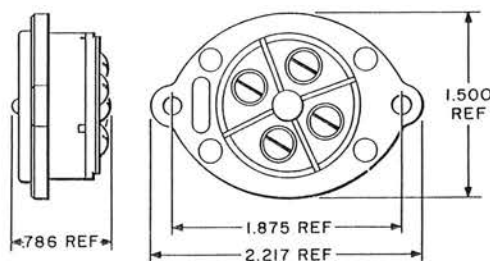


Consists of a 541A Jack, a 43B Bracket, and a flush type cover plate arranged for mounting in a standard electrical outlet box. The associated 504A Plug can be inserted in one position only. Overall dimensions of the 547B are 4.500 inches long by 2.750 inches wide by 1.384 inches deep.

Used with portable telephone sets having from two to twelve conductor mounting cords.

Code No.	Comcode	Color
547BW-49	101 336 196	Light olive gray
547BW-50	101 336 204	Ivory
547BW-54	101 336 212	Brown

## 548 Type



## JACKS

A flush-type jack consisting of a block of plastic insulating material containing four intermeshed coil spring contacts.

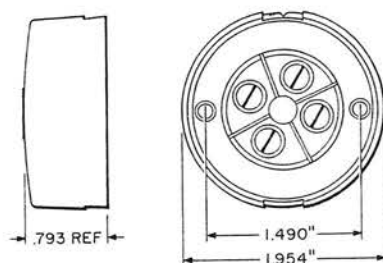
Two self-tapping screws are furnished for mounting.

The associated 505A type plug can be inserted in one position only.

Intended to be mounted in the woodwork at stations for use with portable telephone sets having 2, 3, or 4 conductor mounting cords.

Code No.	Comcode	Color
548A-49	100 278 290	Light olive gray
548A-50	100 278 308	Ivory
548A-54	100 278 316	Brown

## 549AW-49 and 549AW-50



A nonflush type consisting of a block of plastic insulating material containing four intermeshed coil spring contacts.

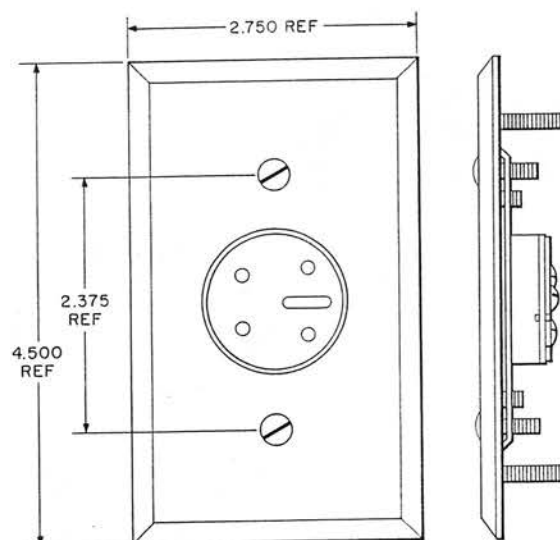
Two wood screws are provided for mounting.

The associated 505A type plug can be inserted in one position only.

For use with portable telephone sets having 2, 3, or 4 conductor mounting cords.

Code No.	Comcode	Color
549AW-49	101 205 185	Light olive gray
549AW-50	101 205 193	Ivory

## 550 Type



Consists of a 548A type jack, a 43A Bracket, and a flush-type cover plate arranged for mounting in an electrical outlet box.

Mounting screws are furnished.

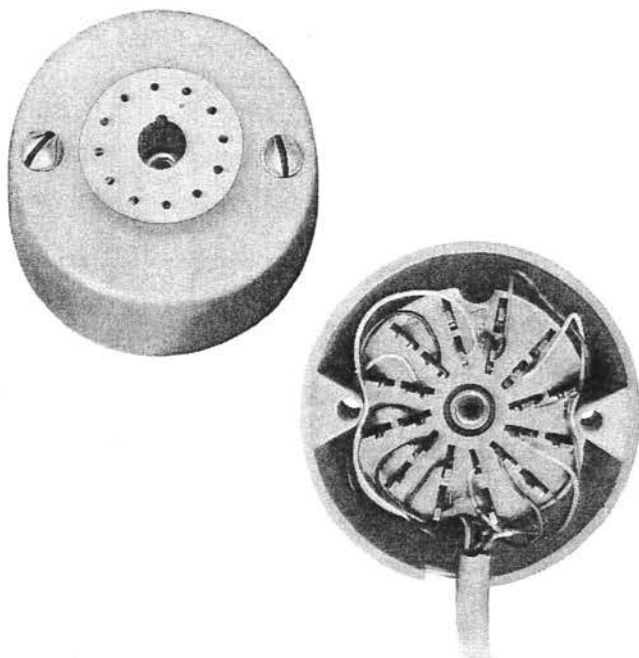
The associated 505A type plug can be inserted in one position only.

Intended for use with portable telephone sets having 2, 3, or 4 conductor mounting cords.

Code No.	Comcode	Color
550A-49	100 278 340	Light olive gray
550A-50	100 278 357	Ivory
550A-54	100 278 365	Brown

## JACKS

## 551AW Type

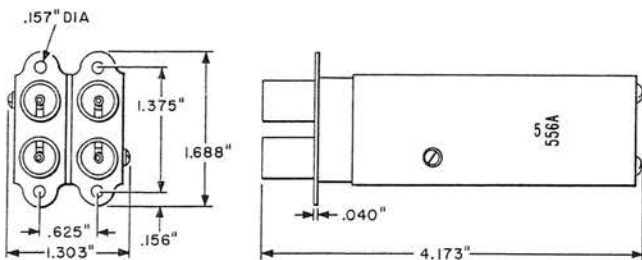


Nonflush-type jack consisting of a block of insulating material containing twelve spring contacts equipped with quick contact terminals. The associated 504A Plug can be inserted in one position only. Overall dimensions are 1.345 inches high by 2.540 inches in diameter. Two wood screws are provided for mounting.

Used with portable telephone sets having from two to twelve conductor mounting cords.

Code No.	Comcode	Color
551AW-49	101 336 220	Light olive gray
551AW-50	101 336 238	Ivory

## 556 Type



556A: Consists of two number 513-type twin coaxial jacks. One end is arranged for use with 358A or similar type plugs. The other end is arranged for use with 754E Cables. Each jack is equipped with a 62 ohm resistor and with a cable guard. Mounting screws are shipped loose.

Comcode: 100 841 295

556B: Same as 556A except one P-188130 ferrule for a 754E Cable is omitted and replaced by a P-484676 terminal to accommodate a 760A Cable. Arranged for one 754E and one 760A Cable.

Comcode 100 845 767

556C: Same as 556A except is arranged for one 754 Cable and two 730 Cables. Also equipped with two Sealelectro terminals to be used for adding networks.

Comcode: 101 361 095

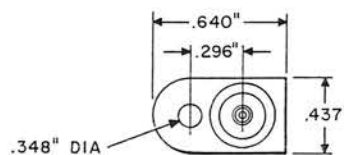
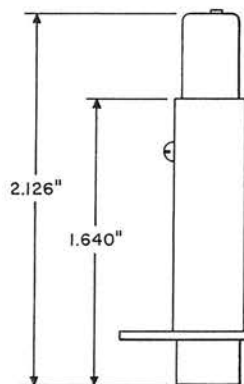
556D: Same as 556A except arranged for one 754 Cable, two 730A Cables, and one 728 or 724 Cable.

Comcode: 101 361 103

556A and B used initially in the TD Radio System.

556C and D used initially in the A2AT Transmission System.

## 570A



A coaxial-type jack having coaxially arranged inner and outer contacts. Single jack arranged for use with 440A and similar type plugs. Mounting screw is furnished.

Not arranged for connection to a coaxial cable. Intended as a terminating jack. Has a 75 ohm resistor connected internally from the center contact to the shell.

Closest recommended mounting centers are .500 inch side by side.

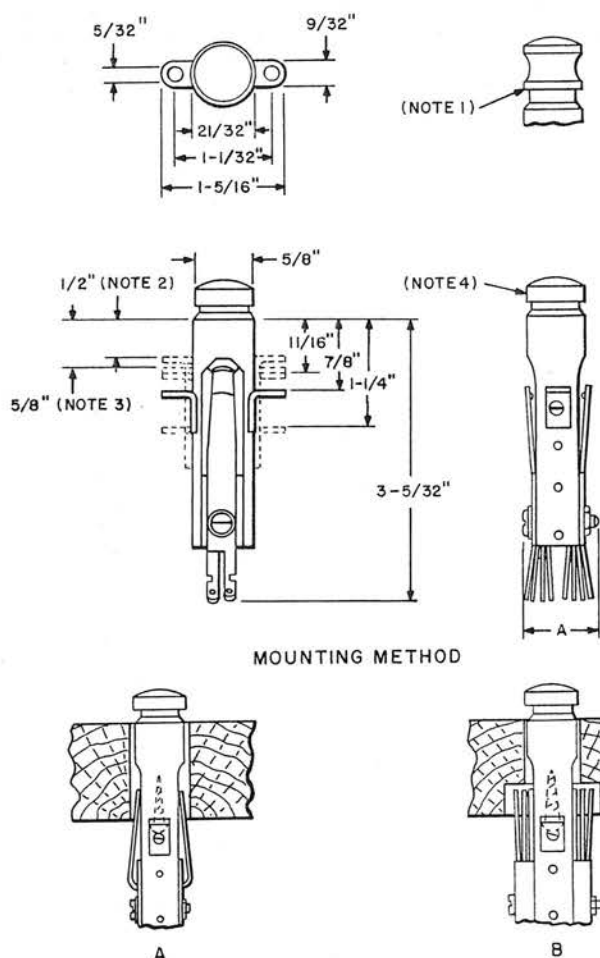
Used initially in Toll Systems-Mastergroup Multiplex.

Comcode: 101 283 398



## KEYS

## 92 Type



## NOTES:

1. PLUNGER USED WITH LOCKING COMBINATIONS.
2. FOR 92Y AND AE ONLY.
3. OPTIONAL FOR 92A, B, AND AC ONLY.
4. PLUNGER USED WITH NON-LOCKING COMBINATION.

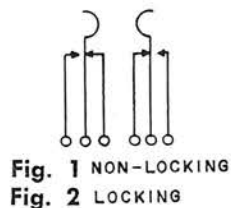


Fig. 2 LOCKING

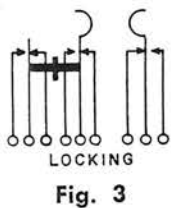
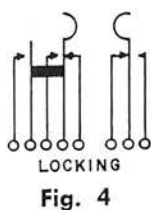


Fig. 5

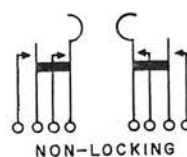
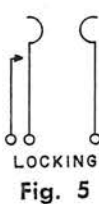


Fig. 6

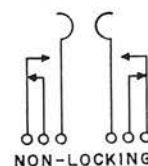


Fig. 8

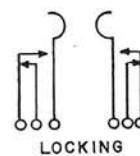


Fig. 10

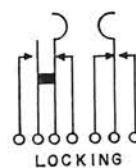


Fig. 12

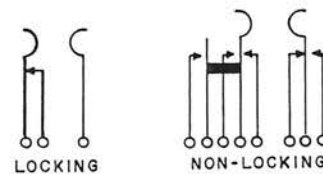


Fig. 14

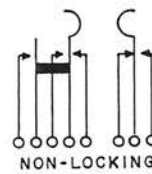


Fig. 15

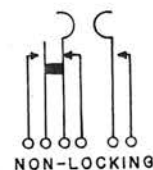


Fig. 7

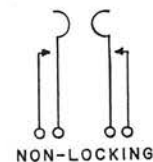


Fig. 9

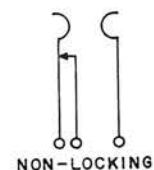


Fig. 11

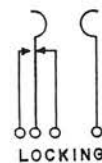


Fig. 13

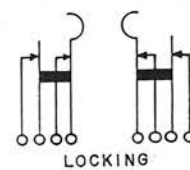


Fig. 16



## KEYS

## 92 Type (Continued)

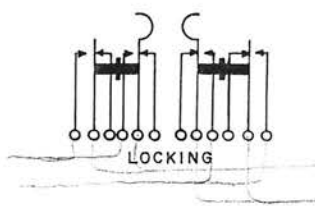


Fig. 17

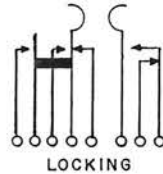


Fig. 18

Black push button type Keys arranged for shelf as indicated in table. Unless otherwise specified in order, Keys arranged for 7/8 inch shelf will be furnished except as noted by footnotes.

Code No.	Comcode	Mounting Method	Contact Arrangement Fig. No.	Arranged for Shelf (Inches)	Dimensions A (Inches)
92A	100 279 777	A	1	5/8	21/32
92A	100 279 785	A	1	11/16	21/32
92A	100 279 793	A	1	7/8	21/32
92A	100 279 801	A	1	1-1/4	21/32
92B	100 279 819	A	2	5/8	21/32
92B	100 279 827	A	2	11/16	21/32
92B	100 279 835	A	2	7/8	21/32
92B	100 279 843	A	2	1-1/4	21/32
92D	100 955 681	B	3	5/8	7/8
92D	100 955 699	B	3	11/16	7/8
92D	101 634 301	B	3	7/8	7/8
92D	101 634 319	B	3	1-1/4	7/8
(a) 92H	101 634 327	B	4	11/16	13/16
(a) 92H	101 634 335	B	4	7/8	13/16
(a) 92H	101 634 343	B	4	1-1/4	13/16
(b) 92N	100 279 884	A	13	11/16	21/32
(b) 92N	100 279 892	A	13	7/8	21/32
(b) 92N	100 279 900	A	13	1-1/4	21/32
(c) 92P	100 279 918	A	5	11/16	21/32
(c) 92P	100 279 926	A	5	7/8	21/32
(c) 92P	100 279 934	A	5	1-1/4	21/32
92R	100 955 707	B	6	11/16	15/16
92R	101 634 350	B	6	7/8	15/16
92R	101 634 368	B	6	1-1/4	15/16
92S	100 955 715	A	1	11/16	21/32
92S	101 634 376	A	1	7/8	21/32
92S	101 634 384	A	1	1-1/4	21/32
92T	100 955 723	B	7	11/16	11/16
92T	101 634 392	B	7	7/8	11/16
92T	101 634 400	B	7	1-1/4	11/16
92W	100 955 731	B	8	11/16	23/32
92W	101 223 501	B	8	7/8	23/32
92W	101 405 637	B	8	1-1/4	23/32
92Y	100 279 983	A	9	1/2	21/32
92Y	100 279 991	A	9	11/16	21/32
92Y	100 280 007	A	9	7/8	21/32
92Y	100 280 015	A	9	1-1/4	21/32

(a) Top of button engraved "MON".

(b) Top of button engraved "E".

(c) Top of button engraved "C".

## KEYS

Code No.	Comcode	Mounting Method	Contact Arrangement Fig. No.	Arranged for Shelf (Inches)	Dimensions A (Inches)
92AA	101 634 418	A	10	11/16	25/32
92AA	101 634 426	A	10	7/8	25/32
92AA	101 634 434	A	10	1-1/4	25/32
92AC	100 955 756	A	11	5/8	21/32
92AC	100 955 772	A	11	11/16	21/32
92AC	101 568 210	A	11	7/8	21/32
92AC	100 955 764	A	11	1-1/4	21/32
92AD	100 955 780	B	12	11/16	21/32
92AD	101 634 442	B	12	7/8	21/32
92AD	101 634 459	B	12	1-1/4	21/32
92AG	100 955 798	B	4	11/16	13/16
92AG	101 634 467	B	4	7/8	13/16
92AG	101 634 475	B	4	1-1/4	13/16
92AH	100 280 072	A	14	11/16	21/32
92AH	100 280 080	A	14	7/8	21/32
92AH	100 280 098	A	14	1-1/4	21/32
(d) 92AJ	100 280 106	A	5	11/16	21/32
(d) 92AJ	100 280 114	A	5	7/8	21/32
(d) 92AJ	100 280 122	A	5	1-1/4	21/32
92AN	100 995 822	B	15	11/16	13/16
92AN	101 634 483	B	15	7/8	13/16
92AN	101 634 491	B	15	1-1/4	13/16
92AR	100 995 830	B	16	11/16	15/16
92AR	101 634 509	B	16	7/8	15/16
92AR	101 634 517	B	16	1-1/4	15/16
92AS	100 955 848	B	17	11/16	1-1/32
92AS	101 634 525	B	17	7/8	1-1/32
92AS	100 955 855	B	17	1-1/4	1-1/32
(e) 92AT	101 634 533	A	9	11/16	21/32
92AT	101 223 519	A	9	7/8	21/32
92AT	101 405 645	A	9	1-1/4	21/32
(f) 92AU	101 634 541	B	3	11/16	7/8
92AU	101 634 558	B	3	7/8	7/8
92AU	101 634 566	B	3	1-1/4	7/8
92AW	100 280 205	B	18	11/16	13/16
92AW	100 280 213	B	18	7/8	13/16
92AW	100 280 221	B	18	1-1/4	13/16

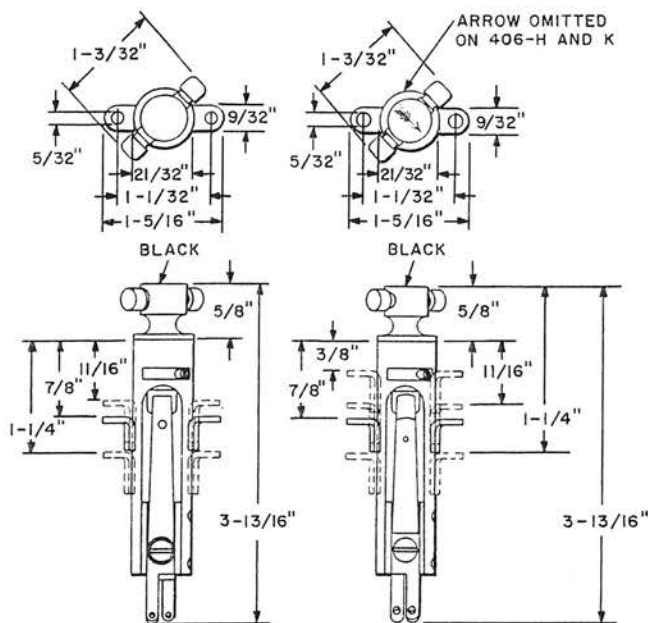
(d) Equipped with a red button, EM.

(e) Top of button engraved RB.

(f) Equipped with special plunger, normally locked in the operating position. Can only be released by removal of plunger.

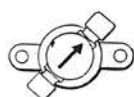
## KEYS

## 406 Type



406A and P

406C, H and K



406R



406A



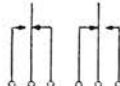
406C and K



406H



406P



406R

Each key is equipped with a black cam. May be obtained with a red cam when specified in the order.

Two number 5 round head wood screws are provided for mounting.

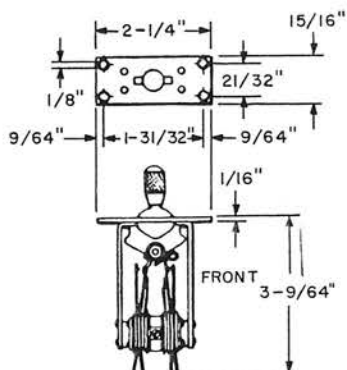
Cams for 406A and P are engraved as specified on the order. Furnished unengraved unless otherwise specified.

Code No.	Comcode	Arranged for Shelf (Inches)
406A	100 281 849	11/16
406A	100 281 856	(*) 11/16
406A	100 281 864	7/8
406A	100 281 872	(*) 7/8
406A	100 281 880	1-1/4
406A	100 281 898	(*) 1-1/4
406C	100 281 914	3/8
406C	100 281 922	(*) 3/8
406C	100 281 930	11/16
406C	100 281 948	(*) 11/16
406C	100 281 955	7/8
406C	100 281 963	(*) 7/8
406C	100 281 971	1-1/4
406C	100 281 989	(*) 1-1/4
406H	100 282 003	3/8
406H	100 282 011	(*) 3/8
406H	100 282 029	11/16
406H	100 282 037	(*) 11/16
406H	100 282 045	7/8
406H	100 282 052	(*) 7/8
406H	100 282 060	1-1/4
406H	100 282 078	(*) 1-1/4
406K	100 282 094	3/8
406K	100 282 102	(*) 3/8
406K	100 282 110	11/16
406K	100 282 128	(*) 11/16
406K	100 282 136	7/8
406K	100 282 144	(*) 7/8
406K	100 282 151	1-1/4
406K	100 282 169	(*) 1-1/4
406P	100 282 185	11/16
406P	100 282 193	(*) 11/16
406P	100 282 201	7/8
406P	100 282 219	(*) 7/8
406P	100 282 227	1-1/4
406P	100 282 235	(*) 1-1/4
406R	100 282 250	3/8
406R	100 282 268	(*) 3/8
406R	100 282 276	11/16
406R	100 282 284	(*) 11/16
406R	100 282 292	7/8
406R	100 282 300	(*) 7/8
406R	100 282 318	1-1/4
406R	100 282 326	(*) 1-1/4

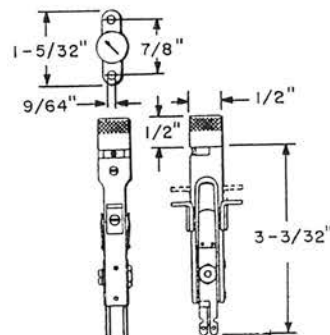
(\*) Red Cam.

KEYS

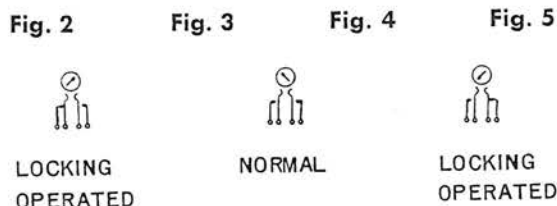
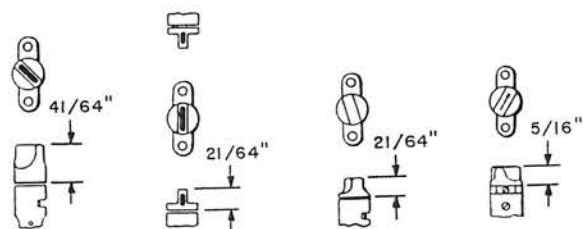
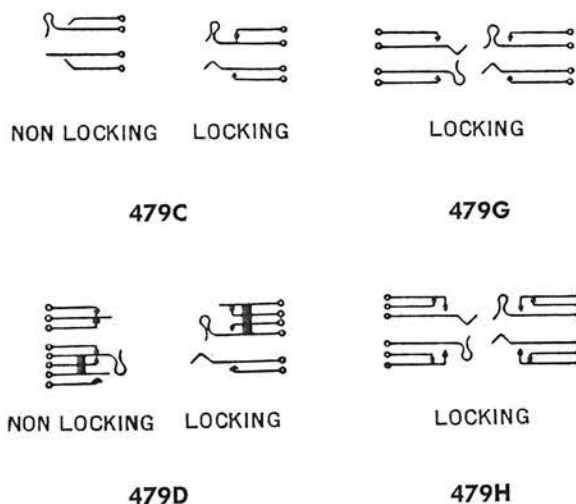
479 Type



498 Type



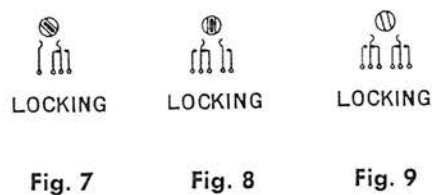
General Design and Dimensions of 498 Type



Lever type keys with black metallic tops and black lever handles unless otherwise indicated.

Keys are arranged for mounting on woodwork. Four screws are furnished for mounting.

Code No.	Comcode
479C	100 282 961
479D	100 282 979
479G	100 283 001
479H	100 283 019





## KEYS

## 498 Type (Continued)

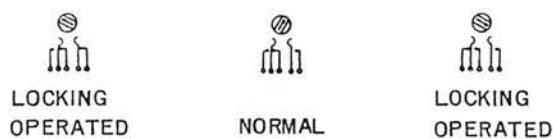


Fig. 10

Singly mounted rotating button type keys intended for switching.

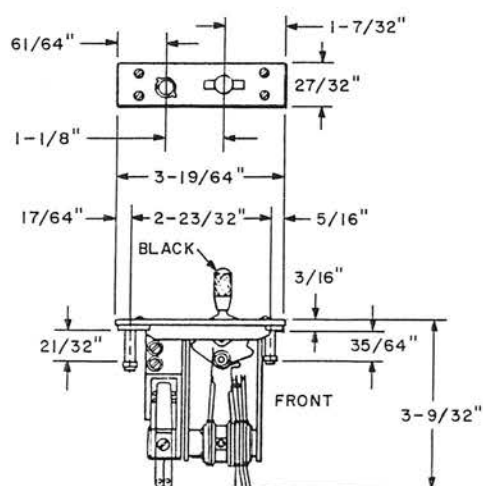
Buttons of 498A, E, H, AD, AL, AP, AR, and AS are arranged to rotate 90 degrees clockwise and 90 degrees counterclockwise, from normal position. All others are arranged to rotate 90 degrees clockwise from normal position.

Mounting screws are provided unless otherwise indicated by footnote.

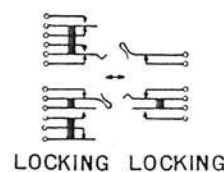
Code No.	Comcode	Fig. No.	Schematic Fig. No.	Color of Button	Color of Engraving	Thickness of Keyshelf (Inches)
498A	100 284 975	1	6	Red	Black	7/8
498G	100 285 048	2	7	Black	White	7/8
498K	100 285 071	3	8	Black	White	7/8
*498AM	100 285 329	4	4	Dark Beige	—	3/4
	100 285 311	4	9	Dark Beige	—	7/8
*498AS	100 285 378	5	10	Dark Beige	Black	5/8

\*Not provided with mounting screws.

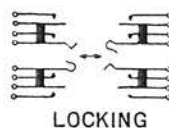
## 546 Type



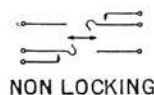
546A



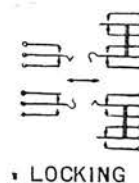
546B



546C

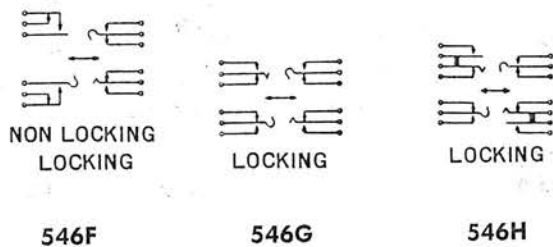


546D



546E

## KEYS

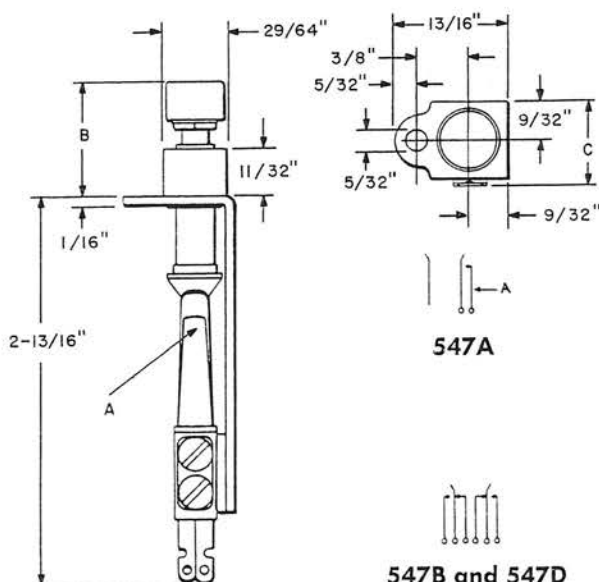


Arranged for mounting in a number 377A Key Mounting. Equipped with key unit lamp socket for number 2 type lamp cap, unless otherwise specified. Lamp and lamp cap are not furnished.

Code No.	Comcode	Key Unit No.	Used For
546A(a)	100 286 392	2ACY	Pulsing
546B(b)	100 286 400	2APY	Splitting
546C	100 286 418	2APD	Checking
546D(b)	100 286 426	2SP	Tone
546E(b)	100 286 434	2BD	Talking
546F	100 286 442	2LH	Signaling
546G	100 286 459	2GR	Signaling and audible ringing
546H	100 286 467	2CA	Signaling

- (a) Equipped with cushion springs to reduce noise when restoring lever to normal.
- (b) Not equipped with lamp socket.

## 547 Type



Nonlocking push button type keys. For use on number 184 and 185 Jack Mountings and 385A Key Mounting. Mounting screw is furnished.

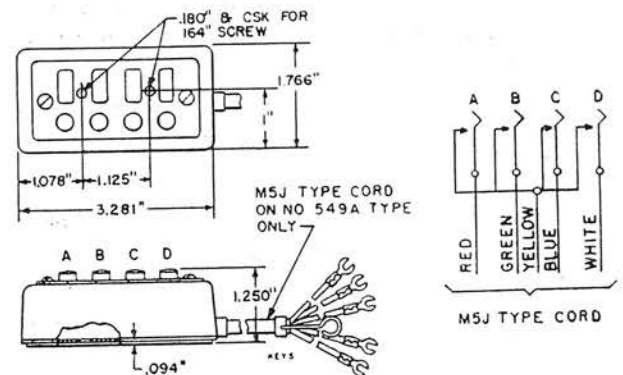
547A: Equipped with black button. Available with red button when specified on order.

547B: Equipped with black button. Available with a white, clear frosted, red, bright red, green, or orange button when specified on order.

547D: Equipped with a clear frosted button.

Code No.	Comcode	Dimensions (Inches)	
		B	C
547A	100 286 475	53/64	9/16
547B	100 286 491	53/64	9/16
547D	100 286 566	1-19/64	9/16

## 549AW and BW Type



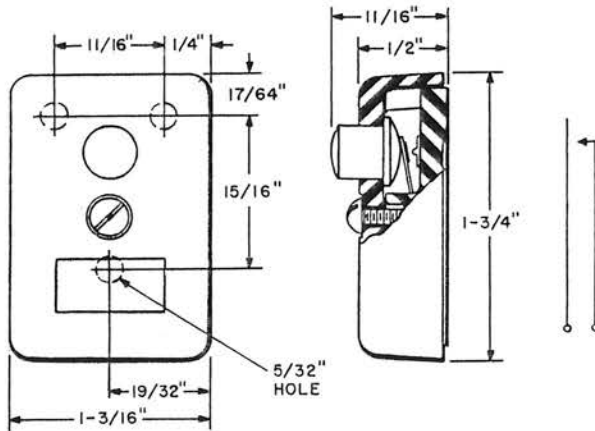
Consists of four nonlocking push button keys mounted in metal boxes. Keys are equipped with white plastic push buttons and provided with an escutcheon plate and designation card.

Used for operating buzzers in key equipment. May be obtained in colors indicated in the following table. Dash number of color desired must be specified on order.

Code No.	Comcode	Color	Consist of Key No.	Cord
549AW-3	101 336 246	Black	549B-3	M5J-3
549AW-51	101 336 261	Green	549B-51	M5J-51
549AW-56	101 336 287	Yellow	549B-56	M5J-56
549AW-58	101 336 295	White	549B-58	M5J-58
549AW-60	101 336 311	Light Beige	549B-60	M5J-60
549AW-61	101 336 329	Light Gray	549B-61	M5J-61
549BW-3	101 359 313	Black	—	—
549BW-51	101 359 339	Green	—	—
549BW-56	101 359 354	Yellow	—	—
549BW-58	101 359 362	White	—	—
549BW-60	101 359 388	Light Beige	—	—
549BW-61	101 359 396	Light Gray	—	—

KEYS

551AW Type

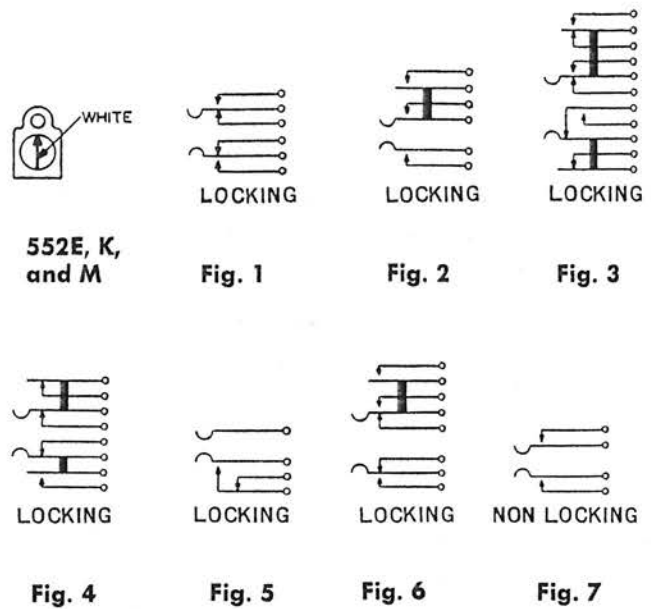
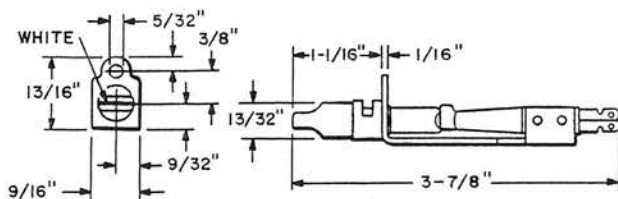


Nonlocking push button keys in a case of insulating material. Push button is white plastic. Provided with window having a transparent face strip for mounting a designation card.

May be obtained in colors indicated in the following table. Dash number of color desired must be specified on order.

Code No.	Comcode	Color
551AW-3	101 336 469	Black
551AW-50	101 336 477	Ivory
551AW-51	101 336 485	Green
551AW-53	101 336 493	Red
551AW-56	101 336 501	Yellow
551AW-58	101 336 519	White
551AW-60	101 336 535	Light Beige
551AW-61	101 336 543	Light Gray

552 Type



Turn button type keys. Will mount in the same drillings as 218A, 223A, or similar type jacks. Mounting screws are provided.



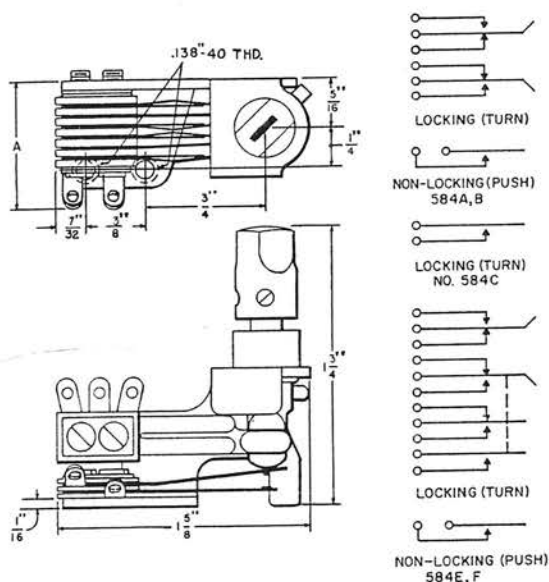
## KEYS

Code No.	Comcode	Schematic Fig. No.	Button Type	Horizontal Mounting Centers (Inches)
(a) 552A	100 287 184	1	Black with white line	5/8
(a) 552B	100 287 192	2	Black with white line	3/4
(a) 552C	100 287 200	3	Black with white line	1
(a) 552D	100 287 218	4	Black with white line	3/4
(d) 552E	100 287 226	1	Black with white arrow	5/8
	100 287 234	1	Red with black arrow	5/8
(a) 552G	100 287 242	5	Black with white line	5/8
(a) 552H	100 287 259	6	Black with white line	3/4
(a) 552J	100 287 267	1	Clear frosted with white line	5/8
(b) 552K	100 287 275	4	Black with white arrow	3/4
	100 287 283	4	Red with black arrow	3/4
(a) 552L	100 287 291	2	Clear frosted with white line	3/4
(c) 552M	100 287 309	7	Black with white arrow	5/8
	100 287 317	7	Red with black arrow	5/8

- (a) Turning the button clockwise operates all contact springs.
- (b) Turning the button clockwise operates a make and a break contact. Turning the button counterclockwise operates two break contacts.

- (c) Turning the button clockwise operates one make contact. Turning the button counterclockwise operates the other make contact.
- (d) Turning the button clockwise operates one set of transfer springs. Turning the button counterclockwise operates the other set of transfer springs.

## 584 Type



584A, C, and E: Button is oriented 45 degrees clockwise from the vertical. Used in the number 510 and 511 type telephone sets.

584B and F: Button is oriented 90 degrees clockwise relative to the position on 584A. Used in number 558 type telephone sets.

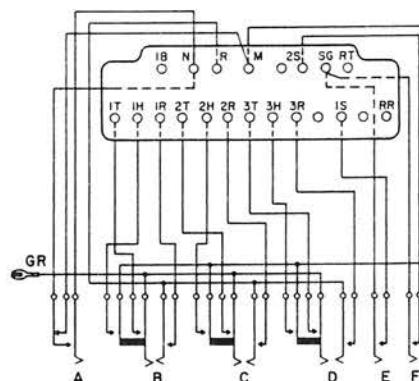
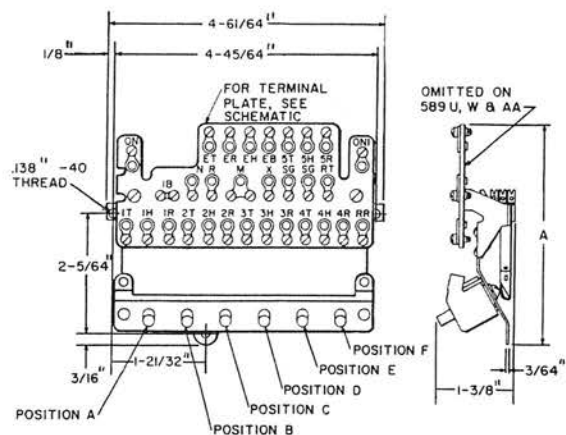
Code No.	Comcode
584A	100 287 747
584B	100 287 754
584C	100 287 762
584E	100 287 788
584F	100 287 796

Combination turn and push button type key. Push button can be operated with turn button in either position.

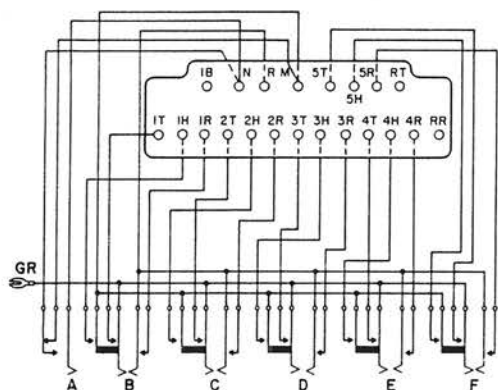


## KEYS

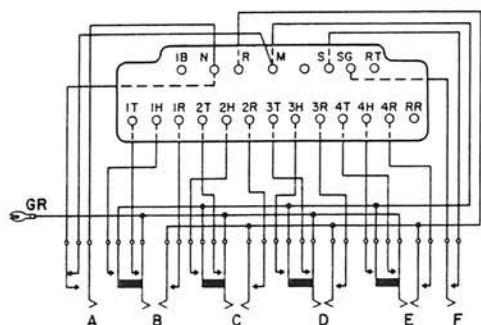
589 Type



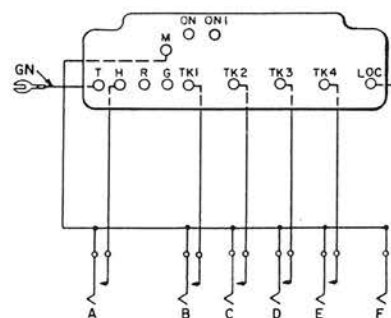
589E



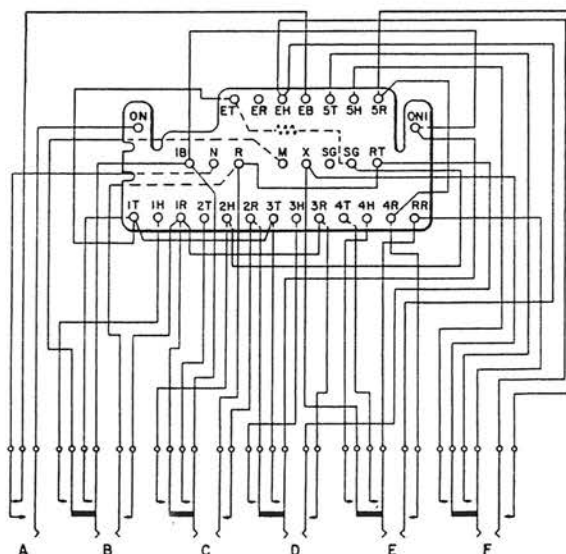
589A



589D

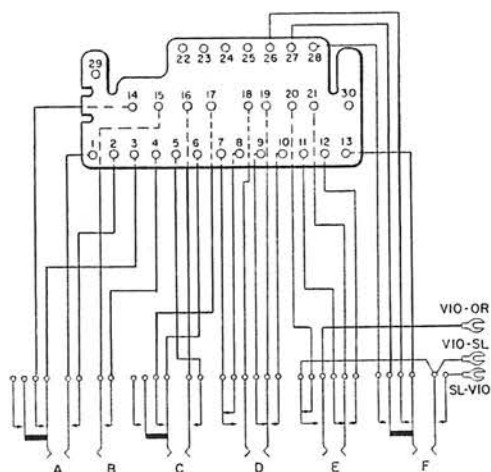


589L

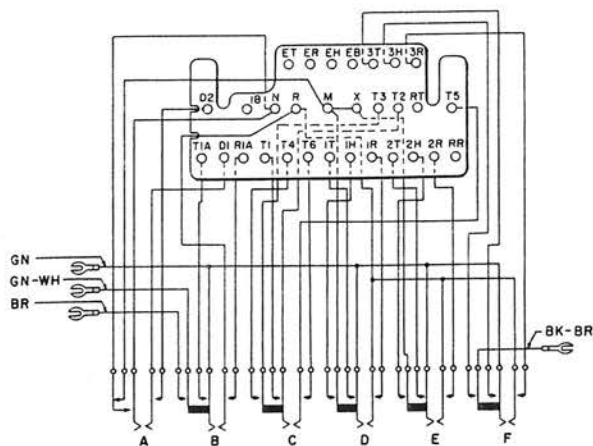


589M

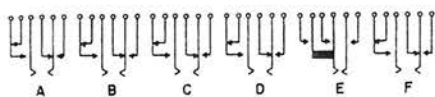
KEYS



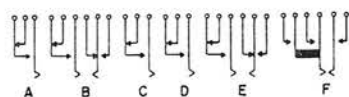
589S



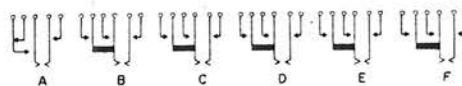
589T



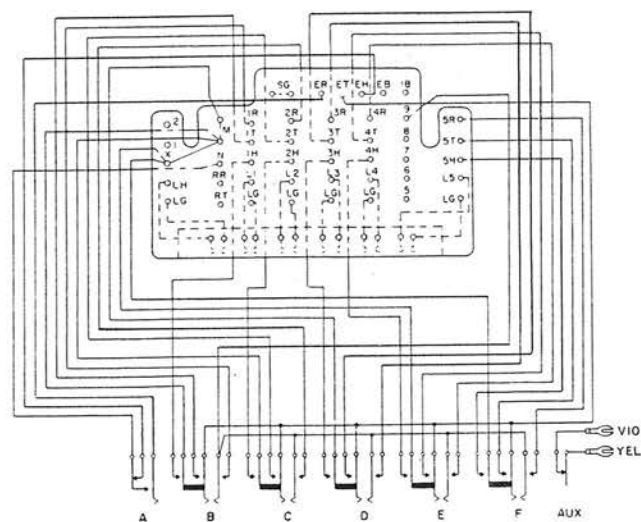
589U



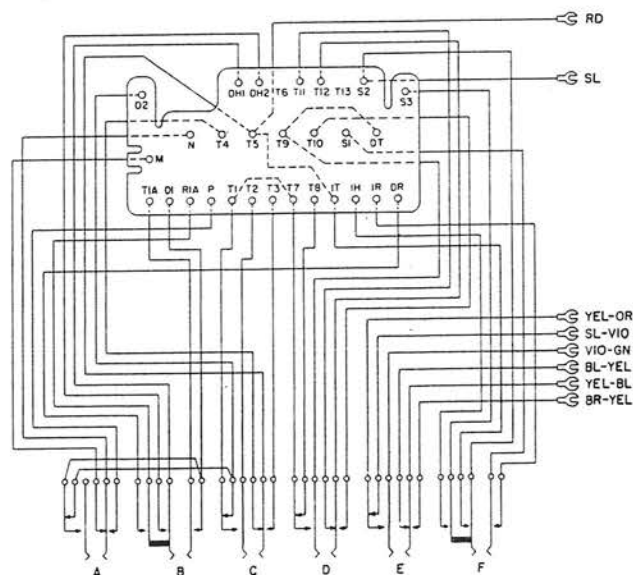
589W



589AA



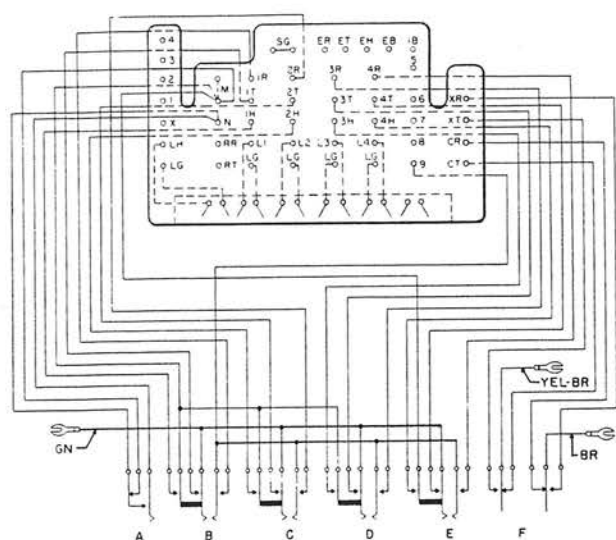
589AB



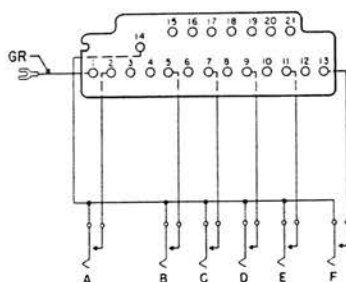
589AC

at the terminal strip, the positions can be converted in the field to Pickup (Locking). The releasing plungers, which are nonlocking, and the locking plungers will release any plunger that is locked. The nonlocking plungers and the turn button will not release locked plungers, unless otherwise indicated by footnote. Operation of any two or more locking plungers simultaneously is prevented by means of a lockout feature, unless otherwise indicated by footnote.

Arranged to mount lamp strips for illuminated type apparatus, except 589AB and 589AJ which are equipped with six lamp sockets. Buttons required for use with plungers are furnished as part of the associated apparatus.



589AJ



589AN

Contact springs which are operated by the action of the plungers are locking, releasing, or nonlocking as indicated on the following table. Turn button positions are locking. Keys having positions designated as "Pickup or Signal (Convertible)" on the following table are furnished with the positions arranged and wired for Pickup (Locking) but by removal of a screw pin from the plunger and a change in wiring at the terminal strip, the position can be converted in the field to Signal (Nonlocking). Keys having positions designated as "Signal or Pickup (Convertible)" are furnished with the positions arranged and wired for Signal (Nonlocking), but by inserting a screw pin in the plunger and a change in wiring



## KEYS

Code No.	Comcode	Dimension A (Inches)	Positions (Spring Combinations)					
			A	B	C	D	E	F
589A	100 287 911	3-1/8	Hold (Releasing)	Pickup (Locking)	Pickup (Locking)	Pickup (Locking)	Pickup (Locking)	Pickup (Locking)
589D	100 287 929	3-1/8	Hold (Releasing)	Pickup (Locking)	Pickup (Locking)	Pickup (Locking)	Pickup (Locking)	Signal (Nonlocking)
589E	100 287 937	3-1/8	Hold (Releasing)	Pickup (Locking)	Pickup (Locking)	Pickup (Locking)	Signal (Nonlocking)	Signal (Nonlocking)
589L(a)	100 287 978	3-1/8	Hold (Releasing)	Pickup (Locking)	Pickup (Locking)	Pickup (Locking)	Pickup (Locking)	Local (Locking)
589M(f)	100 287 986	3-27/32	Release (Releasing)	Pickup or Signal (Convertible)	Pickup or Signal (Convertible)	Pickup or Signal (Convertible)	Signal or Pickup (Convertible)	Signal or Pickup (Convertible)
589S	100 288 000	3-15/16	Ans (Nonlocking)	Clear (Nonlocking)	Orig (Nonlocking)	(Nonlocking)	Test (Locking)	Local (Locking)
589T	100 288 018	3-27/32	Hold (Releasing)	Pickup (Locking)	Signal (Nonlocking)	Pickup (Locking)	Pickup or Signal (Convertible)	Pickup or Signal (Convertible)
589U(a)(e)	100 288 026	2-7/8	Signal (Nonlocking)	Signal (Nonlocking)	Signal (Nonlocking)	Pickup (Locking)	Pickup (Locking)	Pickup (d) (Locking)
589W(a)(e)	100 288 034	2-7/8	Signal (d) (Nonlocking)	Signal (d) (Nonlocking)	Signal (d) (Nonlocking)	Signal (d) (Nonlocking)	Signal (d) (Nonlocking)	(d) (Turn-Locking)
589AA(a)	100 288 042	2-7/8	Hold (Releasing)	Pickup or Signal (Convertible)	Signal or Pickup (Convertible)	Pickup or Signal (Convertible)	Pickup or Signal (Convertible)	Pickup or Signal (Convertible)
589AB(b)(c)	100 288 059	4-1/8	Hold (Releasing)	Pickup (Locking)	Pickup (Locking)	Pickup or Signal (Convertible)	Pickup or Signal (Convertible)	Pickup or Signal (Convertible)
589AC	100 288 067	3-15/16	Hold (Releasing)	Pickup or Signal (Convertible)	Signal or Pickup (Convertible)	Signal or Pickup (Convertible)	Pickup or Signal (Convertible)	Pickup or Signal (Convertible)
589AJ(b)	100 288 091	4-1/8	Hold (Releasing)	Pickup (Locking)	Pickup (Locking)	Pickup (Locking)	Pickup or Signal (Convertible)	Cutoff (Turn-Locking)
589AN	100 288 133	3-1/8	Hold (Releasing)	Pickup (Locking)	Pickup (Locking)	Pickup (Locking)	Pickup (Locking)	Local (Locking)

(a) Not equipped with a terminal plate or wiring.

(b) Equipped with six lamp sockets arranged for 51A or 52A Lamps.

(c) Equipped with an auxiliary spring combination consisting of a pair of normally closed contacts which is actuated by the operation of any locking or releasing plunger.

(d) May be operated simultaneously with any position.

(e) Nonlocking plungers will release locked plungers.

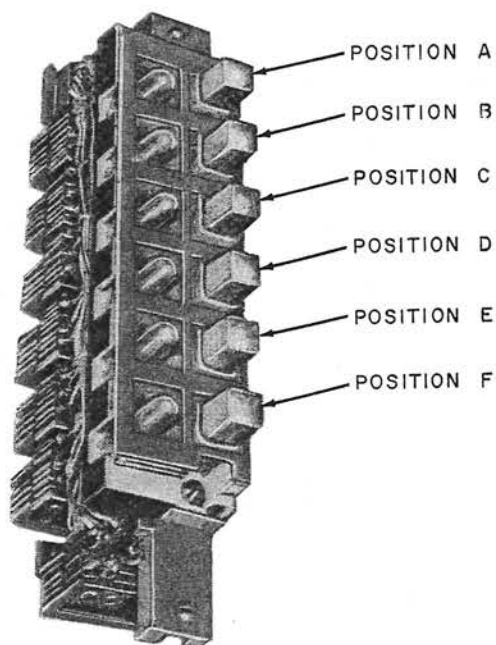
(f) When depressing any button in positions B through F, the contacts operated by that button will make before any locked plunger releases.





## KEYS

598 and 599 Type



Mechanically locking keys consisting of plunger-operated spring combinations as indicated in table, and a common chaining switch, except where indicated by footnote, having three sets of break contacts wired to a KS-16672L3 Connector except where indicated by footnote. The buttons are of the illuminated type. Overall dimensions are approximately 6.594 inches long by 1.250 inches wide by 3.125 inches deep.

The spring combinations which are operated by the action of the individual buttons are locking, nonlocking, releasing, or turn-locking as indicated in table. Those designated as "Pickup" are furnished arranged for Pickup (Locking), but by removal of a screw pin from the plunger can be converted to Signal (Nonlocking) in which

condition, operation of the button does not operate the chaining switch, does not release any operated pickup button, and therefore can be used for signaling. Operation of any locking button releases any locked button and operates the chaining switch. Operation of any two or more locking buttons simultaneously is prevented by means of a lockout feature as indicated by footnote.

598A, B, C, E and F: Each button operates three sets of make contacts.

598D: Buttons in positions A, D, E, and F operate three sets of make contacts and buttons in positions B and C operate two sets of transfer contacts.

598G and H: Each button operates two sets of transfer contacts.

598J: Buttons in positions A and B operate two sets of transfer contacts. Buttons in positions C, D, E, and F operate three sets of make contacts.

599A and C: Buttons in positions A through E operate three sets of make contacts, and button in position F operates two sets of transfer contacts.

599B: Same as 599A except button in position A operates a set of break contacts and two sets of transfer contacts.

599E: Buttons in positions A, C, and E operate three sets of make contacts, and button in position F operates two sets of transfer contacts.

599F: Buttons in positions A and C operate three sets of make contacts and button in position F operates two sets of transfer contacts.

599G: Buttons in positions A, B, and C operate three sets of make contacts. Buttons in positions D, E, and F operate two sets of transfer contacts.

599H: Buttons in positions A, B, C, and D operate three sets of make contacts. Buttons in positions E and F operate two sets of transfer contacts.

## KEYS

## 598 and 599 Type (Continued)

## 598 Type

Code No.	Comcode	Positions (Spring Combinations)					
		A	B	C	D	E	F
598(c) (h)	100 288 257	Pickup (Locking)	Pickup (Locking)	Pickup (Locking)	Pickup (Locking)	Pickup (Locking)	Pickup (Locking)
598B(a) (b) (h)	100 288 265	Pickup (Locking)	Pickup (Locking)	Pickup (Locking)	Dial-back (Nonlocking)	Hold (Nonlocking)	Release (Locking)
598C(d) (h)	100 288 273	Pickup (Locking)	Pickup (Locking)	Pickup (Locking)	Pickup (Locking)	Pickup (Locking)	Pickup (Locking)
598D(c) (e) (f)	100 288 281	(Locking)	(Locking)	Release (Nonlocking)	Release (Nonlocking)	Release (Nonlocking)	Release (Nonlocking)
598E(c) (e) (g)	100 288 299	(Nonlocking)	(Nonlocking)	(Nonlocking)	(Nonlocking)	(Nonlocking)	(Nonlocking)
598F(c) (e) (g)	100 288 307	(Turn-locking)	(Nonlocking)	(Nonlocking)	(Nonlocking)	(Nonlocking)	(Nonlocking)
598G(c) (e) (g)	100 288 315	(Nonlocking)	(Nonlocking)	(Nonlocking)	(Nonlocking)	(Nonlocking)	(Nonlocking)
598H(c) (e) (g)	100 288 323	(Nonlocking)	(Nonlocking)	(Nonlocking)	(Nonlocking)	(Nonlocking)	(Nonlocking)
598J(c)	100 288 331	Signal (Nonlocking)	Signal (Nonlocking)	Pickup (Locking)	Pickup (Locking)	Pickup (Locking)	Pickup (Locking)

- (a) Equipped with six 51A Lamps, one each in positions A, B, and C for illuminating, and one each in positions D, E, and F for spares.  
 (b) Button in position E is transparent red and is nonreleasing and button in position D is nonreleasing.  
 (c) Equipped with six 51A Lamps, one in each position.  
 (d) Arranged to accommodate six 51A or six 52A Lamps, one in each position. The use of 52A Lamps must be limited to operating conditions that preclude excessive heat build-up from lamp operation.  
 (e) Chaining switch is omitted.  
 (f) The operation of any plunger will release any previously locked-down plunger.  
 (g) Lock out feature is omitted.  
 (h) Terminates in a KS-16672L5 Connector.

## 599 Type

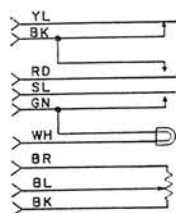
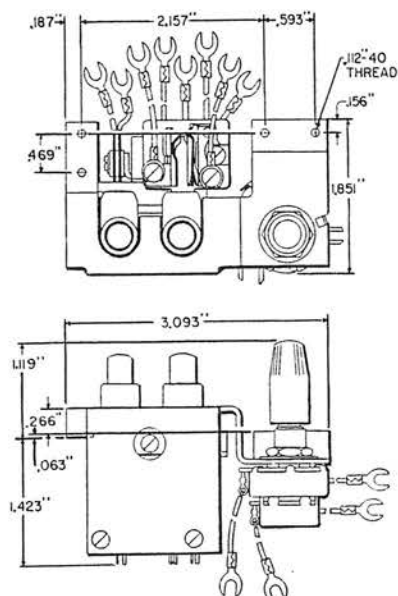
Code No.	Comcode	Positions (Spring Combinations)					
		A	B	C	D	E	F
599A(a) (b) (l)	100 288 364	Pickup (Locking)	Pickup (Locking)	Pickup (Locking)	Pickup (Locking)	Pickup (Locking)	Hold (Releasing)
599B(a) (b) (c)	100 288 372	Cut-off (Turn-locking)	Pickup (Locking)	Pickup (Locking)	Pickup (Locking)	Pickup (Locking)	Hold (Releasing)
599C(a) (d) (l)	100 288 380	Pickup (Locking)	Pickup (Locking)	Pickup (Locking)	Pickup (Locking)	Pickup (Locking)	Hold (Releasing)
599E(f) (h) (l)	100 288 398	Pickup (Locking)	—	Pickup (Locking)	—	Pickup (Locking)	Hold (Releasing)
599F(e) (g) (h) (l)	100 288 406	Pickup (Locking)	—	Pickup (Locking)	—	—	Off (Releasing)
599G(a) (j) (t) (u)	100 288 414	Pickup (Locking)	Pickup (Locking)	Pickup (Locking)	Flashing (Nonlocking)	Release (Locking)	Hold (Releasing)
599H(b) (l) (m)	100 288 422	Pickup (Locking)	Pickup (Locking)	Pickup (Locking)	Pickup (Locking)	Hold (Releasing)	Hold (Releasing)

- (a) Operation of the transparent red hold button releases any locked button and provides a holding function on circuits so equipped.  
 (b) Equipped with six 51A Lamps, one in each position.  
 (c) As furnished, button in position A cannot be depressed. Removing the blocking detail from the button assembly will enable this button to be depressed, thereby releasing any locked buttons.  
 (d) Arranged to accommodate six 51A or six 52A Lamps, one in each position. The use of 52A Lamps must be limited to operating conditions that preclude excessive heat build-up from lamp operation.  
 (e) Equipped with a red button in position A and F and a green button in position C.  
 (f) Equipped with three 51A Lamps, one each in positions A, C, and E.  
 (g) Equipped with two 51A Lamps one each in positions A and C.  
 (h) Operation of the transparent red button in position F releases any locked button.  
 (j) Equipped with three 51A Lamps, one each in positions A, B, and C.  
 (k) Equipped with an amber button in position D and a green button in position E.  
 (l) Terminates in a KS-16672L4 Connector.  
 (m) Operation of the transparent red or green hold buttons releases any locked button and provides a holding function.



## KEYS

613B



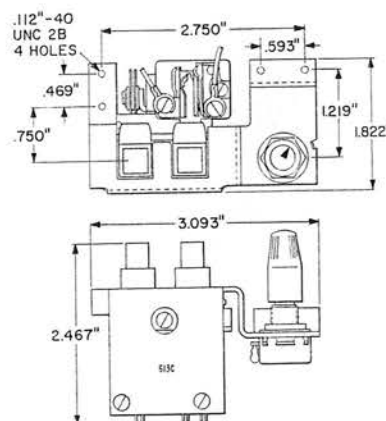
Consists of two push button operated spring combinations and a potentiometer assembled on a metal bracket. Equipped with a 51A Lamp for illuminating the plunger adjacent to the potentiometer. Terminals are approximately 18 inches long.

Mounting screws and a clear plastic window assembly are furnished.

For use in customized installations of 3B Speakerphone Set.

Comcode: 100 288 471

613C



Consists of a two button ON-OFF Key with square buttons and a potentiometer assembled to a bracket for panel mounting. A clear plastic window and four .112-40 by 1/2 inch long FHM screws are shipped loose. The ON key is equipped with a 51A Lamp; and the key, potentiometer, and lamp are equipped with 18 inch spade-tipped leads.

The assembly is designed to mount on a 1/4 inch thick panel. For mounting on panels of less than 1/4 inch thickness, four spacers will be required.

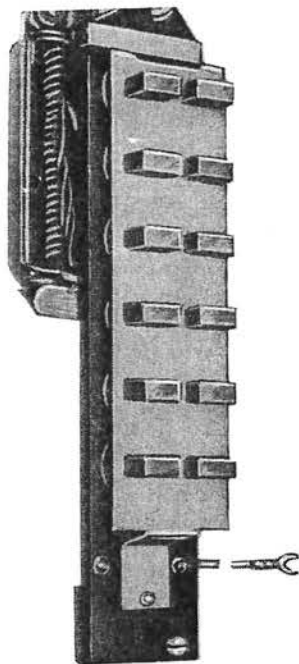
Used in 3B Speakerphone System installations employing modular telephone units.

Comcode: 101 150 050



## KEYS

617A



Consists of twelve nonlocking plunger-operated spring combinations, a connector, and two ground strips assembled on a mounting. The ground strips are located under the two rows of spring combinations and are connected by means of a removable strip. An 8-inch long flexible lead, terminated in a cord tip arranged for a number 4, 5 or 6 screw, is connected to the ground strips. Overall dimensions are approximately 6-5/8 inches long by 1-1/4 inches wide by 2-7/8 inches deep.

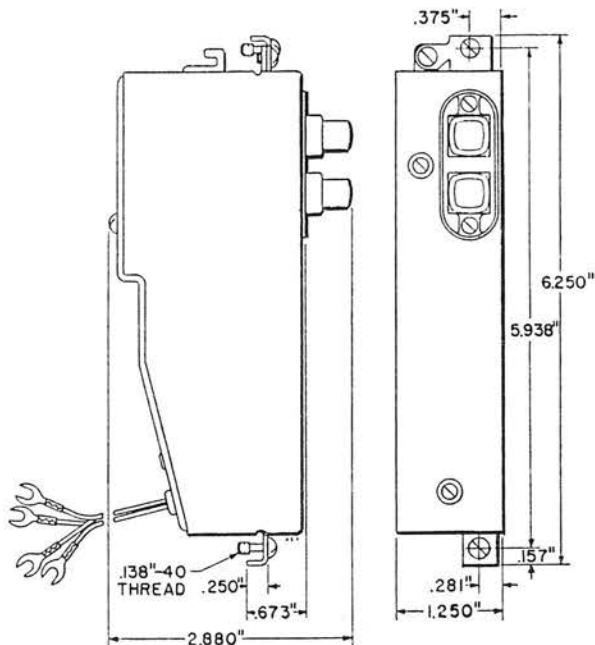
Each spring combination has a pair of make contacts. One contact of each pair is connected to one of the ground strips. The other contact of each pair is connected to a terminal on the connector.

A designation strip (shipped loose) is provided.

Forms part of the number 630 to 639 type telephone sets, and is arranged to mount interchangeably with a number 598 or 599 type key, or a 105BW Apparatus Blank.

Comcode: 100 288 513

621A and 622A



**621A:** Consists of a push button operated nonlocking spring combination and a push button operated release mechanism assembled on a metal bracket and provided with a black metal cover. The release push button located on top is clear and self-restoring. When depressed mechanically, operates a release arm which is arranged to actuate the pivot bar of an interlocked field of associated 598A keys which releases all locked buttons. The signal push button is amber and operates a set of make before break contacts. Equipped with 9-inch long terminal leads with cord tips arranged for number 4, 5, or 6 screws. Arranged to mount in 423AW2 and 424AW2 Key Mountings.

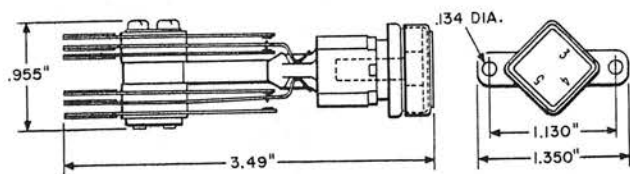
Comcode: 100 288 638

**622A:** Same as 621A except that it contains a 24 volt dc electromagnetic mechanical booster associated with the release push button. The booster reduces the push button pressure required to operate larger field of associated 598A Keys. Equipped with four 9-inch, two 12-inch, and two 13-inch long terminal leads. Arranged to mount in 423AW2 and 424AW2 Key Mountings.

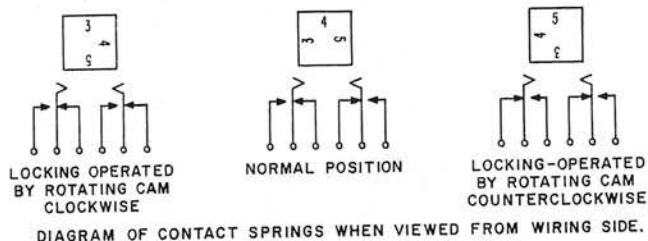
Comcode: 100 288 646

# KEYS

## 625A Type



POSITION OF KEY FACE WHEN VIEWED FROM FRONT



A turn button type key equipped with a square button plunger having a red transparent top and a designation strip.

Turning the button clockwise operates one set of transfer springs. Turning the button counterclockwise operates the other set of transfer springs.

Terminals are arranged for mechanically wrapped connections.

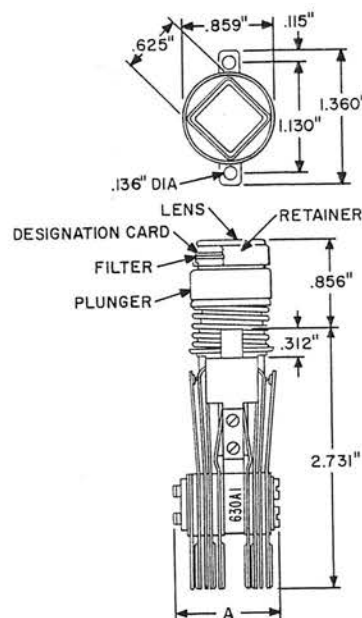
Arranged to mount on one inch horizontal or vertical centers with mounting holes 45 degrees from the horizontal.

The Keys are coded so that color of plunger and retainer is indicated by the last number in the code as indicated below.

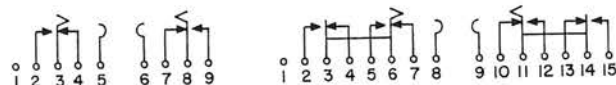
Code No.	Comcode	Color
625A1	101 150 332	Beige
625A2	101 150 340	Gray
625A3	101 150 357	Green

The 625A1 Key replaces the 625A Key.

## 630 Type

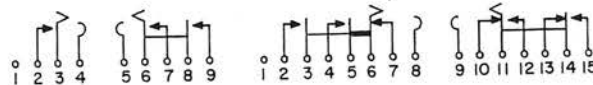


NO. 630A1 ALSO GENERAL DESIGN AND DIMENSIONS OF 630 TYPE



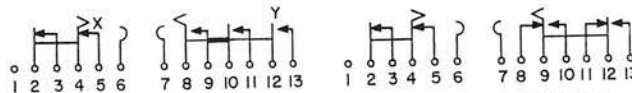
NO. 630A TYPE

NO. 630F TYPE



NO. 630B TYPE

NO. 630G TYPE



NO. 630C & N TYPE  
(X & Y APPLY TO NO. 630C ONLY)

NO. 630H & P TYPE



NO. 630D TYPE

NO. 630J1



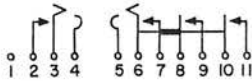
NO. 630E1

NO. 630K1

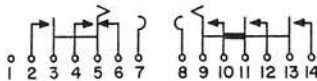


## KEYS

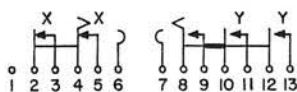
## 630 Type (Continued)



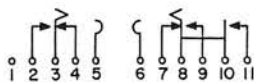
NO. 630R TYPE



NO. 630T TYPE



NO. 630U TYPE



NO. 630W TYPE

Each is a push-to-lock, push-to-unlock key, provided with contacts of No. 1 metal, unless otherwise noted in the table, and terminals arranged for mechanically wrapped connections.

They are equipped with a square-button plunger and retainer having a clear plastic lens. A green, red or yellow lens may be obtained when specified in the order.

The keys are arranged to accommodate a KS-20221 Designation Card, which is not furnished and must be ordered separately. They are also arranged for but not equipped with an A3, B2, or M1 Lamp for button illumination.

As an added feature, if a colored signal is required when the lamp is on, an amber, green, or red filter for insertion under the designation card may be specified in the order. This is generally recommended for white keys only.

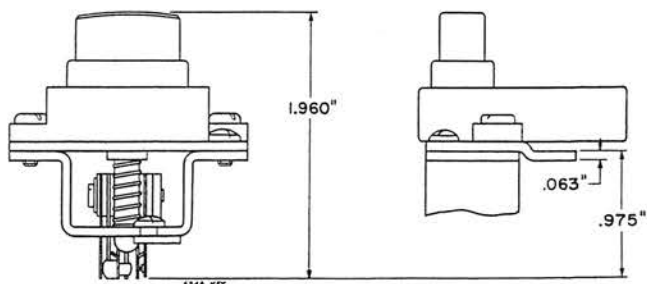
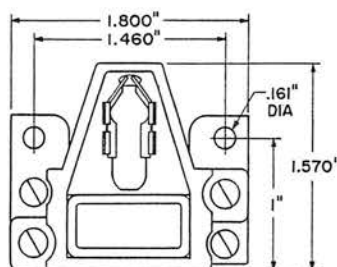
These keys are arranged to mount on a 0.312 inch key shelf equipped with a 0.062 inch mask, or any other mounting surface totaling 0.375 inch thickness. Mounting screws are provided.

The closest recommended horizontal and vertical mounting centers with mounting holes 45 degrees from horizontal are 1.125 inches for 630F1, F4, H1, and P4, and 1.00 inch for 630A1, A2, A3, A4, B1, B4, C1, C4, D1, D2, D3, E1, J1, K1, N4, R1, R2, R3, T1, T4, U1, and W4. When 630C1, C4, and N4 are mounted in two or more rows horizontally or vertically, the closest recommended mounting centers in either the horizontal or vertical directions are 1.125 inches, and 1.00 inch in the perpendicular direction.

Code No.	Comcode	Color of Plunger and Retainer	Dimension A (Inches)	Replaces No.
630A1	101 150 365	Beige	1.116	630A
630A2	101 150 373	Gray	1.116	—
630A3	101 150 381	Green	1.116	—
630A4	101 150 399	White	1.116	630L
630B1	101 150 407	Beige	1.200	630B
630B4	101 150 415	White	1.200	630M
(a) 630C1	101 150 423	Beige	1.250	630C
(a) 630C4	101 153 435	White	1.250	—
630D1	101 153 443	Beige	1.200	630D
630D2	101 153 450	Gray	1.200	—
630D3	101 153 468	Green	1.200	—
(b) 630E1	101 153 476	Beige	1.260	630E
(b) 630E4	101 201 523	White	1.260	—
630F1	101 153 484	Beige	1.580	630F
630F4	101 153 492	White	1.580	630S
630G1	101 153 500	Beige	1.520	630G
630G4	101 201 333	White	1.520	—
630H1	101 153 518	Beige	1.390	630H
630J1	101 153 526	Beige	1.320	630J
(c) 630K1	101 153 534	Beige	1.350	630K
(c) 630K4	101 498 640	White	1.350	—
(d) 630N4	101 153 542	White	1.250	630N
(b) 630P4	101 153 559	White	1.390	630P
(e) 630R1	101 153 567	Beige	1.280	630R
(e) 630R2	101 153 575	Gray	1.280	—
(e) 630R3	101 153 583	Green	1.280	—
630T1	101 153 591	Beige	1.420	—
630T4	101 201 382	White	1.420	—
(b) (c) 630U1	101 201 390	Beige	1.250	—
630W4	101 639 417	White	1.266	—

- (a) The "X" contact breaks before the "Y" contact makes.
- (b) No. 2 contact metal.
- (c) The "Y" contact makes before the "X" contact breaks.
- (d) The "X" and "Y" sequence does not apply to 630N4.
- (e) Three make contacts on one side are momentary.

## 634A and B



## KEYS

Non-locking illuminated push-button type key assembled on a metal bracket. Depressing the button operates two sets of break contacts and one set of make contacts. All contacts are of number 2 metal (palladium).

Equipped with a 51A Lamp.

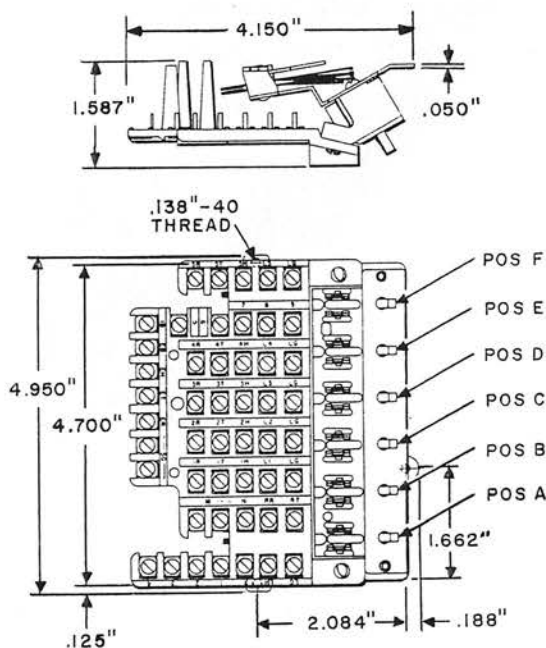
634A: Has a green plastic button.

Comcode: 100 289 016

634B: Has a red plastic button.

Comcode: 101 220 739

## 636A and B



Mechanically locking keys consisting of six spring combinations which are plunger operated and wired to a terminal strip.

Contact springs which are operated by the action of the plungers are locking or releasing as indicated. Keys having positions designated as "Pickup or Signal (Convertible)" are furnished with the positions arranged and wired for Pickup (Locking) but by removal of a screw pin from the plunger and a change in the wiring at the terminal strip, the position can be converted in the field to Signal (Nonlocking). Releasing plungers, which are nonlocking, and locking plungers will release any plunger that is locked. Operation of any two or more locking plungers simultaneously is prevented by means of a lock-out feature.

Equipped with six lamp sockets arranged for 51A Lamps, which are not furnished. Buttons required for use with plungers are furnished as part of the associated apparatus.

636A: Plunger in position A operates one set of transfer contacts. Plungers in positions B through F operate three sets of make contacts.

For use in 564HLW, 565HKW, and 1564HLW type telephone sets.

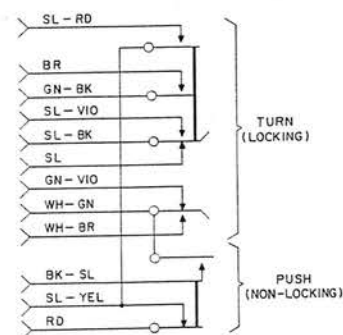
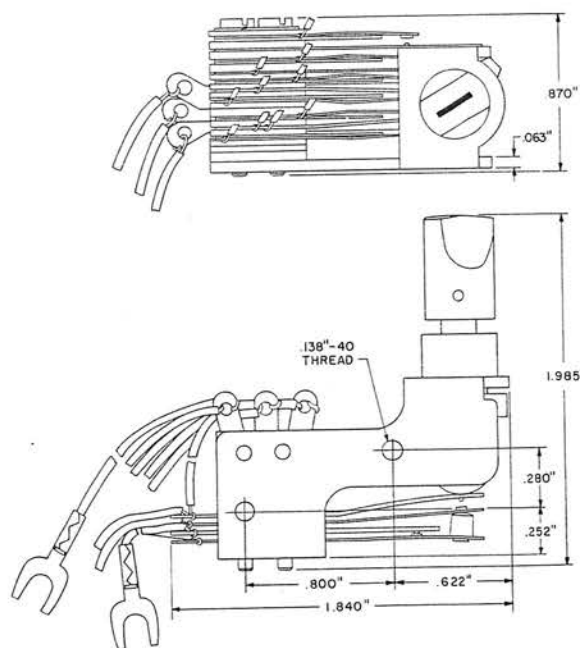
636B: Plungers in positions A through F operate three sets of make contacts.

For use in 565GKW and 1565GKW type telephone sets.

Code No.	Comcode	Positions (Spring Combinations)					
		A	B	C	D	E	F
636A	100 289 073	H/R	P/L	P/L	PS/C	PS/C	PS/C
636B	100 289 081	P/L	P/L	P/L	PS/C	PS/C	PS/C

H/R—Hold (Releasing)  
P/L—Pickup (Locking)  
PS/C—Pickup or Signaling (Convertible)

## 637A



The 637A Key is a combination turn and push button type key assembled on a metal bracket. Equipped with terminal leads from 3-1/4 to 7 inches long having cord tips that are arranged for number 4, 5, and 6 screws. Turning the button clockwise will operate all contacts in the TURN (LOCKING) position as indicated in the schematic. Push button can be operated when the turn button is in either position. Equipped with a clear plastic button with a black line which indicates the position of the turn button.

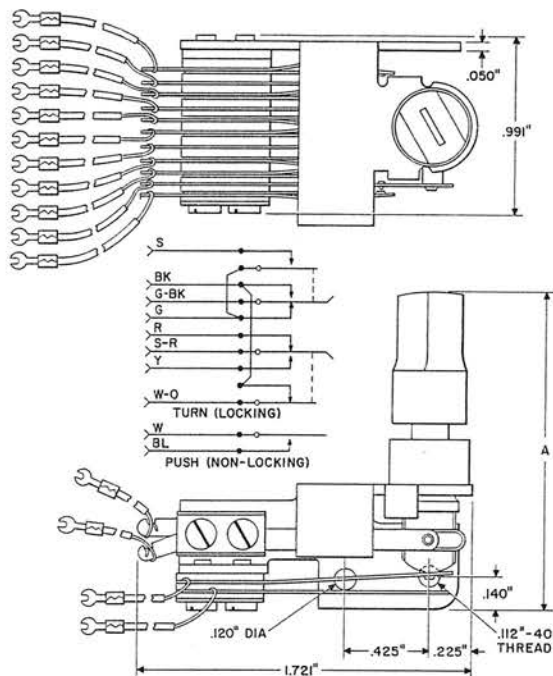
Comcode: 100 289 099

Used in the 514BW and 563HBW Telephone sets.



## KEYS

638C and D



**638C:** A combination turn and push button type key consisting of a single plunger and two separate sets of non-bifurcated spring combinations mounted on a metal bracket. The turn button operates two transfers, a break and a make contact (locking) and the push button operates one set of make contacts (nonlocking).

The push button may be operated in either position of the turn button. Equipped with a clear plastic knob having a black line which indicates the position of the turn button.

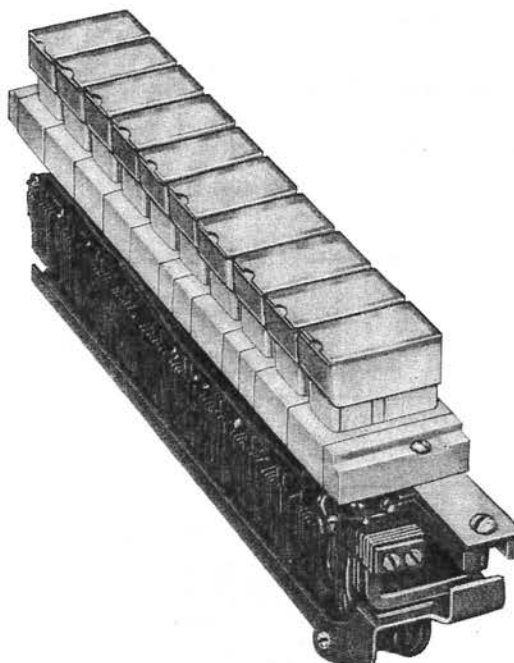
Equipped with terminal leads from 3.25 inches to 7.0 inches long having cord tips that are arranged for number 4, 5, or 6 screws. Spade tipped leads are soldered to the terminals.

**638D:** Same as 638C except that the knob is 0.125 inch longer.

Code No.	Comcode	Dimension "A" (Inches)
638C	101 092 443	1.226
638D	101 092 450	1.351

The 638C and D were used initially in the 713B and 1713B telephone sets, respectively.

645 Type



Consists of ten illuminated push buttons in a die-cast frame. Overall dimensions are approximately 9.065 inches long by 3.248 inches high by 1.250 inches wide. All buttons are hinged to allow the button to be swung upward to facilitate changing of designation strips. The designation strips are assembled into a clear window which is slotted on the side away from the hinged side. The window is of clear plastic and is illuminated by a 53A Lamp which is contained by spring clips in the lamp block. The buttons are assembled to the plungers of the key by a press fit which allows removal of the button for lamp replacement. Contacts from the contact spring assemblies and lamp block are wired to a 50-contact KS-16672L1 Connector mounted to the key.

**645A:** Has nonlocking buttons in all positions. No two buttons may be operated simultaneously. Each button operates a spring contact assembly of one make sequence. The key is also equipped with a chaining switch of one make and one break sequence.

Comcode: 100 289 198

**645B:** Has locking buttons in the first five positions. Each of these five buttons will release any other locked button but no two of these five buttons may be locked simultaneously. Each of these five buttons operated a spring contact assembly of three makes.

Comcode: 100 289 206

## KEYS

645C: Same as 645A except the buttons equipped with snap-on caps which may be removed to permit replacement of the 53A Lamps.

Comcode: 101 395 051

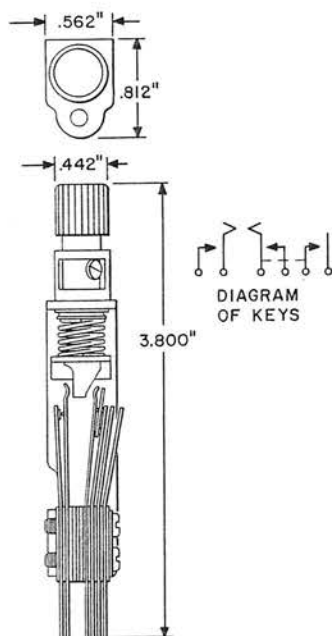
645D: Same as 645B except the buttons in positions 1 through 5 are locking-releasing type and the hold button in position 10 is a nonlocking-releasing type and the buttons are equipped with snap-on caps which may be removed to permit replacement of the 53A Lamps.

Comcode: 101 395 069

The buttons in positions 6 through 9 are nonlocking and nonreleasing and may be operated simultaneously with each other and also with any other button in positions 1 through 5. The tenth position performs the holding function of these pickup lines associated with the first five positions.

For use with the Nurse's Console in the 3A Communication System (Hospital Interphone).

## 646A



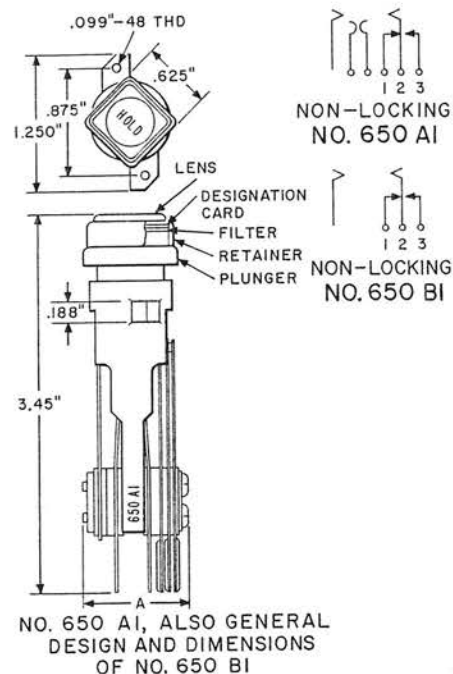
Combination push and turn button key. Pushing button in operates two make contacts, nonlocking. Turning the button operates one make contact, locking.

Horizontal mounting centers are 0.750 inch.

Used initially in the 395A Key Mounting in the number 300 Switching System.

Comcode: 101 153 658

## 650A1 and B1



650A1: A nonlocking push button key. Equipped with a square-button plunger and retainer having a clear plastic lens. May be obtained with a green, red, or yellow lens when specified in the order. Contacts are of number 1 metal. Dimension A is 0.991 inch.

Arranged to accommodate a KS-20221 Designation Card, which is not furnished and must be ordered separately.

As an added feature, if a colored signal is required only when the lamp is on, an amber, green, or red filter may be specified in the order for insertion under the designation card. This is generally recommended for white keys only.

Arranged for but not equipped with an A3, B2, or M1 Lamp for button illumination.

Terminals are arranged for mechanically wrapped connections.

Arranged to mount on a 0.312 inch key shelf equipped with a 0.062 inch mask, or any other mounting surface totaling 0.375 inch thickness, on one inch horizontal or vertical centers with mounting holes 45 degrees from horizontal. Mounting screws are furnished.

Comcode: 101 153 732

650B1: Same as 650A1 except it is not arranged for a lamp. Dimension A is 0.917 inch.

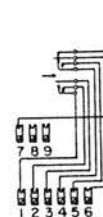
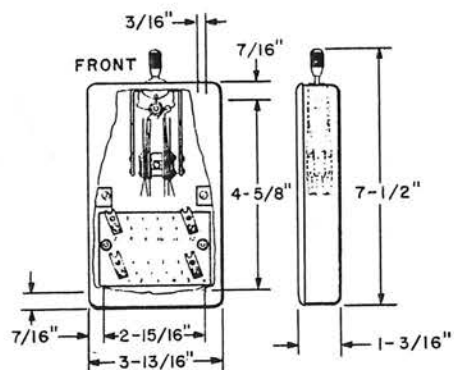
Comcode: 101 153 740

These keys are used in the 608D PBX.

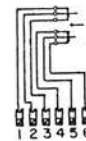


KEYS

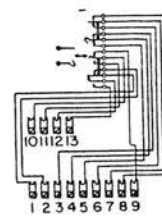
6017 Type



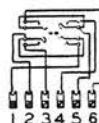
6017M



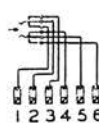
6017P



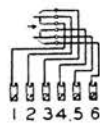
6017S



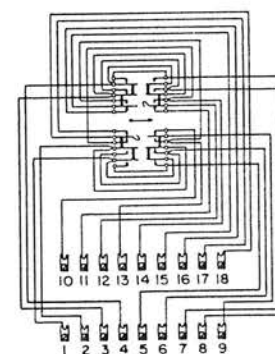
6017A



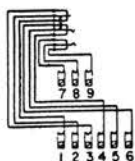
6017B and K



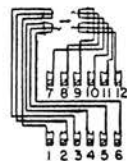
6017C



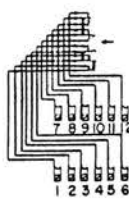
6017R



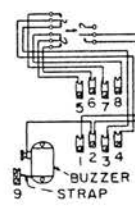
6017D



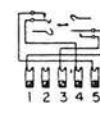
6017E



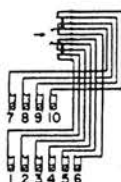
6017G



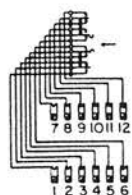
6017T and U



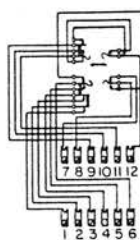
6017Y



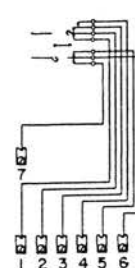
6017H



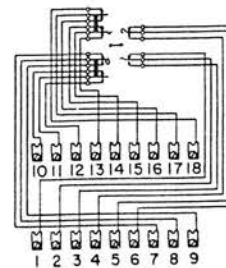
6017J



6017L



6017AA

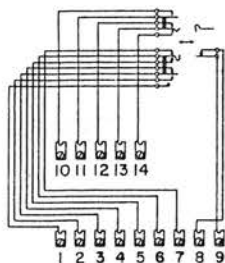


6017AB

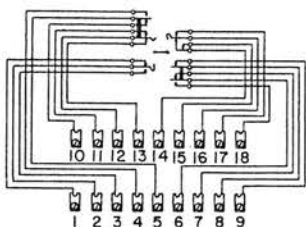


## KEYS

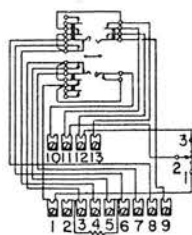
## 6017 Type (Continued)



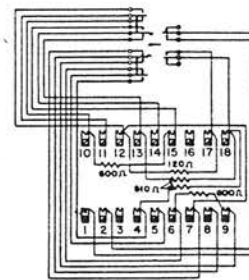
6017AC



6017AK



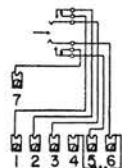
6017AN



6017AP



6017AL



6017AM

Consists of a key unit and connecting block mounted in a black finished metal box. Equipped with black lever handle. Wood screws are furnished for mounting.

Code No.	Comcode	Lever Color	Key Unit No.	Spring Combination
6017A	100 289 297	Black	2BF	Locking-Locking
6017A	100 289 305	White	2BF	Locking-Locking
6017A	100 289 313	Red	2BF	Locking-Locking
(a) 6017B	100 289 321	Black	2GP	Locking
(a) 6017B	100 289 339	White	2GP	Locking
(a) 6017B	100 289 347	Red	2GP	Locking
6017C	100 289 354	Black	2F	Non Locking
6017C	100 289 362	White	2F	Non Locking
6017C	100 289 370	Red	2F	Non Locking
6017D	100 289 388	Black	2CL	Locking
6017D	100 289 396	White	2CL	Locking
6017D	100 289 404	Red	2CL	Locking
6017E	100 289 412	Black	2GR	Locking-Locking
6017E	100 289 420	White	2GR	Locking-Locking
6017E	100 289 438	Red	2GR	Locking-Locking
6017G	100 289 446	Black	2AKE	Locking
6017G	100 289 453	White	2AKE	Locking
6017G	100 289 461	Red	2AKE	Locking
6017H	100 289 479	Black	2WB	Locking
6017H	100 289 487	White	2WB	Locking
6017H	100 289 495	Red	2WB	Locking
6017J	100 289 503	Black	2GE	Locking
6017J	100 289 511	White	2GE	Locking
6017J	100 289 529	Red	2GE	Locking
(a) 6017K	100 289 537	Black	2GP	Locking
(a) 6017K	100 289 545	White	2GP	Locking
(a) 6017K	100 289 552	Red	2GP	Locking

(a) 6017B and K are the same except that on 6017B the 2GP Key Unit is adjusted for break-before-make whereas on 6017K the 2GP Key Unit is adjusted before make-before-break.

## KEYS

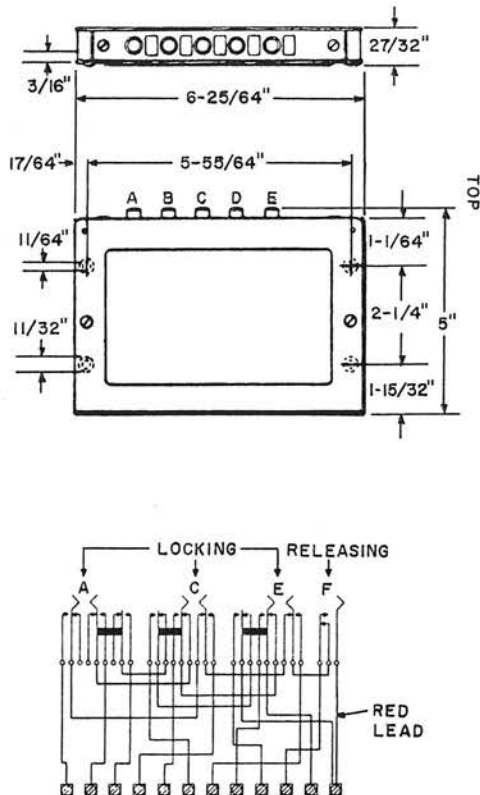
Code No.	Comcode	Lever Color	Key Unit No.	Spring Combination
6017L	100 289 560	Black	2AND	Locking-Locking
6017L	100 289 578	White	2AND	Locking-Locking
6017L	100 289 586	Red	2AND	Locking-Locking
6017M	100 289 594	Black	2ANJ	Non Locking
6017M	100 289 602	White	2ANJ	Non Locking
6017M	100 289 610	Red	2ANJ	Non Locking
6017P	100 289 628	Black	2EE	Non Locking
6017P	100 289 636	White	2EE	Non Locking
6017P	100 289 644	Red	2EE	Non Locking
6017R	100 289 651	Black	2ANP	Non Locking
6017R	100 289 669	White	2ANP	Non Locking
6017R	100 289 677	Red	2ANP	Non Locking
6017S	100 289 685	Black	2APR (g)	Locking
6017S	100 289 693	White	2APR (g)	Locking
6017S	100 289 701	Red	2APR (g)	Locking
(b) (k) 6017T	100 289 719	Black	2ARB	Locking-Non Locking
(b) (k) 6017T	100 289 727	White	2ARB	Locking-Non Locking
(b) (k) 6017T	100 289 735	Red	2ARB	Locking-Non Locking
(c) 6017U	100 289 743	Black	2ARB	Locking-Non Locking
(c) 6017U	100 289 750	White	2ARB	Locking-Non Locking
(c) 6017U	100 289 768	Red	2ARB	Locking-Non Locking
(k) 6017Y	100 289 776	Black	2AAR (j)	Locking-Non Locking
(k) 6017Y	100 289 784	White	2AAR (j)	Locking-Non Locking
(k) 6017Y	100 289 792	Red	2AAR (j)	Locking-Non Locking
6017AA	100 289 800	Black	2ATN	Non Locking-Non Locking
6017AA	100 289 818	White	2ATN	Non Locking-Non Locking
6017AA	100 289 826	Red	2ATN	Non Locking-Non Locking
6017AB	100 289 834	Black	2RF (g)	Locking-Locking
6017AB	100 289 842	White	2RF (g)	Locking-Locking
6017AB	100 289 859	Red	2RF (g)	Locking-Locking
6017AC	100 289 867	Black	2AUF	Locking-Non Locking
6017AC	100 289 875	White	2AUF	Locking-Non Locking
6017AC	100 289 883	Red	2AUF	Locking-Non Locking
(g) 6017AK	100 289 982	Black	2AFB	Locking-Non Locking
(g) 6017AK	100 289 990	White	2AFB	Locking-Non Locking
(g) 6017AK	100 290 006	Red	2AFB	Locking-Non Locking
6017AL	100 290 014	Black	2WL	Locking-Non Locking
6017AL	100 290 022	White	2WL	Locking-Non Locking
6017AL	100 290 030	Red	2WL	Locking-Non Locking
(e) 6017AM	100 290 048	Black	2DS	Locking
(e) 6017AM	100 290 055	White	2DS	Locking
(e) 6017AM	100 290 063	Red	2DS	Locking
(f) 6017AN	100 290 071	Black	2ABB	Locking
(f) 6017AN	100 290 089	White	2ABB	Locking
(f) 6017AN	100 290 097	Red	2ABB	Locking
(h) 6017AP	100 290 105	Black	2HA	Locking
(h) 6017AP	100 290 113	White	2HA	Locking
(h) 6017AP	100 290 121	Red	2HA	Locking

- (b) Equipped with a KS-8108L2 Buzzer.  
(c) Equipped with a KS-8109L2 Buzzer.  
(d) Equipped with a KS-8110L2 Buzzer.  
(e) Equipped with a 287 ohm KS-14603L1A Resistor.  
(f) Equipped with a 287 ohm KS-14603L1A Resistor and a 5000 ohm KS-14786L1 Potentiometer.  
(g) Equipped with metal contacts.

- (h) Equipped with a 14A Guard, one 120 ohm and two 510 ohm KS-13490L1 Resistors, and two 600 ohm 221A Resistors. Stamped LINE and TEST at front and rear lever positions, respectively.  
(j) Equipped with heavy contacts.  
(k) Must be made on customer order basis and should be ordered only in cases where no other apparatus will meet requirements.

## KEYS

6021DN-3



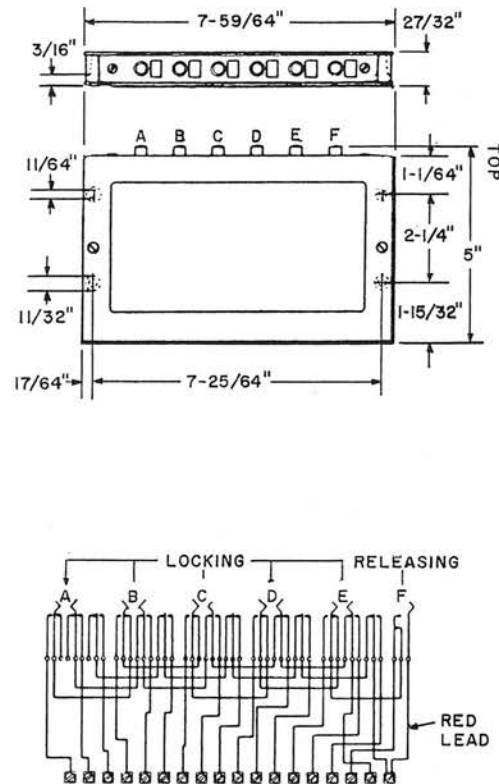
Consists of a key unit and a terminal strip enclosed in a black metal box. The contact springs are strapped to the terminal strip for outside connection. The keys are equipped with black push buttons. The box may be reversed with respect to the key assembly to permit mounting on either the right or left side of a desk or table. The cover is provided with two holes for cable entrance and is attached to the box with screws.

The locking buttons, when depressed, release any locked button and remain locked in the operated position. The releasing push buttons, when depressed, release any locked button and return to normal position. The nonlocking push buttons, when depressed, do not release any locked button and return to normal position after depressing.

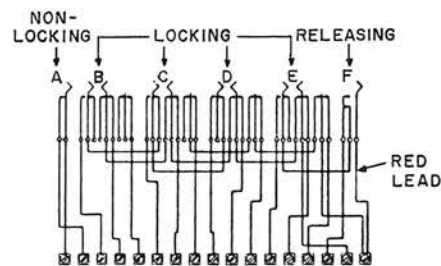
A designation card frame is provided above each button and a set of designation cards is furnished.

Comcode: 100 290 238

6027 Type



6027DA-3



6027DB-3

Consists of a key unit and a terminal strip enclosed in a black metal box. The contact springs are strapped to the terminal strip for outside connection. The keys are equipped with six black push buttons.

The box may be reversed with respect to the key unit in order to permit mounting on either the right or left side of a desk or table. The cover has two holes for cable entrance and is attached to the box with screws.



## KEYS

## 6027 Type (Continued)

The locking push buttons, when depressed, release any locked button and remain locked in the operated position. The releasing buttons, when depressed, release any locked button and return to normal position. The nonlocking push button, when depressed, does not release any locked buttons and returns to normal position. A designation card frame is provided for each button and a set of designation cards is furnished.

Code No.	Comcode	Features (a)
6027DA-3	100 290 295	PPPPPH
6027DB-3	100 290 303	SPPPPH

(a) Arranged for pickup (P), signal (S), and hold (H), as indicated.

For use in the 1A1 Key Telephone System. The red lead (see illustration) should be removed when used with the 1A1 Key Telephone System.

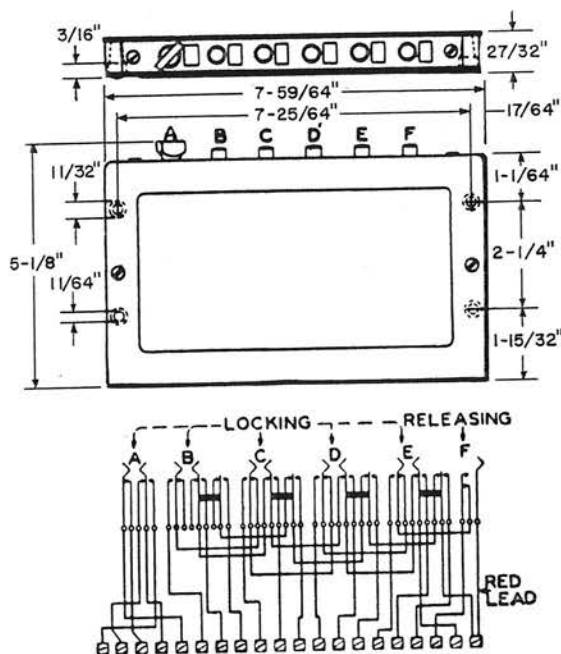
The locking push buttons, when depressed, release any locked button and remain locked in the operated position. The releasing push buttons, when depressed, release any locked button and return to normal position. The nonlocking push buttons, when depressed, do not release any locked buttons and return to normal position. The turn button neither releases nor is released by any other button. A designation card frame is provided for each button and a set of designation cards is furnished.

This key has one cutoff key (C), four pickup keys (P), and one hold key (H) (C P P P P H).

For use in 1A1 Key Telephone Systems. The red lead (see illustration) should be removed when used with the 1A1 Key Telephone System.

Comcode: 100 290 345

## 6028DA-3



Consists of a key unit and a terminal strip enclosed in a black metal box. The contact springs are strapped to the terminal strip for outside connection. The keys are equipped with five black push buttons and one black turn button.

The box may be reversed with respect to the key assembly in order to permit mounting on either the right or left side of a desk or table. The cover is provided with two holes for cable entrance and is fastened to the box with screws.



## KEYS

## 6040 and 6041 Type

Consist primarily of a 589 and a 636 type key enclosed in a black or colored housing of insulating material with a cord of matching or harmonizing color. The 6041 type keys are the same as the 6040 type except that they are not equipped with cords.

The overall dimensions for these keys are 5-13/64 inches wide by 5-3/8 inches deep by 2-21/64 inches high.

The keys are arranged for hold (H), pickup (P), release (R), signal (S), cutoff (C), and local (L) as indicated in the following tables. Spring combinations enclosed in ( ) may be connected for signaling and pickup, respectively, in the field. Pickup (P) and local (L) positions are equipped with 51A Lamps. Designation cards are not furnished.

Intended for use with desk, wall, and hang up type telephone sets to provide illuminated key switching similar to that of the number 564 type telephone sets.

Code No.	Comcode	Color	No. of Springs	Key	Cord	Features
6040GW-3	101 132 207	Black	34	636A	D50N	HPP(P)(P)(P)
6040GW-51	101 132 215	Green	34	636A	D50N	HPP(P)(P)(P)
6040GW-56	101 157 832	Yellow	34	636A	D50N	HPP(P)(P)(P)
6040GW-58	101 132 223	White	34	636A	D50N	HPP(P)(P)(P)
6040GW-60	101 132 249	Light beige	34	636A	D50N	HPP(P)(P)(P)
6040GW-61	101 157 840	Light gray	34	636A	D50N	HPP(P)(P)(P)
6040HW-3	100 291 558	Black	34	636B	D50S	PPP(P)(P)(P)
6040HW-51	100 291 566	Green	34	636B	D50S	PPP(P)(P)(P)
6040HW-56	100 291 574	Yellow	34	636B	D50S	PPP(P)(P)(P)
6040HW-58	100 291 582	White	34	636B	D50S	PPP(P)(P)(P)
6040HW-60	100 291 608	Light beige	34	636B	D50S	PPP(P)(P)(P)
6040HW-61	100 291 616	Light gray	34	636B	D50S	PPP(P)(P)(P)
6040JW-3	100 291 640	Black	23	589AJ	D50T	HPPP(P)(C)
6040JW-51	100 291 657	Green	23	589AJ	D50T	HPPP(P)(C)
6040JW-56	100 291 665	Yellow	23	589AJ	D50T	HPPP(P)(C)
6040JW-58	100 291 673	White	23	589AJ	D50T	HPPP(P)(C)
6040JW-60	100 291 699	Light beige	23	589AJ	D50T	HPPP(P)(C)
6040JW-61	100 291 707	Light gray	23	589AJ	D50T	HPPP(P)(C)
6040KW-3	100 291 731	Black	12	589AN	D20H	HPPPL
6040KW-51	100 291 749	Green	12	589AN	D20H	HPPPL
6040KW-56	100 291 756	Yellow	12	589AN	D20H	HPPPL
6040KW-58	100 291 764	White	12	589AN	D20H	HPPPL
6040KW-60	100 291 780	Light beige	12	589AN	D20H	HPPPL
6040KW-61	100 291 798	Light gray	12	589AN	D20H	HPPPL
6041EW-3	100 293 125	Black	33	589M	—	R(P)(P)(P)(S)(S)
6041EW-50	100 293 133	Ivory	33	589M	—	R(P)(P)(P)(S)(S)
6041EW-51	100 293 141	Green	33	589M	—	R(P)(P)(P)(S)(S)
6041EW-56	100 293 158	Yellow	33	589M	—	R(P)(P)(P)(S)(S)
6041EW-58	100 293 166	White	33	589M	—	R(P)(P)(P)(S)(S)
6041EW-60	100 293 182	Light beige	33	589M	—	R(P)(P)(P)(S)(S)
6041EW-61	100 293 190	Light gray	33	589M	—	R(P)(P)(P)(S)(S)
6041GW-3	100 293 224	Black	34	636A	—	HPP(P)(P)(P)
6041GW-51	100 293 232	Green	34	636A	—	HPP(P)(P)(P)
6041GW-56	100 293 240	Yellow	34	636A	—	HPP(P)(P)(P)
6041GW-58	100 293 257	White	34	636A	—	HPP(P)(P)(P)
6041GW-60	100 293 273	Light beige	34	636A	—	HPP(P)(P)(P)
6041GW-61	100 293 281	Light gray	34	636A	—	HPP(P)(P)(P)
6041HW-3	100 293 315	Black	34	636B	—	PPP(P)(P)(P)
6041HW-51	100 293 323	Green	34	636B	—	PPP(P)(P)(P)
6041HW-56	100 293 331	Yellow	34	636B	—	PPP(P)(P)(P)
6041HW-58	100 293 349	White	34	636B	—	PPP(P)(P)(P)
6041HW-60	100 293 364	Light beige	34	636B	—	PPP(P)(P)(P)
6041HW-61	100 293 372	Light gray	34	636B	—	PPP(P)(P)(P)

## KEYS

Code No.	Comcode	Color	No. of Springs	Key	Cord	Features
6041JW-3	100 293 406	Black	23	589AJ	—	HPPP(P)(C)
6041JW-51	100 293 414	Green	23	589AJ	—	HPPP(P)(C)
6041JW-56	100 293 422	Yellow	23	589AJ	—	HPPP(P)(C)
6041JW-58	100 293 430	White	23	589AJ	—	HPPP(P)(C)
6041JW-60	100 293 455	Light beige	23	589AJ	—	HPPP(P)(C)
6041JW-61	100 293 463	Light gray	23	589AJ	—	HPPP(P)(C)
6041KW-3	100 293 497	Black	12	589AN	—	HPPPPL
6041KW-51	100 293 505	Green	12	589AN	—	HPPPPL
6041KW-56	100 293 513	Yellow	12	589AN	—	HPPPPL
6041KW-58	100 293 521	White	12	589AN	—	HPPPPL
6041KW-60	100 293 547	Light beige	12	589AN	—	HPPPPL
6041KW-61	100 293 554	Light gray	12	589AN	—	HPPPPL

6050 and 6051 Type

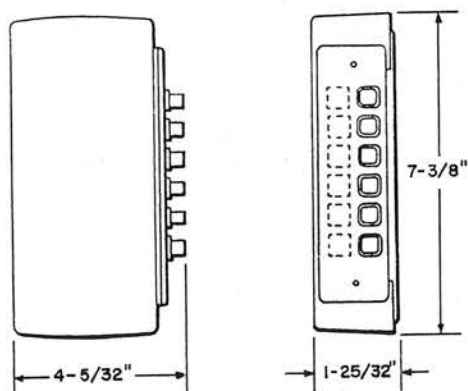


Fig. 1

The 6050 and 6051 type keys consist of a key mounting equipped with 598 or 599 type keys as indicated. They are furnished in the colors indicated below and are provided with five face mats colored cream white, blue, gold, green, and silver for use under the face plate to provide a choice of color contrasts.

These keys are furnished with key buttons on the right side of the key mounting but the buttons can be changed in the field to the left side, if desired.

The keys are arranged for hold (H), pickup (P), and cutoff (C) as indicated in the table.

The 6050 and 6051 type keys are arranged for, but not equipped with, the A25A and A50A type connector cables, respectively.

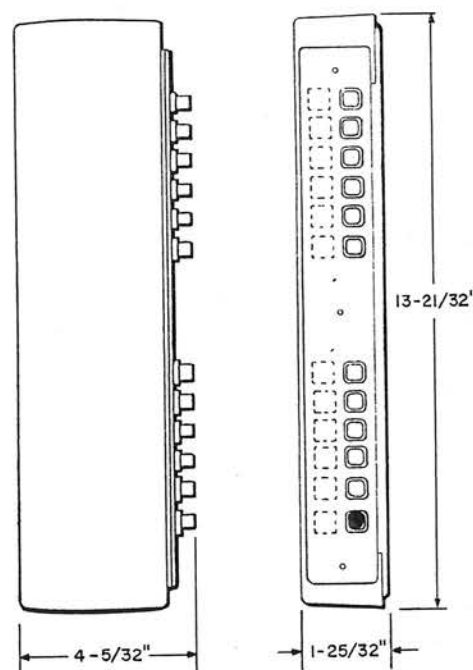


Fig. 2

## KEYS

## 6050 and 6051 Type (Continued)

Code No.	Fig. No.	No. of Springs	Features Top to Bottom	Key Mounting	Keys
6050AW	1	36	PPPPPH	397AW	599A
6050BW	1	36	PPPPPP	397AW	598A
6050CW	1	38	CPPPPH	397AW	599B
6051AW	2	72	PPPPPPPPPPPH	398AW	598A, 599A
6051BW	2	72	PPPPPPPPPPPP	398AW	Two 598A
6051CW	2	72	PPPPPPCPPPPH	398AW	598A, 599B

## 6050 Type

Code No.	Comcode	Color
6050AW-3	100 293 877	Black
6050AW-50	100 293 885	Ivory
6050AW-51	100 293 893	Green
6050AW-56	100 293 901	Yellow
6050AW-58	100 293 919	White
6050AW-60	100 293 935	Light beige
6050AW-61	100 293 943	Light gray
6050BW-3	100 293 976	Black
6050BW-50	100 293 984	Ivory
6050BW-51	100 293 992	Green
6050BW-56	100 294 008	Yellow
6050BW-58	100 294 016	White
6050BW-60	100 294 032	Light beige
6050BW-61	100 294 040	Light gray
6050CW-3	100 294 073	Black
—		
6050CW-51	100 294 081	Green
6050CW-56	100 294 099	Yellow
6050CW-58	100 294 107	White
6050CW-60	100 294 123	Light beige
6050CW-61	100 294 131	Light gray

## 6051 Type

Code No.	Comcode	Color
6051AW-3	100 294 453	Black
6051AW-50	100 294 461	Ivory
6051AW-51	100 294 479	Green
6051AW-56	100 294 487	Yellow
6051AW-58	100 294 495	White
6051AW-60	100 294 511	Light beige
6051AW-61	100 294 529	Light gray
6051BW-3	100 294 552	Black
6051BW-50	100 294 560	Ivory
6051BW-51	100 294 578	Green
6051BW-56	100 294 586	Yellow
6051BW-58	100 294 594	White
6051BW-60	100 294 610	Light beige
6051BW-61	100 294 628	Light gray
6051CW-3	100 294 651	Black
—		
6051CW-51	100 294 669	Green
6051CW-56	100 294 677	Yellow
6051CW-58	100 294 685	White
6051CW-60	100 294 701	Light beige
6051CW-61	100 294 719	Light gray



## KITS

## Artificial Cable

## 1A

The 1A Artificial Cable Kit is a series of networks in small cases made of a strong gray plastic, all the same size and shape, but with distinguishing labels. The size of each case is 4.355 inches long by 2.750 inches wide by 1.750 inches deep. The cases are fitted with plugs and jacks so that they may be pinned directly in tandem, without cords. The kit consists of the following networks:

Qty	Network	Qty	Network
15	4096B	4	4096R
10	4096C	6	4096T
6	4096D	6	4096U
4	4096E	4	4096W
6	4096G	4	4096Y
6	4096H	6	4096AB
4	4096J	6	4096AC
4	4096K	4	4096AD
6	4096M	4	4096AE
6	4096N	16	4096AH
4	4096P		

Sixteen 4096AH Networks (88 mh loading coils) are provided for loading purposes. 4096A, F, L, S and AA networks are available for simulating 6000 feet, 3000 feet, 1500 feet, 750 feet, and 250 feet, respectively, of 0.066uf/mile number 19AWG cable, but must be ordered separately. In addition, 4096AF Network (22 mh loading coil) and 4096AG Network (44 mh loading coil) are available for loading purposes but must be ordered separately.

Used to simulate cable characteristics of high capacitance number 19, 22, 24, and 26 AWG cable in various lengths as indicated in table.

Comcode: 100 857 481

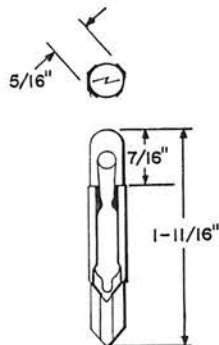
Simulated length of cable	Quantity of each type network gauge of 0.083 uf/mile cable			
	19AWG	22AWG	24AWG	26AWG
6000 feet	15-4096B	10-4096C	6-4096D	4-4096E
3000 feet	6-4096G	6-4096H	4-4096J	4-4096K
1500 feet	6-4096M	6-4096N	4-4096P	4-4096R
750 feet	6-4096T	6-4096U	4-4096W	4-4096Y
250 feet	6-4096AB	6-4096AC	4-4096AD	4-4096AE





## LAMPS

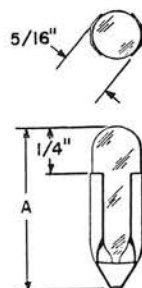
## 2 Type



Carbon filament lamps used with number 12, 30, 34, or similar type lamp sockets.

Code No.	Comcode	Voltage	Current (Amp)	
			Min	Max
2C	100 316 538	15	.103	.120
2E	100 316 546	20	.090	.120
2F	100 316 553	12	.105	.120
2G	100 316 561	24	.075	.115
2J	100 316 579	24	.018	.033
2K	100 316 587	30	.090	.120
2R	100 316 595	18	.090	.120
2T	100 316 603	40	.034	.046
2U	100 316 611	24	.035	.048
2W	100 316 629	18	.035	.045
2Y	100 316 637	48	.030	.042

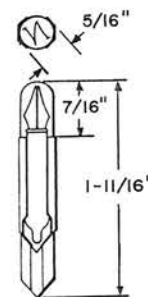
## 51A, 52A, 53A and B



Tungsten filament lamps intended for use in illuminated push button telephone sets. Minimum illumination is 200 end-foot candles except 53B which is 1000 end-foot candles.

Code No.	Comcode	Voltage	Current (Amp)		A (Inch)
			Min	Max	
51A	100 316 645	10	.035	.045	7/8
52A	100 316 652	24	.026	.034	7/8
53A	100 316 660	10	.035	.045	3/4
53B	100 316 678	6	.240	.260	3/4

## A, B, C, E, F, G, H, J, K, and M Type



Tungsten filament lamps used with number 12, 30, 34, or similar type lamp sockets.

Code No.	Comcode	Voltage	Current (Amp)	
			Min	Max
A1(a)	100 316 686	24	.033	.045
A2	100 316 694	24	.075	.105
A3(a)	100 316 702	24	.033	.045
A4(b)	100 316 710	24	.075	.105
B2	100 316 736	18	.036	.048
C2	100 316 751	36	.032	.044
E1	100 316 769	6	.033	.045
E2	100 316 777	6	.270	.310
E3	100 316 785	6	.120	.160
F1	100 316 793	4	.170	.210
F2	100 316 801	4	.270	.310
G1	100 316 819	8	.085	.100
G2	100 316 827	8	.035	.050
H1	100 316 835	16	.270	.310
J1	100 316 843	10	.230	.270
K1	100 316 868	30	.033	.045
K2(b)	100 316 876	30	.032	.044
M1	100 845 577	48	.036	.044

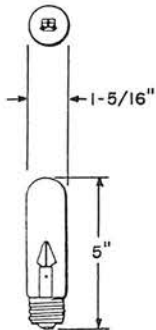
(a) A1 and A3 are similar except the illumination of A3 is approximately twice that of A1.

(b) A portion of the bulb on the front of the lamp has a white lacquer coating.

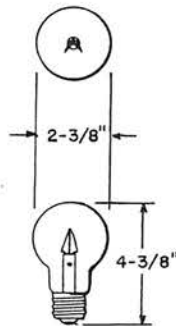
## LAMPS

## Ballast

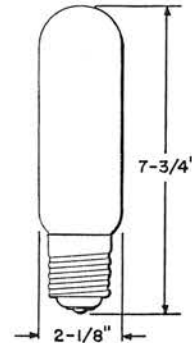
4B, 5A and B, 7A, 8A, 111A, 120A, 121B  
122A, 123A, 124A, 125A, 126B  
127A, and 128A



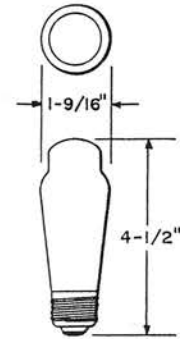
4B



5A and B

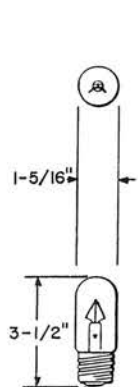


124A, 125A, 127A and 128A

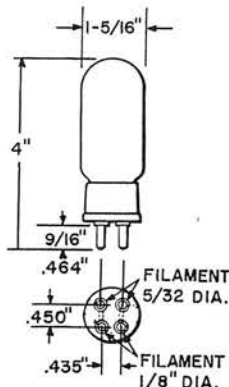


126B

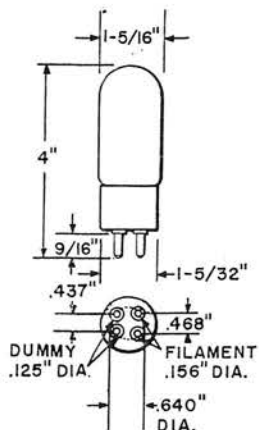
Current regulators designed to maintain approximately constant current within a rated voltage range.



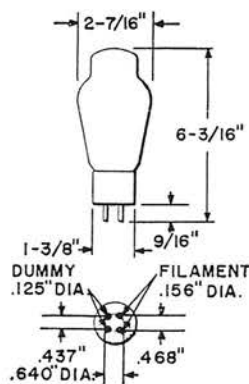
7A and 8A



111A



120A, 121B, and 122A



123A

Code No.	Comcode	Voltage Range	Ballasted Current Amperes °F
4B	100 316 934	3 to 9.5	1.07 to 1.17 at 90
5A	100 316 942	3 to 9.5	.940 to 1.010 at 90
5B	100 316 959	3 to 9.5	1.07 to 1.16 at 90
7A	100 316 975	3 to 10	.490 to .530 at 90
8A	100 316 983	3 to 10	.485 to .525 at 90
111A(a)	100 317 007	1.0 to 3.0	5.20 ±% at 70
120A(b)	100 317 023	5.5 to 12	.430 at 70
121B(b)	100 852 847	5.5 to 12	.870 at 70
122A(b)	100 317 049	3.0 to 7.5	1.9 at 70
123A(b)	100 317 056	4.0 to 12.0	3.0 at 70
124A	100 317 064	5.0 to 12.0	10.0 ±17% at 70
125A	100 317 072	10.0 to 60.0	1.6 to 2.35
126B	100 317 080	5.5 to 14.5	0.97 ±.03 at 70
127A	100 317 098	25 to 55	2.7 ±.18 at 70
128A	100 317 106	25 to 55	2.40 ±.15 at 70

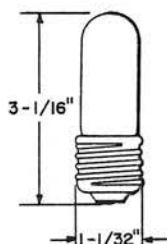
(a) Arranged to mount in 130B Electron Tube Socket.

(b) Arranged to mount in 143B Electron Tube Socket.

## LAMPS

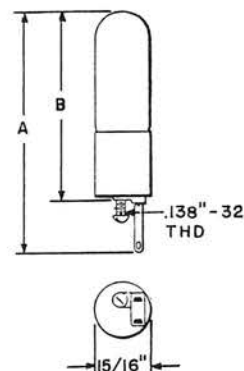
## Resistance

12 Type



Tungsten filament lamps having a medium screw base.

13 Type



Tungsten filament lamps with a molded base having two soldering terminals. Will mount on relay mounting plates on 1-inch centers and on mounting plates drilled or punched for E, R, or U-type relays.

Dimensions A and B for 13P are 3-7/8 inches and 3 inches, respectively. Dimensions A and B for all other codes are 4-3/16 inches and 3-5/16 inches, respectively.

13A through 13L are electrically equivalent to the corresponding code of the number 12 type.

Code		Average Current (Amperes) at Specified Voltages							
No.	Comcode	1V	2V	5V	10V	24V	30V	40V	90V
12A	100 317 130	.070	—	.137	—	—	—	.300	—
12B	100 317 148	—	—	—	.019	—	.0375	—	.072
12C	100 317 155	—	—	—	.031	—	.059	—	.1115
12D	100 317 163	—	—	—	.049	—	.091	—	.169
12E	100 317 171	—	—	—	.057	—	.107	—	.200
12F	100 317 189	—	.136	—	.342	.565	—	—	—
12G	100 317 197	—	—	—	.115	—	.221	—	.415
12H	100 317 205	—	.066	.110	—	.280	—	—	—
12J	100 317 213	.130	—	.274	—	—	—	.634	—
12L	100 317 221	—	—	.073	.100	—	—	—	.212
13A	100 317 239	.070	—	.137	—	—	—	.300	—
13B	100 317 247	—	—	—	.019	—	.0375	—	.072
13C	100 317 254	—	—	—	.031	—	.059	—	.1115
13D	100 317 262	—	—	—	.049	—	.091	—	.169
13E	100 317 270	—	—	—	.057	—	.107	—	.200



## LAMPS

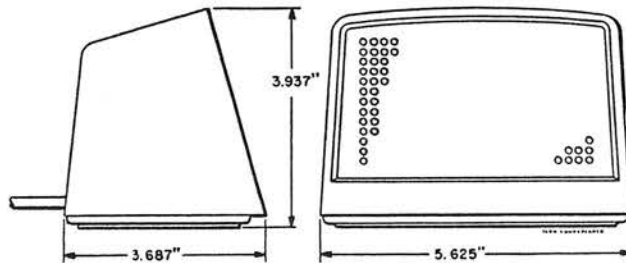
## Resistance

## 13 Type (Continued)

Code		Average Current (Amperes) at Specified Voltages												
No.	Comcode	1V	1.25V	1.5V	2V	5V	10V	24V	25V	30V	40V	50V	90V	120V
13F	100 317 288	—	—	—	.136	—	.342	.565	—	—	—	—	—	—
13G	100 317 296	—	—	—	—	—	.115	—	—	.221	—	—	.415	—
13H	100 317 304	—	—	—	.066	.110	—	.280	—	—	—	—	—	—
13J	100 317 312	.130	—	—	—	.274	—	—	—	—	.634	—	—	—
13L	100 317 320	—	—	—	—	.073	.100	—	—	—	—	—	.212	—
13N	100 317 338	—	—	—	.033	—	.063	—	—	—	—	.108	—	—
13P	100 317 346	—	.005	—	—	—	.0175	—	—	—	—	—	—	—
13R	100 317 353	—	—	—	.055	—	—	—	—	.022	—	—	—	.050
					Max									
13S	100 317 361	—	—	.010	—	—	—	—	.040	—	—	—	—	—
				Min					Max					

## LOUDSPEAKERS

760AW Type



Consists of a permanent magnet dynamic loud speaker mounted on a metal base having a plastic housing, with cord of same color furnished. Has a nominal impedance

of 23 ohms at a frequency of 1000 Hz, and an approximate dc resistance of 19 ohms, both exclusive of the cord.

For use in the 3B Speakerphone System.

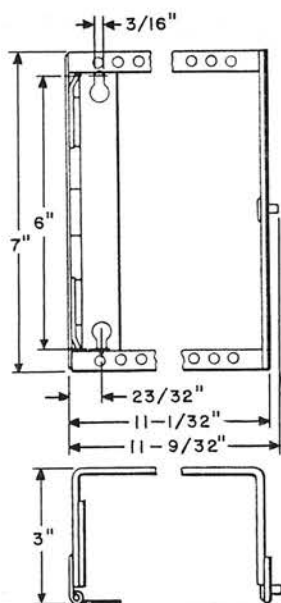
Code No.	Comcode	Color of Housing	Cord
760AW-3	100 727 064	Black	R2FK-3
760AW-49	100 727 072	Light Olive Gray	R2FK-49
760AW-50	101 493 740	Ivory	R2FK-50
760AW-51	100 727 080	Green	R2FK-51
760AW-53	101 578 730	Red	R2FK-53
760AW-54	—	Brown	R2FK-54
760AW-56	100 727 098	Yellow	R2FK-56
760AW-58	100 727 106	White	R2FK-58
760AW-60	100 727 122	Light Beige	R2FK-60
760AW-61	100 727 130	Light Gray	R2FK-61



## MOUNTINGS

## Apparatus

15A

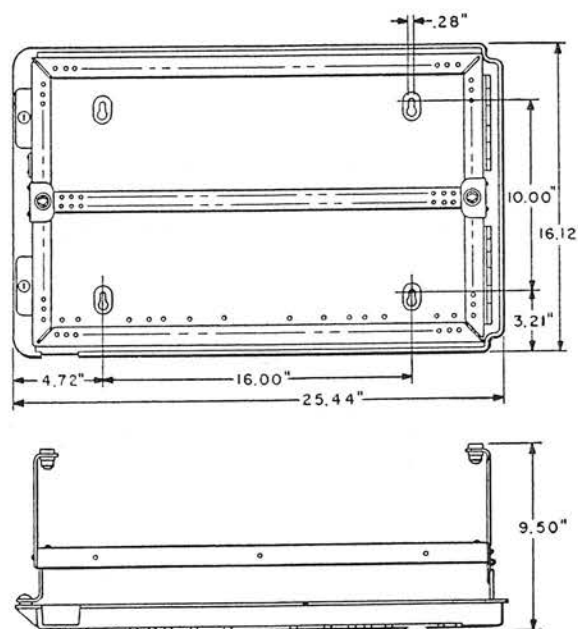


Metal framework arranged for mounting some 200 type key telephone units. Can also mount bent bracket type key telephone units by using P-37B204 Brackets. Brackets must be ordered separately.

Arranged to mount on a wall or on a 173A Backboard so the hinged mounting surface allows the framework to swing open, which permits access to front and rear of key telephone units. Two 15A Apparatus Mountings can be mounted on a 173A Backboard and protected with a 116A Cover.

For use in the 1A1 Key Telephone System.  
Comcode: 100 321 306

16C



A metal framework assembled on a metal backboard, hinged to permit access to front and rear of apparatus when assembled on this mounting. Provided with six cable rings, six blocks, and screws for mounting the cable rings and blocks.

Arranged to mount 200 type key telephone units or bent bracket type units by using P-37B204 Brackets, which must be ordered separately. Can also mount 19-inch mounting plates with the aid of P-36B209 Adapters, which must be ordered separately, and 23-inch mounting plates up to a total height of 13 inches. For wall or floor mounting.

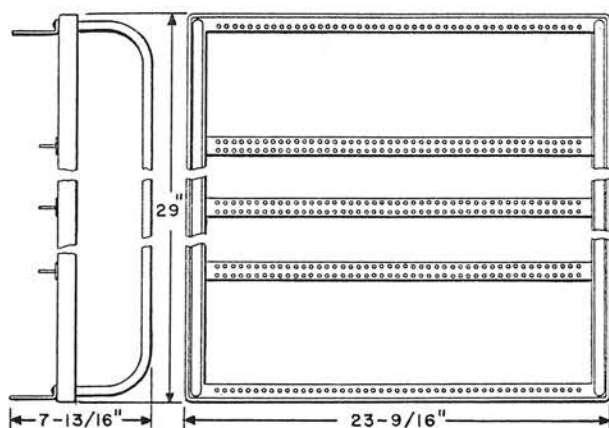
For use with a 117A Cover in the 1A1 Key Telephone System.  
Comcode: 100 321 322



## MOUNTINGS

## Apparatus

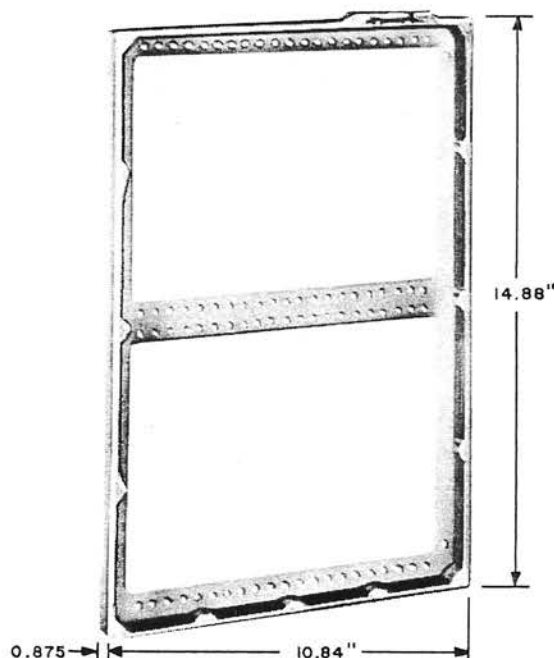
26A



Metal frame arranged to mount four rows of 200 type key telephone units or similar type units or 12 mounting plates, 2 inches high and 23 inches long, or a combination of units and plates. Can be modified to hold 13 mounting plates by removing two of the horizontal T-section mounting bars. Four supports and eight screws are furnished. Two of these supports are assembled in the top and two in the bottom to protect the terminals in the key telephone units.

Comcode: 100 321 447

31B



Die cast metal framework arranged for mounting a 230B Key Telephone Unit in each of two rows, or number 200 type key telephone units in each row up to a total width of 9-3/16 inches.

Mounts a 177A Backboard by means of a P-15C309 Bracket and a P-15C308 Hinged Bracket which permits access to front and rear. Mounting brackets must be ordered separately. May be protected by 116A Cover.

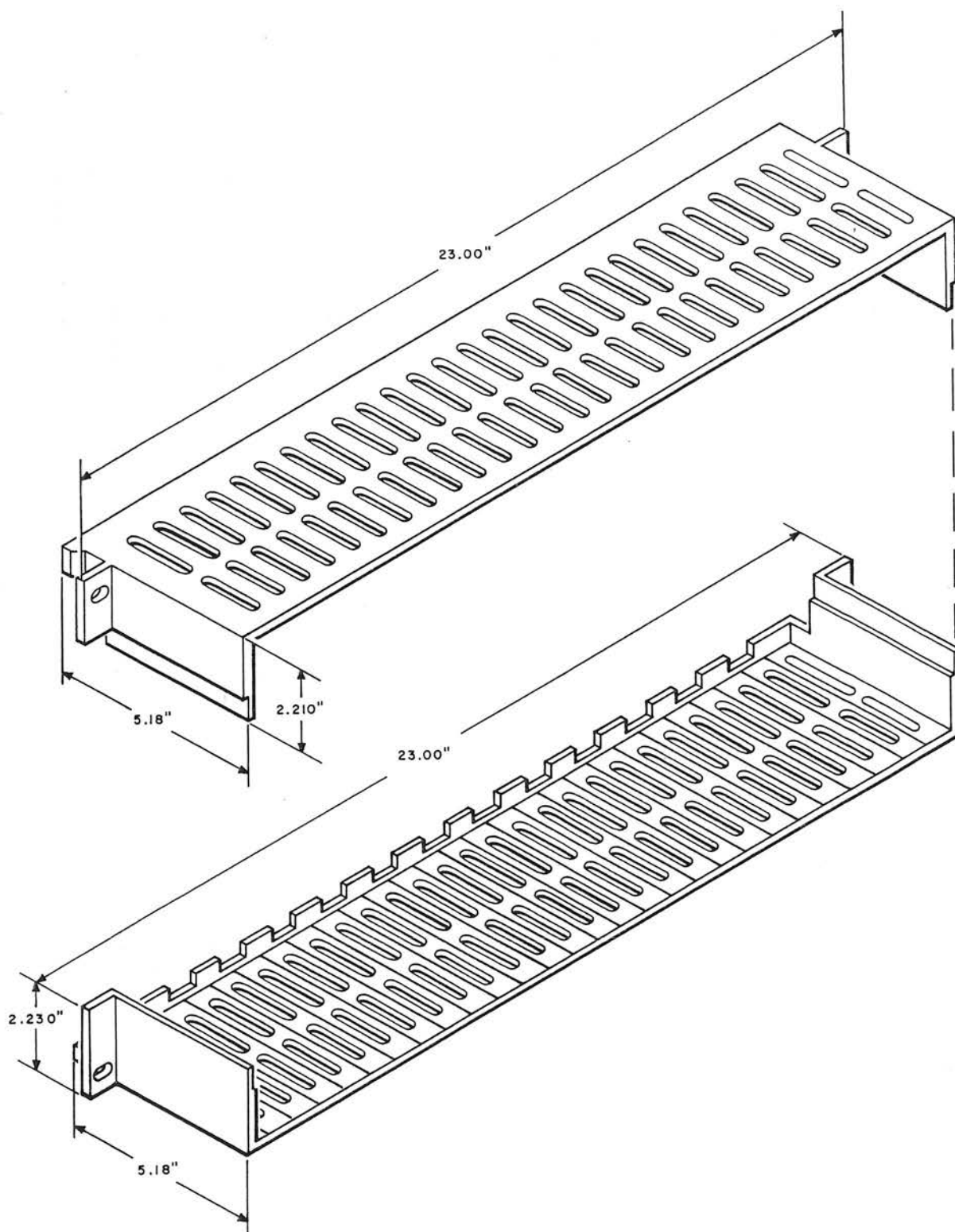
Forms a part of the number 300, 301, and 302 type key service units.

Comcode: 100 321 504

MOUNTINGS

Apparatus

57A



APPARATUS

## MOUNTINGS

## Apparatus

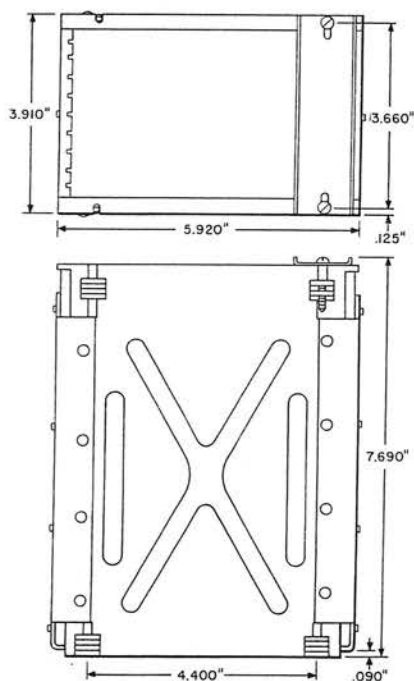
## 57A (Continued)

Consists of two cast metal frames, a top mounting, and a bottom mounting assembled to accommodate fourteen printed wiring cards with dimension of 5.3 inches by 3.5 inches by 1.5 inches.

Used in number 584 type panels in the 1A2 Key Telephone System.

Comcode: 101 230 878

## 61A

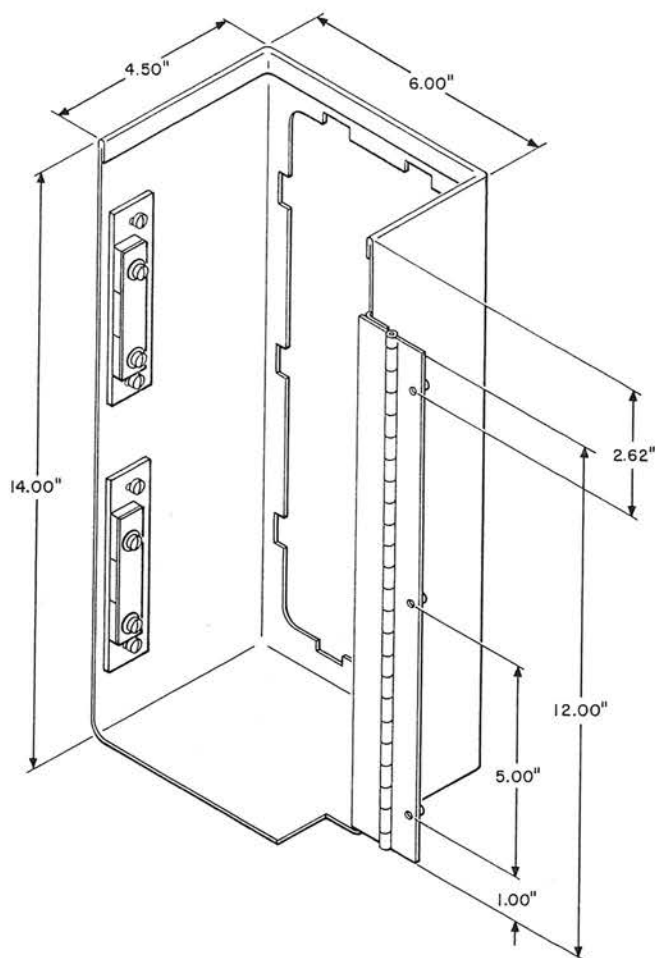


Consists essentially of a 0.63 inch thick steel plate having a 289A zinc plated finish. Has two stamped end plates and two formed grid supports with plastic grids. Arranged for mounting on a 6.00 inch mounting plate and on 4.010 inch horizontal mounting centers. Will accommodate one to five 927A Connectors and printed wiring boards. Four number 6 self tapping screws are provided for mounting.

Used initially with Data Auxiliary Sets 811CW1 and 816BW1.

Comcode: 101 237 071

## 66A



A corrosive resistant steel apparatus mounting having an oxford gray (-52) finish. Equipped with a piano type hinge to allow the mounting to swing away from the surface on which it is mounted.

Used initially to mount the 223BW-52 Hand Telephone Set to a number 28 type teletypewriter.

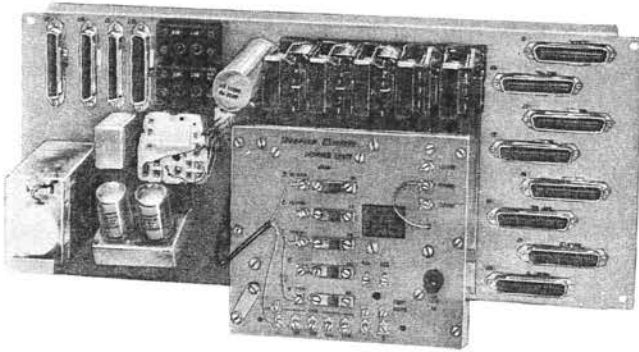
Comcode: 101 202 448



## MOUNTINGS

## Data

## 4A1



Consists of a power unit, an interrupter, relays, connectors, and pigtail components mounted on a panel. Arranged for relay rack mounting by four 0.32 inch by 0.25 inch holes located on 22.312 inch by 9.00 inch centers.

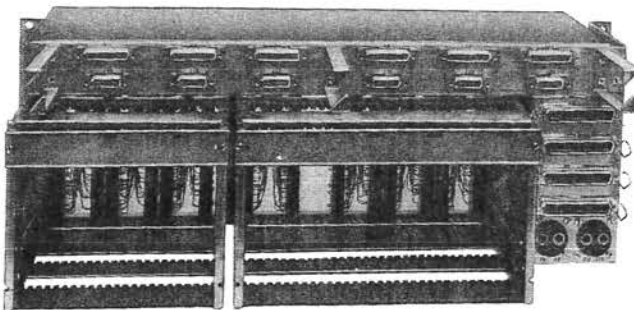
Overall dimensions are approximately 23.00 inches long by 9.96 inches high by 8.01 inches deep.

Functions as a distribution and control panel which interconnects a mixture of up to eight Data Mountings 5A1 and/or 6A1, Data Auxiliary Set 804L, telephone lines, and a remotely located console control position when used.

Used initially at NASA Huntsville multiple data set installation.

Comcode: 101 214 302

## 5A1



Consists of a 58A Apparatus Mounting, a 59B Apparatus Mounting, 927B Connectors, KS-16786L4 Connectors, KS-19078L1 and L2 Connectors; and 225A Jacks mounted and wired on a panel. Arranged for relay rack mounting by four 0.32 inch by 0.26 inch holes located on 22.312 inch by 7.00 inch centers.

Overall dimensions are approximately 23.00 inches long by 7.96 inches high by 8.90 inches deep.

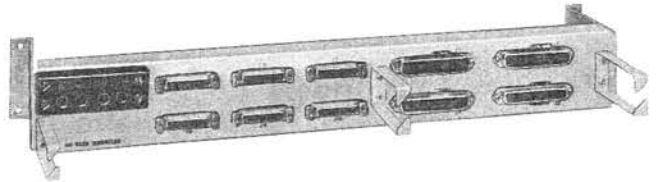
Provides four-wire line control functions for up to six switched network data sets with or without associated data auxiliary sets 801CW type in a multiple data set system. Each data set may be controlled from either of two telephone unit positions.

One AR195 Circuit Pack for each data set associated with the data mounting and one AR196 Circuit Pack for every three data sets associated with it are required but must be ordered separately.

Used initially in the NASA Huntsville multiple data set installation.

Comcode: 101 214 310

## 6A1



Consists of four KS-16786L4 Connectors, six KS-19087L2 Connectors, and four 631C Jacks mounted and wired on a panel. Arranged for relay rack mounting by four 0.32 inch by 0.26 inch holes located on 22.312 inch by 2.00 inch centers.

Overall dimensions are approximately 23.00 inches long by 2.96 inches high by 7.59 inches deep.

Used initially in NASA Huntsville multiple data set installation.

Comcode: 101 214 328

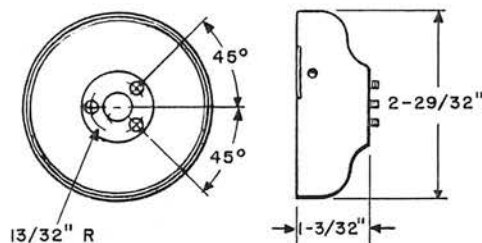




# MOUNTINGS

## Dial

30A

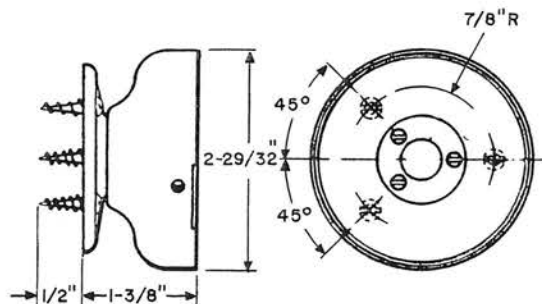


Consists of a black finished metal mounting for mounting on residence system sets and similar apparatus. Mounting screws are furnished.

Used in conjunction with number 52 type dial adapter for mounting number 6 type dials.

Comcode: 100 321 793

32A

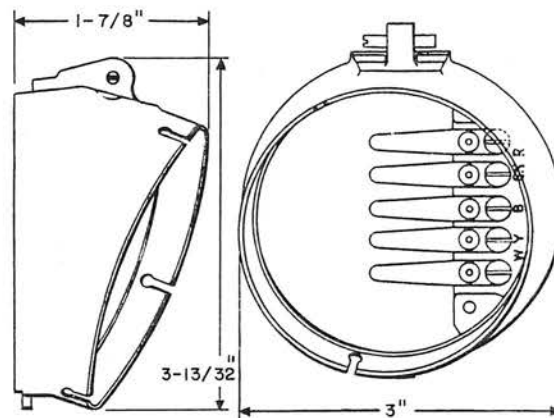


Consists of the 30A Dial Mounting provided with a black finished base for mounting dial in a vertical position on local test desk and PBX switchboards. Mounting screws are furnished.

Used in conjunction with number 52 type dial adapters for mounting number 6 type dials.

Comcode: 100 321 801

34D



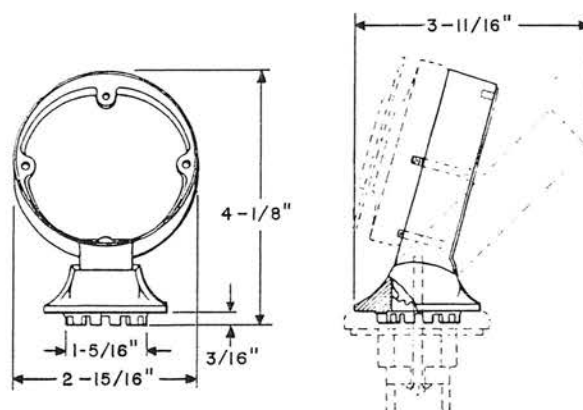
Black finished metal detachable dial mounting for use in conjunction with 25B Connecting Block and 52D Dial Adapter for mounting 5E type dials.

Provided with a locking screw to prevent removal without the use of a tool. Mounting screws and a dust shield are furnished.

Used on toll test boards and telegraph service boards which have slanting plug shelves.

Comcode: 100 321 819

43A Type



Mounts number 6 type dials. Has a removable cover plate providing access to the dial terminals. The connections from the dial to the hand set mounting pass through the inside of the base.

For use with G type hand set mountings and is arranged to mount at various angles with respect to the vertical

## MOUNTINGS

## Dial

## 43A Type (Continued)

in steps of 15 degrees up to a maximum of 45 degrees. Screws and washers are furnished for mounting the dial and dial mounting.

Code No.	Comcode	Color
43A-3	100 321 868	Black
43A-50	100 321 876	Ivory
43A-51	100 321 884	Green
43A-53	100 321 892	Red
43A-56	100 321 900	Yellow
43A-58	100 321 918	White
43A-60	100 321 934	Light beige
43A-61	100 321 942	Light gray

44B-45: Same as 44B-3 Dial Mounting except color is gray green.

Comcode: 100 321 983

44C-3: Same as 44B-3 Dial Mounting except terminal is marked BK instead of GN. Arranged to mount 6A, 6C, 6D, 6G, 6H, 6M, 6N, or 6R type dials.

Comcode: 100 321 991

44D-3: Same as 44B-3 Dial Mounting except is provided with six contact springs and six screw terminals. Arranged to mount 6J, 6K, or 6L type dials. 59D Dial Adapter is required, but is not furnished and must be ordered separately. Fig. 2 shows 44D.

Comcode: 100 322 007

## 44 Type

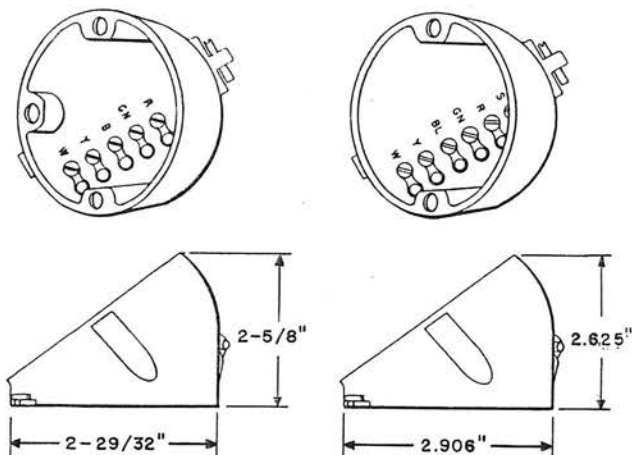


Fig. 1

Fig. 2

44B-3: Consists of black plastic frame provided with five contact springs, five screw terminals, and a 59B Dial Adapter. The springs are so positioned as to make contact with the contact points of number 25 type connecting blocks. A locking stud is provided for securing the dial mounting to the connecting block. Dials can be mounted at an angle of approximately 37 degrees from the horizontal. Arranged to mount 6E, 6F, or 6P type dials. Fig. 1 shows 44B.

Comcode: 100 321 967

44B-43: Same as 44B-3 Dial Mounting except utilizes 59C Dial Adapter. Color is gray beige.

Comcode: 100 321 975

## 50B and 50C Type

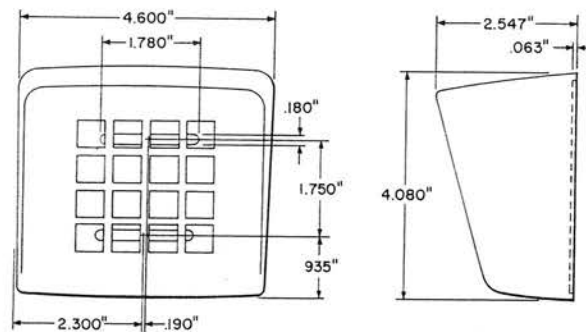


Fig. 1

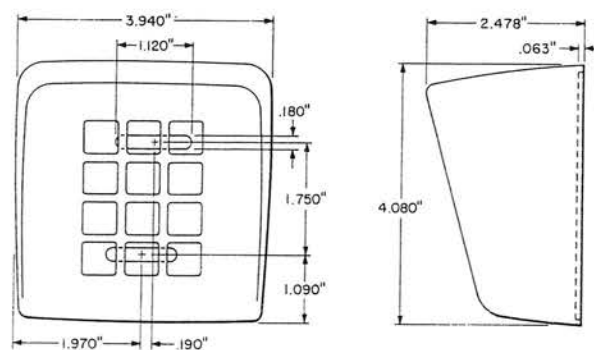


Fig. 2

50B Type: Consist of a metal bracket for mounting a 66D3A dial and a housing that snaps on over the bracket. Provided with a card retainer and a screw for securing the housing to the bracket.

Initial use: PBX Switchboard.

## MOUNTINGS

## Dial

**50C Type:** Consist of a metal base arranged for mounting a 35H3A Dial, and a housing that snaps on over the base. Provided with a card retainer, and a screw for securing the housing to the base.

Initial use: PBX Switchboard.

Code	Comcode	Fig. No.	Color
50B-3	100 322 072	1	Black
50B-43	100 322 080	1	Gray beige
50C-3	101 365 898	2	Black
50C-43	101 365 906	2	Gray beige

## 6000D

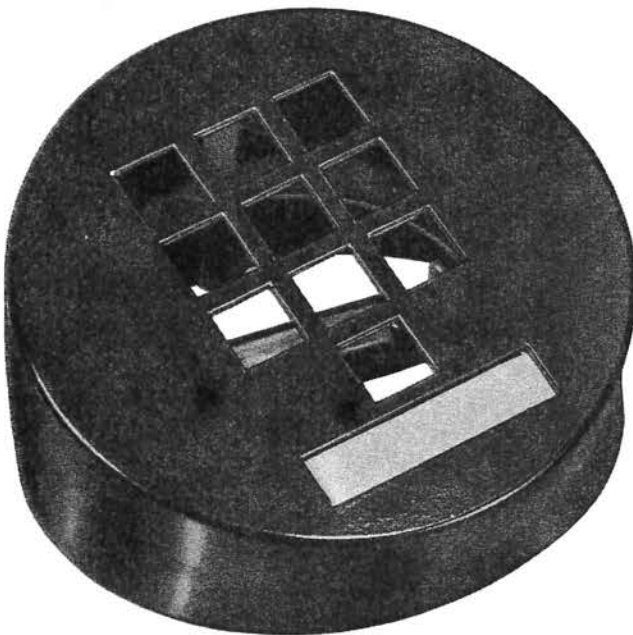
Consists of 34D Dial Mounting, 25B Connecting Block, and D5AH Cord. Used in conjunction with 52D Dial Adapter for mounting 6E type dials.

Arranged to mount on a switchboard keyshelf or other horizontal surface. Provided with a locking screw to prevent removal without the use of a tool.

For use on toll test boards and telegraph service boards which have slanting plug shelves.

Comcode: 100 322 098

## 51A Type



Consists of a molded plastic housing, a dial adapter, and a connecting block for terminating the dial leads. Overall dimensions are approximately 4.500 inches in diameter by 3.275 inches high.

Arranged for mounting the number 25 type, ten-button TOUCH-TONE dials at an angle of 24 degrees on special installation of telephone station apparatus.

Provided with mounting screws and screws for mounting the dial.

Code No.	Comcode	Color
51A-3	100 840 685	Black
51A-58	100 840 693	White

## 6044B-3, 6044B-43, and 6044C-3

**6044B-3:** Consists of 44B-3 Dial Mounting, 25B Connecting Block, and D5AH Cord. For mounting number 6E, 6F, or 6P type dials on telephone switchboards and at order turret positions, at an angle of approximately 37 degrees from horizontal. Color is black.

Comcode: 100 322 114

**6044B-43:** Same as 6044B-3 Dial Mounting except 44B-43 Dial Mounting is required. Color is gray beige.

Comcode: 100 322 122

**6044C-3:** Same as 6044B-3 Dial Mounting except arranged to mount number 6A, 6C, 6D, 6G, 6H, 6M, 6N, or 6R type dials. Consists of 44C-3 Dial Mountings, 25C Connecting Block, and D5AJ Cord.

Comcode: 100 322 148

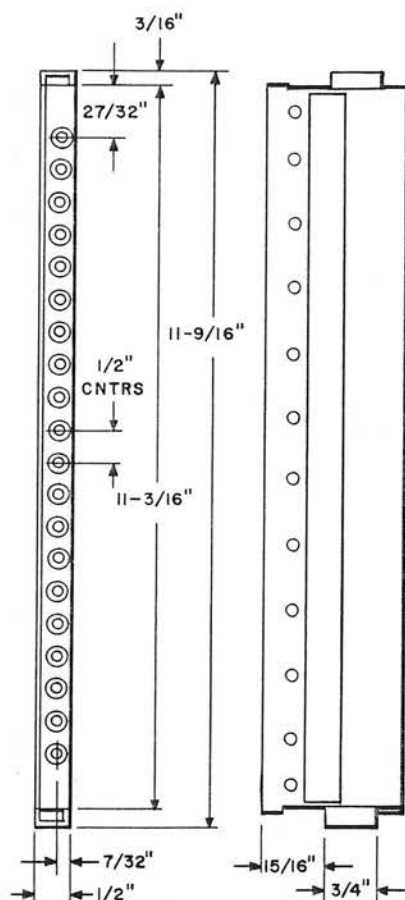




## MOUNTINGS

## Jack

112



Metal mounting with a hard rubber face that will accommodate 20 jacks. Furnished unnumbered unless otherwise specified on order. The lower edge is grooved, and spotted unless specified.

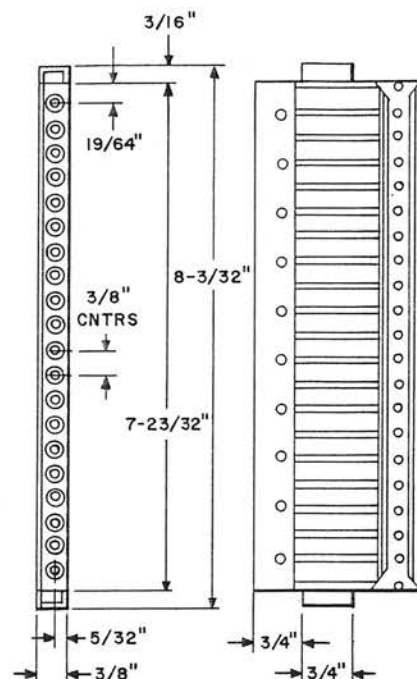
Will mount with number 59 type jack spacer, 137B Lamp Socket Mounting, and number 50 and 51 type designation strips.

For use with number 138 or 141 Jacks.

Comcode: 100 323 047

100 323 054 Numbered per order

113



Metal mounting with a hard rubber face that will accommodate 20 jacks. Furnished unnumbered unless otherwise specified on order. The lower edge is grooved, and spotted unless otherwise specified.

Will mount with number 12 Jack Spacer, number 118 Lamp Socket Mounting, and number 6, 13, and 14 type designation strips.

For use with number 92 Jacks.

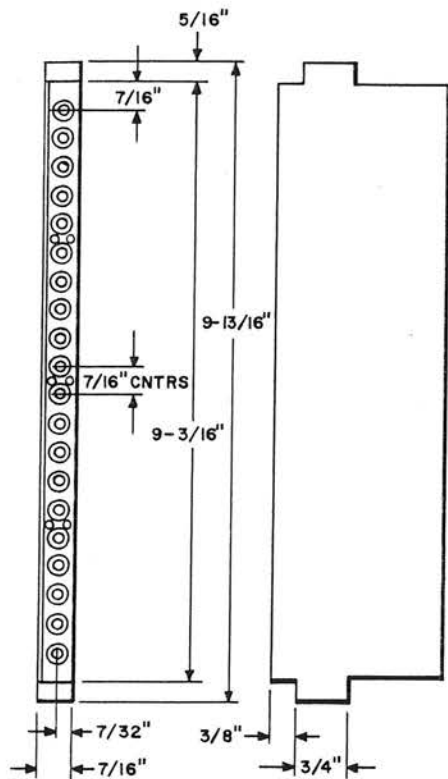
Comcode: 100 323 062

100 323 070 Numbered per order

## MOUNTINGS

## Jack

114



Hard rubber mounting that will accommodate 20 jacks. Furnished unnumbered unless otherwise specified on order. The lower edge is grooved, and spotted unless otherwise specified.

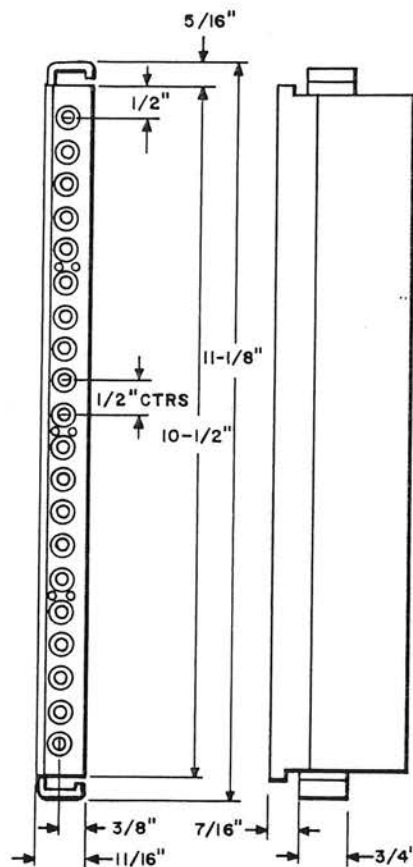
Will mount with number 1 type jack spaces, number 102 Lamp Socket Mounting, and number 1, 2, and 7 type designation strips.

For use with number 49 jacks.

Comcode: 100 323 088

100 323 096 Numbered per order

115



Metal mounting with a hard rubber face that will accommodate 20 jacks. Furnished unnumbered unless otherwise specified on order. The lower edge is grooved and spotted unless otherwise specified.

Will mount with number 27 type jack spaces and number 123 Lamp Socket Mounting.

For use with number 141 Jack.

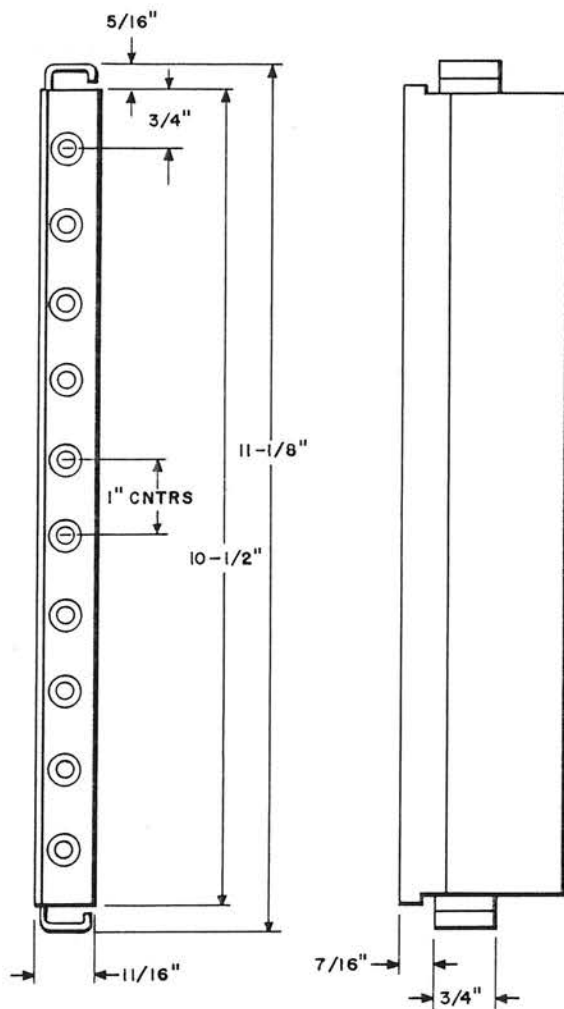
Comcode: 100 323 104

100 323 112 Numbered per order

## MOUNTINGS

## Jack

116



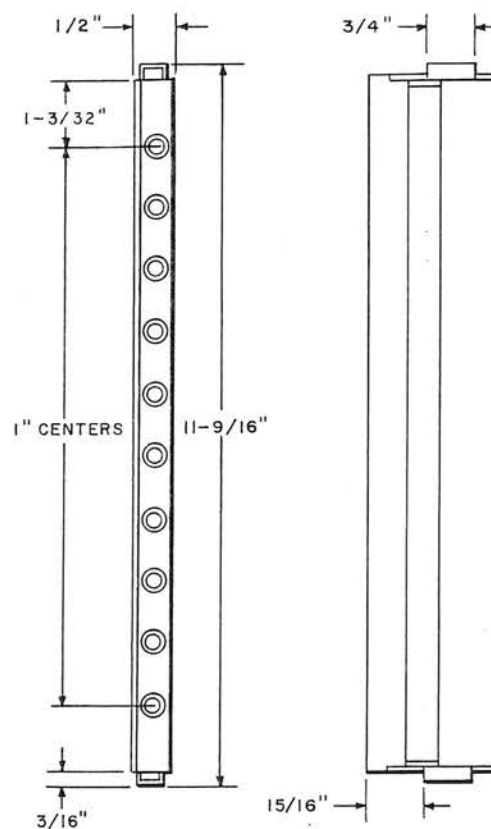
Metal mounting with a face of insulating material that will accommodate 10 jacks. Furnished only on orders for jacks and unnumbered unless otherwise specified. Not furnished partially equipped with jacks. The lower edge is grooved.

Will mount with number 27 type jack spaces and number 125 Lamp Socket Mounting.

For use with number 141, 275, 295, 308, 347, 362, 365, and 378 Jacks.

Comcode: 100 323 120  
100 323 138 Numbered per order

136



Metal mounting with a face of insulating material that will accommodate 10 jacks. Furnished only on orders for jacks and unnumbered unless otherwise specified on orders. Not furnished partially equipped with jacks. The lower edge is grooved.

Will mount with number 59 type jack spacer, 136C Lamp Socket Mounting, and number 51 and 55 type designation strips.

For use with number 138, 141, 275, 295, 308, 347, 362, 365, and 378 Jacks.

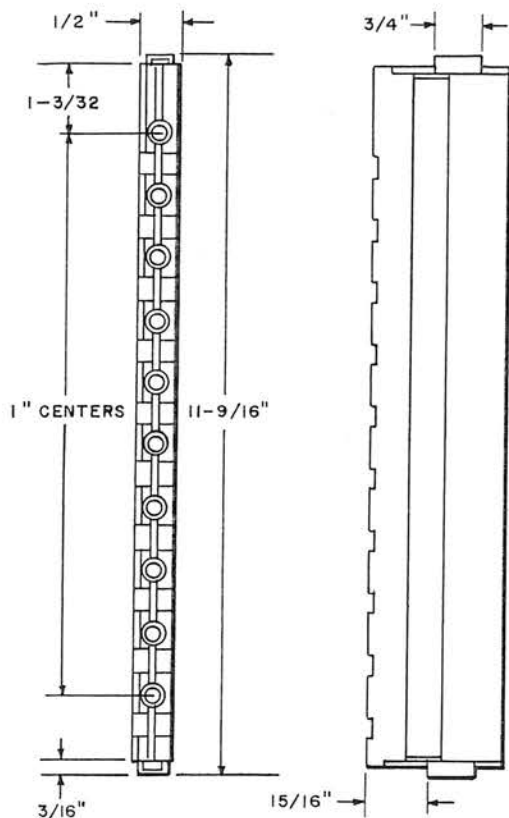
Comcode: 100 323 286  
100 323 294 Numbered per order



## MOUNTINGS

## Jack

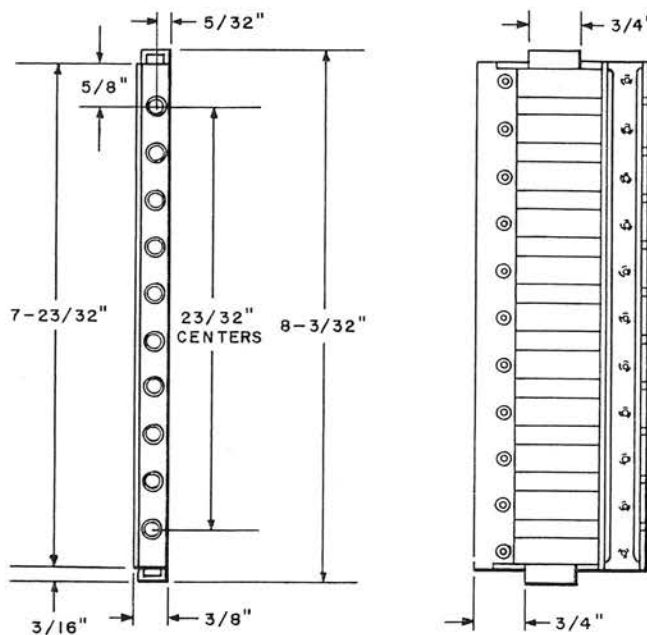
137



Same as number 136 Jack Mounting except is arranged for 5B Number Plate.

Comcode: 100 323 302

138



Metal mounting with a hard rubber face that will accommodate 10 jacks. Furnished only on orders for jacks and unnumbered unless otherwise specified. Not furnished partially equipped with jacks. The lower edge is grooved.

Will mount with number 12 type jack spaces, number 111, 134, 141, and 142 Lamp Socket Mountings, and number 6, 13, and 54 type designation strips.

For use with number 92 Jack.

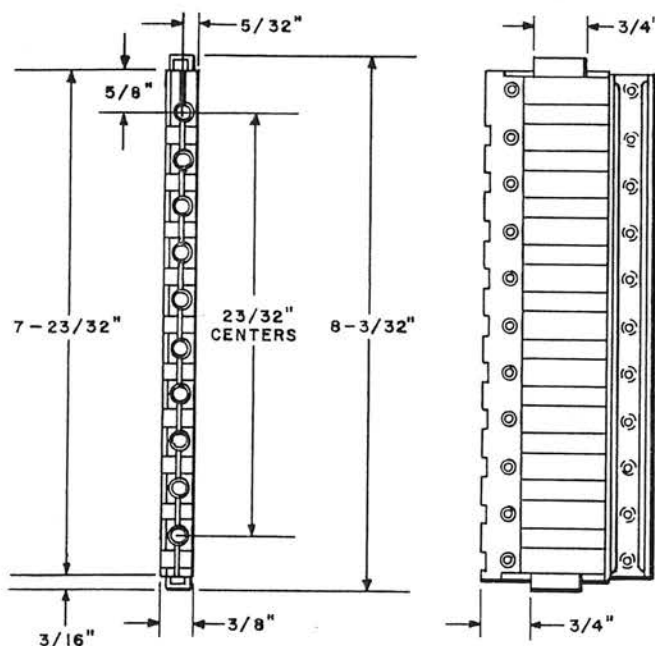
Comcode: 100 323 310

100 323 328 Numbered per order

## MOUNTINGS

## Jack

139



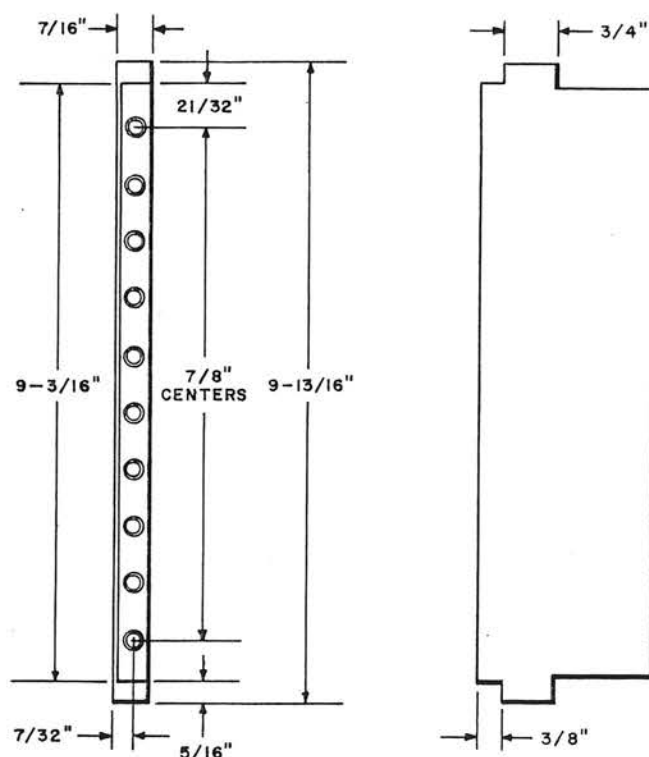
Same as number 138 Jack Mounting except arranged for number 30 and 60 type number plates. Furnished only on orders for jacks or keys, and not furnished partially equipped with jacks or keys.

For use with 490C Key.

Comcode: 100 323 336

101 229 946 E/W 10-92 Jack, 10  
per strip unnumbered

141



Hard rubber mounting that will accommodate 10 jacks. Furnished only on orders for jacks and unnumbered unless otherwise specified. Not furnished partially equipped with jacks. The lower edge is grooved.

Will mount with number 1 type jack spaces, number 101 and 122 Lamp Socket Mountings, and number 1, 2, 7, and 56 types designation strips.

For use with number 49 or 50 Jacks.

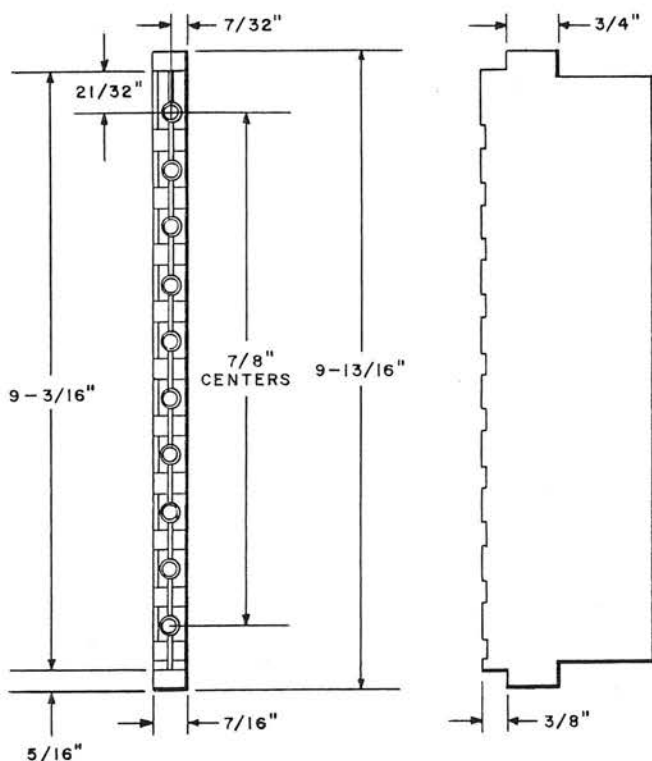
Comcode: 100 323 344

100 323 351 Numbered per order

## MOUNTINGS

## Jack

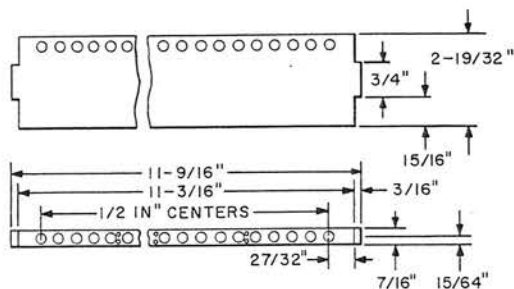
142



Same as number 141 Jack Mounting except is arranged for number 31, 32, and 59 type number plates.

Comcode: 100 323 369

168



Hard rubber mounting that will accommodate 20 jacks. Furnished only on orders for jacks and unnumbered unless otherwise specified. Not furnished partially equipped with jacks. The lower edge of face is grooved and spotted.

Will mount with number 159 type jack spacer, 137B Lamp Socket Mounting, and number 50, 51A, and 55 type designation strips.

For use with number 49 Jack.

Comcode: 100 323 575

100 323 583 Numbered per order

184, 185, and 185B

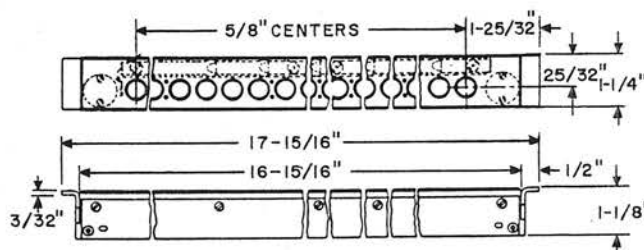


Fig. 1

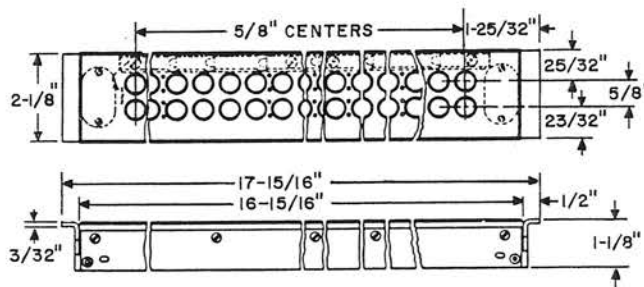


Fig. 2

Consist of a strip of black insulating material reinforced by metal strips at the sides, and equipped with metal mounting lugs at the ends. Furnished unnumbered unless otherwise specified on order.

Arranged to mount on relay racks by means of number 25 Jack Fastener with number 62 or 63 type jack spacer.

For use with number 218 Jack or similar type.

## MOUNTINGS

## Jack

184: Arranged for, but not equipped with, unless specified on order, one 90A Designation Strip, and two 23D Number Plates. Engraving for the 23 Number Plate must be specified on the order. Will accommodate 24 jacks. Fig. 1 shows number 184.

Comcode: 100 323 674

100 323 682 E/W 90A Designation Strip and 23D Number Plate.

100 323 690 Numbered per order

185: Arranged for, but not equipped with unless specified on order, one 90A Designation Strip, and two 127A Number Plates. Engraving for 127A Number Plate must be specified on order. Order must specify the figure numbers and also the numbers of lines on which characters are to be engraved. Will accommodate 48 jacks. Fig. 2 shows number 185 type.

Comcode: 100 323 708

100 323 716 E/W 90A Designation Strip and 127 Number Plate.

100 323 724 Numbered per order

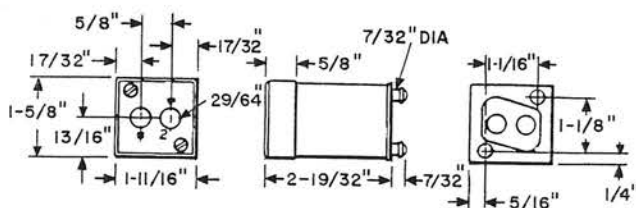
185B: Same as number 185 Jack Mounting, except arranged for two 90A Designation Strips, one above the jack position 27 and one below the jack position 28.

Comcode: 100 323 732

100 323 740 E/W 90A Designation Strip

100 323 757 Numbered per order

213A



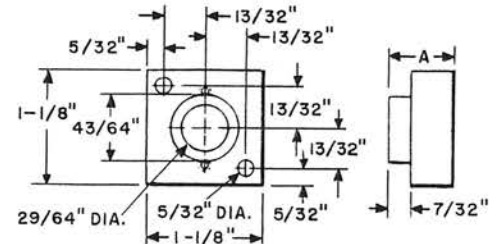
Metal box with a face of insulating material that will accommodate two jacks.

Will mount on relay mounting plate with 1-3/4 inch horizontal and vertical mounting centers.

For use with 223A, 242C, and 360C Jacks or similar type.

Comcode: 100 324 383

214A and B



Mounting of black insulating material that will mount one jack on a 7/32-inch thick metal mounting plate or panel. Mounting screws are furnished.

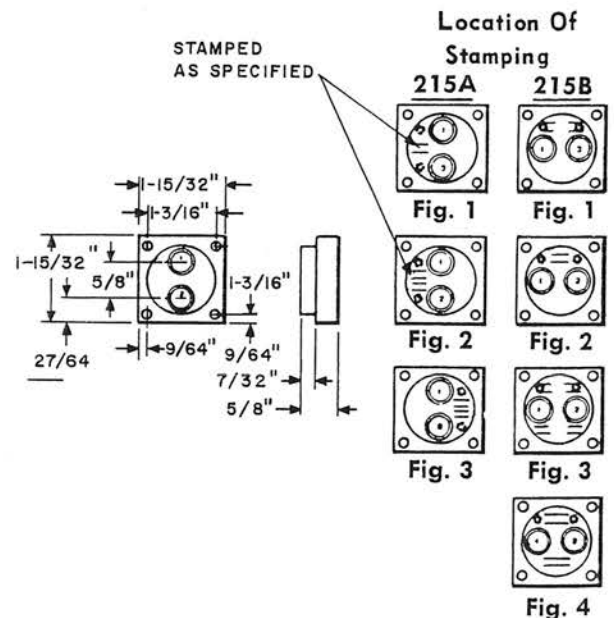
214A: Dimension A is 5/8 inch. For use with 223A Jack or similar type.

Comcode: 100 324 391

214B: Dimension A is 1/2 inch. For use with the miscellaneous circuit in common systems and with 249A Jack or similar type.

Comcode: 100 324 409

215 Type



Mounting of black insulating material that will accommodate two jacks.



## MOUNTINGS

## Jack

## 215 Type (Continued)

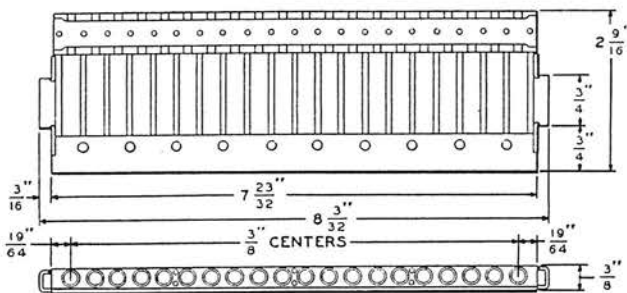
215A: Can be obtained with one or two lines of stamping of one, two, or three characters each in the positions shown in illustration when specified on order. Arranged for 215C Jack or similar type.

Comcode: 100 324 417

215B: Can be obtained with stamping in the positions shown in illustration when specified on order. Arranged for 223A Jack or similar type.

Comcode: 100 324 433

## 228A and B



Consist of a metal mounting plate with a face of black insulating material and mounting, insulating, and clamping strips. Arranged to accommodate 20 jacks. Furnished only on orders for jacks and unnumbered unless otherwise specified. Not furnished partially equipped with jacks.

For use with number 92 Jack.

228A: When equipped with jacks, the sleeve terminals will be strapped and grounded to the mounting plate. For use in taking liner out of service in the toll test boards.

Comcode: 100 324 557

100 324 565 Numbered per order

228B: When equipped with jacks, the ring terminals will be strapped and grounded to the mounting plate. For use in the outgoing trunk test frame and jack bay equipment in the toll switching systems.

Comcode: 100 324 573

100 324 581 Numbered per order

## 230 Type

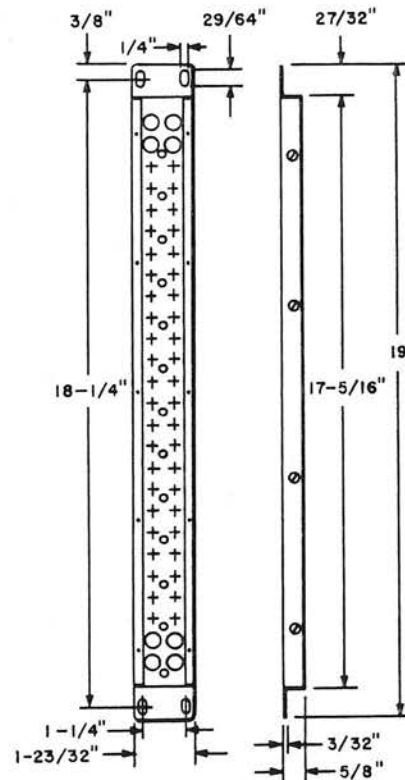


Fig. 1

## MOUNTINGS

## Jack

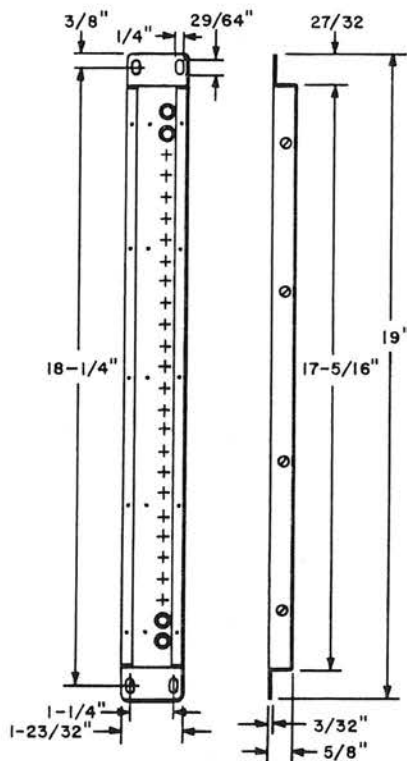


Fig. 2

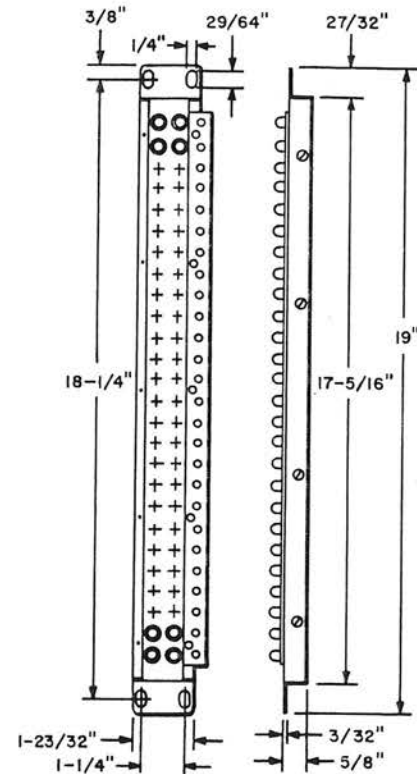


Fig. 3

230A and D: Consist of a strip of black insulating material reinforced by metal strips and equipped with metal mounting lugs.

Can be obtained with the designation strips and number plates specified in table. When ordered, will be furnished as loose parts.

Arranged to mount number 218 or similar type jacks on 5/8-inch centers on relay racks.

230B: Same as 230A Jack Mounting, except as noted in table.

230C: Same as 230A Jack Mounting, except it is equipped with a locking strip intended to engage brackets on number 327 Plugs for locking them in place with wire and lead seals.

Code No.	Comcode	Fig. No.	Jacks per Mtg	Number Plates (a) Code No. Position	Designation Strips Code No. Position
230A	100 324 599	1	52	{ 153A 27 153B 28	99A 29 or 30 99B 29
230B	100 324 607	2	26	{ 153A 27 153B 28	99A 29, 30 or 31 99B 29 or 31
230C	100 324 615	3	52	{ 153A 27 153B 28	99A or 99B 29
230D	100 324 631	1	52	{ 153A 27 153B 28	99A 29 or 30 99B 29

(a) Engraving on two, three, or four lines must be specified on order.

MOUNTINGS

Jack

231A and B

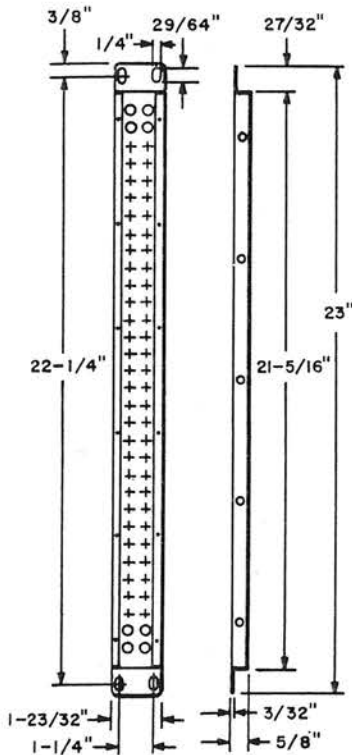


Fig. 1

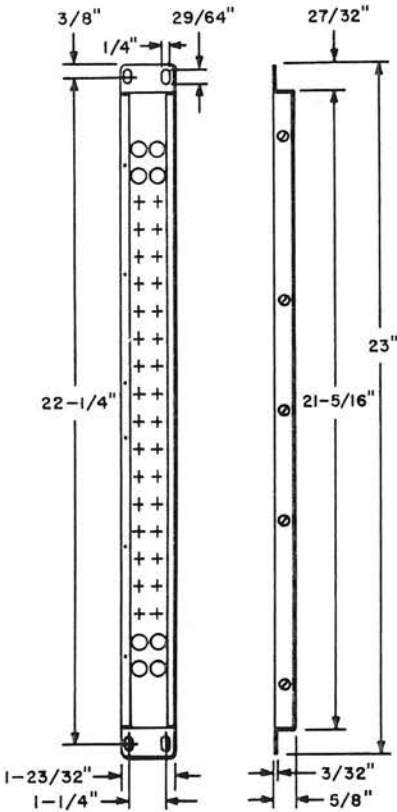


Fig. 2

Each consists of a strip of black insulating material reinforced by metal strips and equipped with metal mounting lugs.

Can also be obtained with the number plates and designation strips specified in table. When ordered, will be furnished as loose parts.

Corresponding jack space is 169A.

231A: Arranged to mount 218A or similar jacks, back-to-back on 5/8-inch vertical and horizontal centers in positions 1 through 32.

231B: Arranged to mount 218A or similar jacks, back-to-back on 5/8-inch vertical and 29/32-inch horizontal centers in positions 1 through 20.

Code No.	Comcode	Fig. No.	Jacks per Mtg	Number Plates (a)		Designation Strips	
				Code No.	Position	Code No.	Position
231A	100 324 656	1	64	{ 153A	33	100A or B	35
				{ 153B	34	100A	36
231B	100 324 664	2	40	{ 153A	21	100C	23
				{ 153B	22		

(a) Engraving on two, three, or four lines must be specified on order.

## MOUNTINGS

## Jack

## 264A, 265A, and 266A

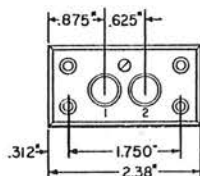


Fig. 1

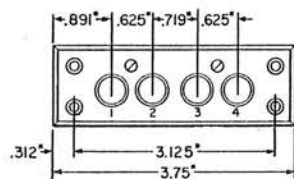


Fig. 2

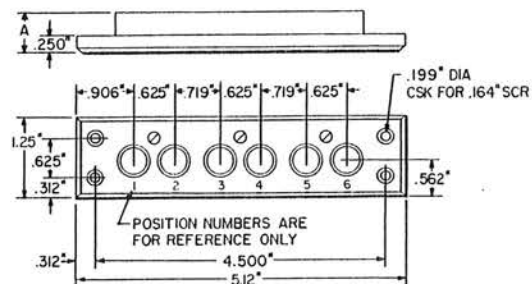


Fig. 3

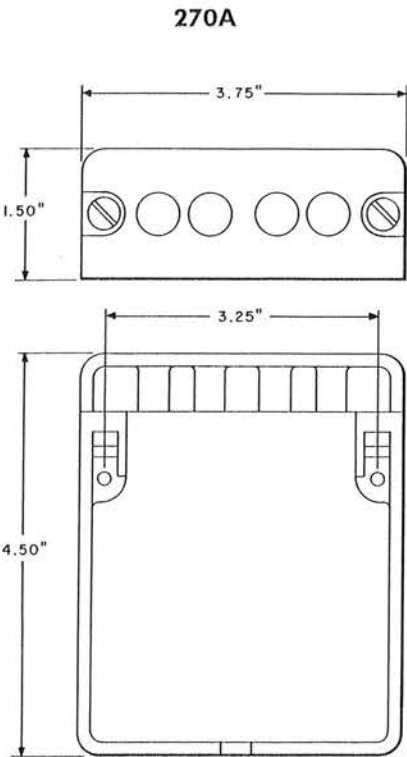
Mounting of black insulating material. Mounting screws, nuts, and washers are furnished.

Code No.	Comcode	Fig. No.	Dimension A (Inch)	Jacks Per Strip	Used with Jacks No.
264A	100 325 257	1	.59	2	223A, 234A or 237A
265A	100 325 265	2	.62	4	223A, 234A or 237A
266A	100 325 273	3	.62	6	223A, 234A or 237A



MOUNTINGS

Jack



A mounting of insulating material, arranged to mount four 223A or similar type jacks. When so equipped, will accommodate two 289B or similar type plugs.

Provided with mounting screws and cover plates in colors listed in table.

Used initially with number 10 and 11 type telephone consoles.

Code No.	Comcode	Color
270A-51	101 418 085	Green
270A-58	101 418 093	White
270A-60	101 266 187	Light beige
270A-61	101 266 195	Light gray

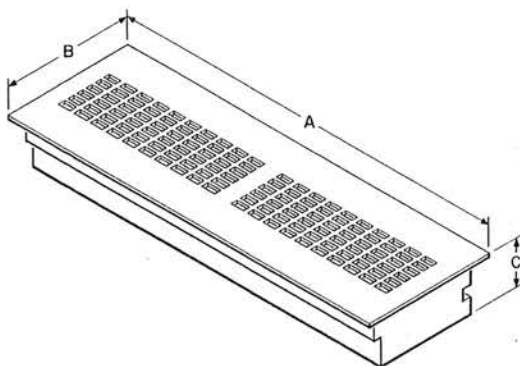




## MOUNTINGS

## Key

## 423AW, 424AW, 425AW, and 426AW Type



A metal framework arranged to mount keys or apparatus blanks. Will mount a 63A Connecting Block for use with 621A or 622A Key, and a 64A Connecting Block for use with each group of five number 598 or 599 type keys. Provided with a clear plastic face plate as indicated in table with five face mats colored silver, gold, blue, green, and cream white for use under the face plate to provide a choice of color contrast, and a snap on bezel for retaining the face plate and a mat. Furnished with insulator for converting pickup positions from locking to nonlocking, and a pivot bar for interlock between keys. Provided with a knockout on both ends of rear surface, and one grommet for cable entrance. Surface for mounting keys or apparatus blanks is hinged to permit access to wiring side.

Used for custom installation of the 1A1 and 6A Key Telephone Systems equipped with 236A Key Telephone Units for line concentrator service where large fields of recess mounted keys are required.

Code No.	Comcode	A	Dimensions (Inches) B	C	Contains Face Plate No.	No. of Keys Arranged for	
						598 or 599 Type Key(a)	621A or 622A Key
423AW2	101 159 531	10.478	9.912	4.913	29AW1	5	1
(b) 423AW3	101 159 549	17.043	9.912	4.913	30BW1	5	1
424AW2	101 159 556	17.043	9.912	4.913	30AW1	10	1
(b) 424AW3	101 159 564	23.608	9.912	4.913	31BW1	10	1
425AW2	101 159 572	23.608	9.912	4.913	31AW1	15	1
(b) 425AW3	101 159 580	30.173	9.912	4.913	32BW1	15	1
426AW2	101 159 598	30.173	9.912	4.913	32AW1	20	1

(a) Or a 105B Apparatus Blank.

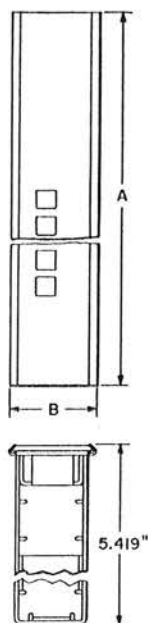
(b) Also arranged for a 690B3 Subscriber Set.



## MOUNTINGS

## Key

## 430A2, 431A1, 431A2, and 432A1



A metal framework arranged to mount keys or apparatus blanks as indicated in table. Provided with a clear plastic face plate as indicated in table together with five face mats colored silver, gold, blue, green, and cream white for use under the face plates to provide a choice of color contrasts, and a snap on bezel for retaining the face plate and a mat. Furnished with three insulators for converting pickup key positions from locking to non-locking, and provisions for interlocking between keys. Provided with an opening for cable entrance on one side only.

Used for custom installations of 1A1 and 6A Key Telephone Systems equipped with 236A Key Telephone Units for line concentrator service where large fields of recess mounted keys are required.

## 431A2. Also General Design of 430 Through 432 Type

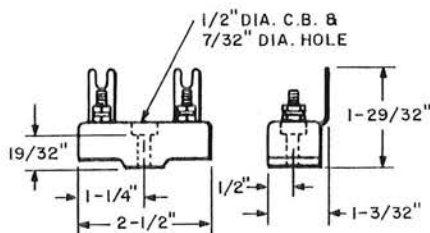
Code No.	Comcode	Dimensions (Inches)		Contains Face Plate No.	No. of Keys Arranged for	
					598 or 599 Type Key (a)	621A or 622A Key
430A2	100 326 990	14.934	2.284	27B1	1	1
431A1	100 327 006	14.934	2.284	27A1	2	—
431A2	100 327 014	21.238	2.446	28B1	2	1
432A1	100 327 022	21.238	2.446	28A1	3	—

(a) Or 105B Apparatus Blanks.

## MOUNTINGS

## Protector

94A

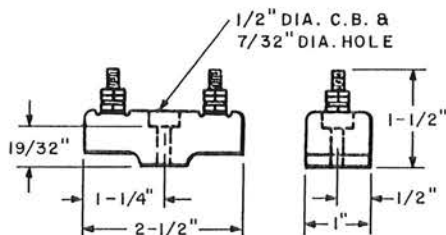


Consists of a porcelain base equipped with clips for mounting 60A Fuses, and having a binding post for one pair of wires. Together with 106C Protector will mount two 60A Fuses.

For use in connection with 106C Protector for sneak current protection. Also forms a part of 1094C Protector.

Comcode: 100 329 440

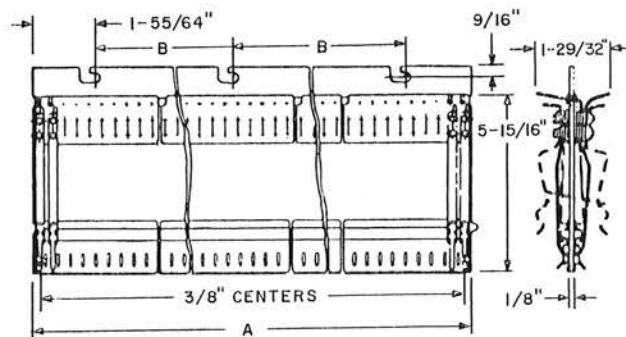
94B



Consists of a porcelain base having a binding post for one pair of wires. Forms part of 1094C Protector.

Comcode: 100 329 457

C50, C52, E50, and E52



C50 and C52: Consists of a metal plate equipped with springs for holding number 28 and 29 Protector Blocks and 76A Heat Coils. The protector blocks and heat coils do not form a part of the protector mounting. Arranged for pairs of wires as indicated below. Part of C50A and C52A Protectors respectively. Mounting screws are furnished. For use on main distributing frames.

E50 and E52: Same as C50 and C52 Protector Mountings, except not equipped with springs for holding heat coils and soldering terminals are multipled to those on right. Mounting screws are furnished. For use in terminating toll cable circuits in conjunction with test boards where heat coil protection is not required.

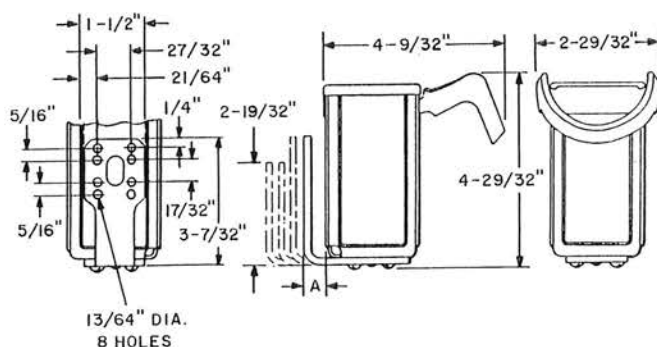
Code No.	Comcode	Dimensions (Inches)		Number of Pairs of Wires
		A	B	
C50	100 329 507	18-23/32	7-1/2	50
C52	100 329 515	19-15/32	7-7/8	52
E50	100 329 523	18-23/32	7-1/2	50
E52	100 329 531	19-15/32	7-7/8	52



## MOUNTINGS

## Hand Set

## G Type



Hand set mountings equipped with a bracket designed to permit adjustment of the mounting to various lengths of desk top overhang. The bracket also permits the mounting to be secured for the hand set to hang at either side or in front of the mounting. Dimension A is adjustable to four lengths: 17/32 inch, 27/32 inch, 1-5/32 inches, and 1-15/32 inches.

Finished in colors indicated below except switch hooks are finished in chromium.

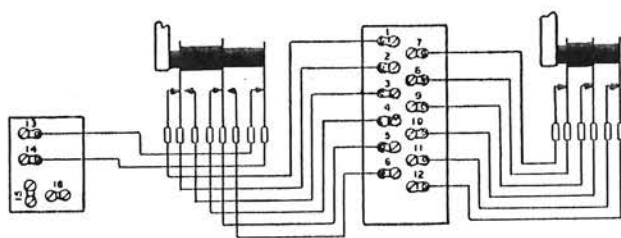
G5W-3: General purpose use.

G6W-3: Part of number 211 type telephone sets.

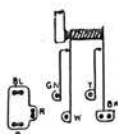
G7W-3: & -61: Part of number 212 type telephone sets.

G8W-3: Part of number 211 Hand Telephone Set.

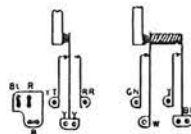
Code No.	Comcode	Color
G5W-3	100 322 353	Black
G6W-3	100 322 460	Black
G7W-3	100 322 577	Black
G7W-61	101 320 067	Light gray
G8W-3	101 320 075	Black



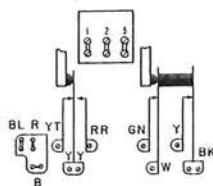
## G5W-3



## G6W-3



## G7W-3



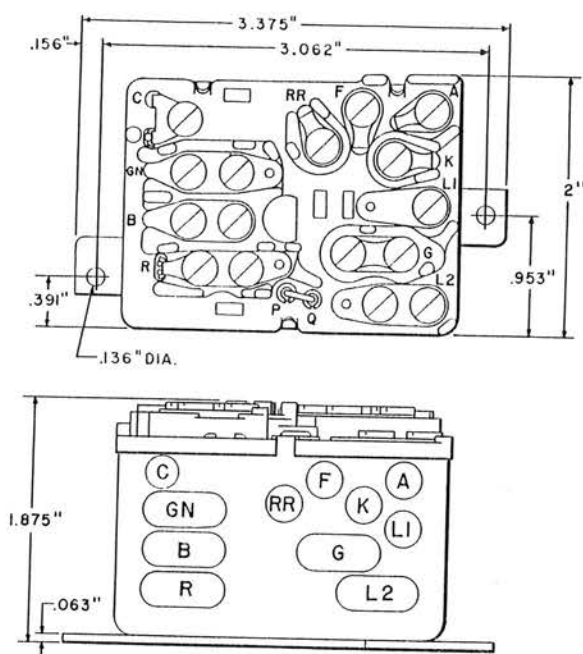
## G8W-3





## NETWORKS

425D

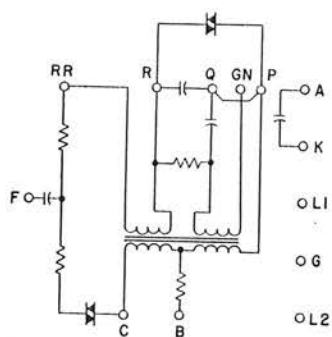


Consists of a transformer, capacitors, resistors, and varistors potted in a metal case. Terminal screws are shipped loose.

Used to provide the transmission circuit elements, including the sidetone balancing network, for an anti-side-tone telephone set. Also provides transmission equalization for varying loop lengths. Includes a ringing capacitor, dial radio interference suppression filter, and terminal plate.

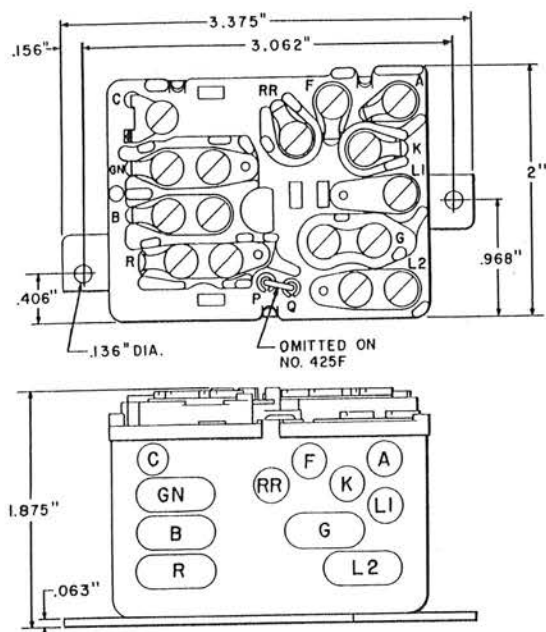
Forms a part of number 636CW, 638CW, and 639CW type telephone sets.

Comcode: 100 335 215



## NETWORKS

## 425E, F, and J



Consists of apparatus potted in a metal case. Terminal screws are shipped loose. Includes a ringing capacitor, dial radio interference suppression filter, and connecting block.

**425E:** Contains a transformer, capacitors, resistors, and varistors. Used to provide the transmission circuit elements, including the sidetone balancing network, for an anti-sidetone telephone set. Also provides transmission equalization for varying loop lengths. For use on 568HFW-3 Telephone Set.

Comcode: 100 335 223

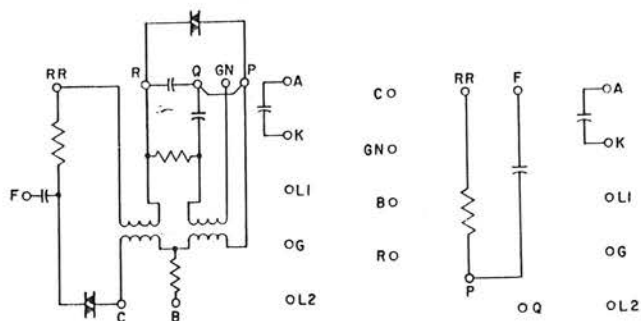
**425F:** Contains two capacitors and a resistor. For use on 691AW-3 Subscriber Set.

Comcode: 100 335 231

**425J:** Same as 425E Network except that equalizing varistors are replaced with resistor strap options for speech equalization. A strapping option for use with TOUCH-TONE dials is added to the network assembly for dial mode equalization.

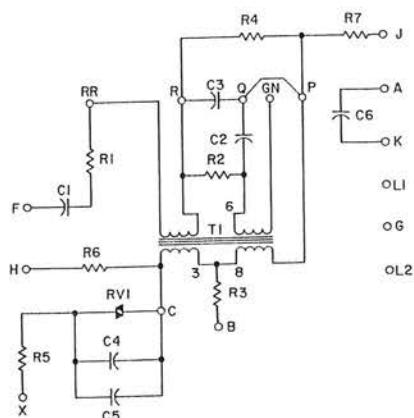
This network is intended to be a substitution for 425E Network in high radio frequency interference locations. It provides transmission circuit elements for an anti-sidetone telephone set with strapping options for loop equalization of speech and dial signals, a ringing capacitor, and terminal plate. Consists of a transformer, varistor, capacitors, and resistors potted in a metal housing.

Comcode: 101 205 276



425E

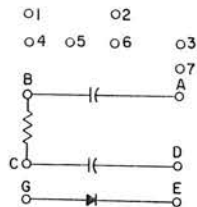
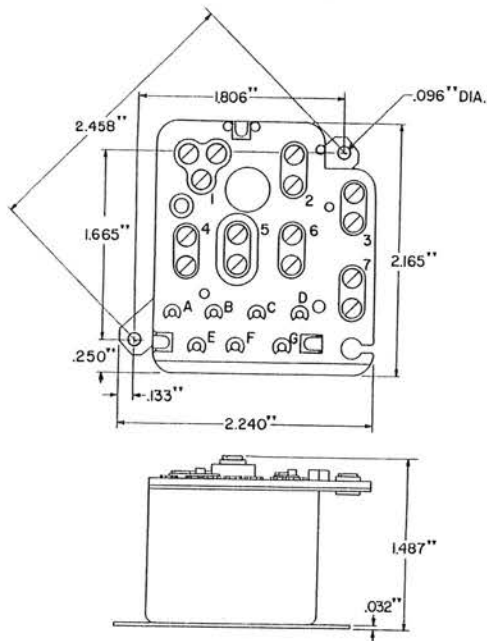
425F



425J

NETWORKS

498A



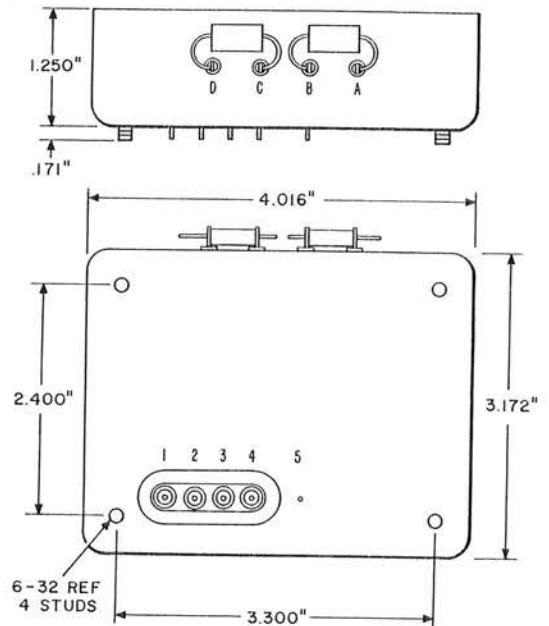
Consists of capacitors, a diode, and a resistor assembled on a terminal plate and potted in a metal case.

Provides circuit elements for both chime and ringer operation.

Forms a part of the F1A Ringer.

Comcode: 100 338 722

4148A



Consists of two tuned circuits, each consisting of a toroidal inductor on a permalloy powder core and one or more polystyrene capacitors potted in a hermetically sealed metal can. Provided with a terminal for grounding the can and four hermetically sealed terminals on the bottom of the can for use on printed wiring boards. May come equipped with trimming capacitors mounted on four hermetically sealed auxiliary terminals located on the side of the can.

With 0.18 volt applied between terminals 1 and 2 with terminal 1 and case grounded, the nominal series resonant frequency is 1200 Hz and the maximum effective resistance is 157 ohms.

With 0.18 volt applied between terminals 3 and 4 with terminal 4 and case grounded, the nominal parallel resonant frequency is 1200 Hz and the maximum conductance is 57.2 micromhos.

Closest recommended mounting centers are 4.093 by 3.500 inches.

Initially used in Data Sets 207A, B, and C.

Comcode: 101 588 135





## PADS

1A, 1C, and 1D

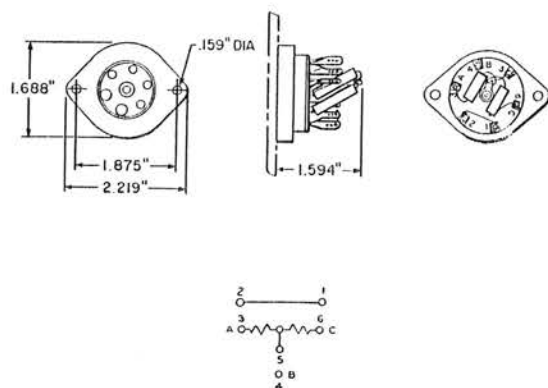


Fig. 1

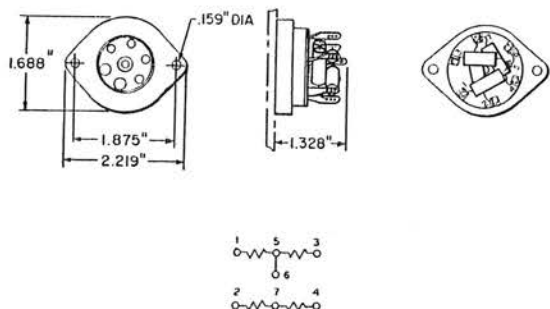


Fig. 2

Consist of an electron tube socket arranged for a number 89 type resistor, and several resistors assembled on the back and wired to the socket terminals.

Will mount on the back of a panel drilled to receive a plug from the front. The recommended mounting centers are 1-3/4 inches by 1-3/4 inches.

For use as 600 ohm constant resistance adjustable pads for gain control or other purposes.

1A: Equipped with two 590 ohm 145C Resistors. For use in unbalanced circuits. See Fig. 1.

Comcode: 100 356 948

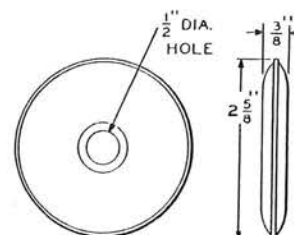
1C: Equipped with four 301 ohms 234N Resistors. For use in balanced circuits. See Fig. 2.

Comcode: 100 356 955

1D: Same as 1C Pad except strap between terminals 5 and 6 is omitted. For use in 22A Testboard.

Comcode: 101 323 080

101A



Disposable paper pad intended for use, when required, on the receivers and head sets to provide a comfortable fit. The side of the pad that contacts the ear is covered with six layers of absorbent tissue, five of which may be removed one at a time when the tissue becomes soiled.

A 104B Adapter is required in place of the receiver cap on each number 52 type head telephone set with which the pad is used.

A 567A Tool is required for attaching pads to the adapter but the tool and adapter are not furnished with the pads and must be ordered separately.

Pads may be obtained only in packages of 25 each.

Comcode: 100 367 432



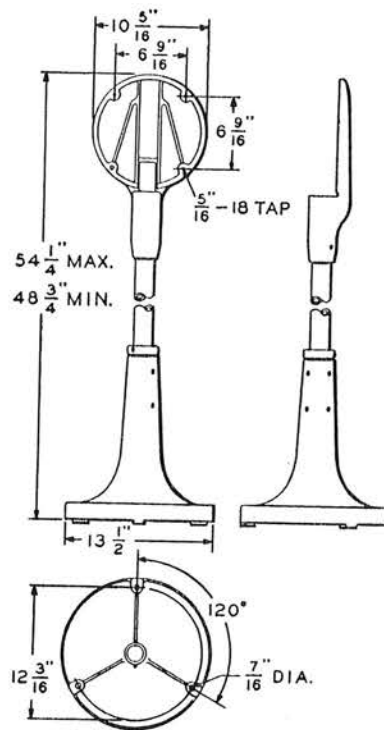






## PEDESTALS

5A



Intended to mount a number 320 type telephone set. The height is adjustable within the limits indicated on the illustration. Black finish. Bolts are furnished for mounting the telephone set to the pedestal.

Comcode: 100 367 655



## PLATES

## Face

17 Type

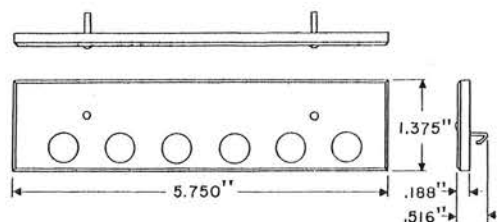


Fig. 1

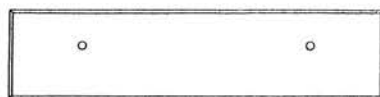


Fig. 2

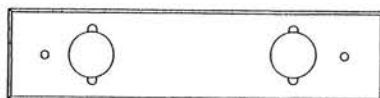


Fig. 3



Fig. 4

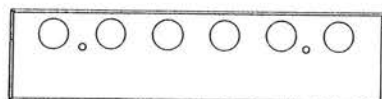


Fig. 5

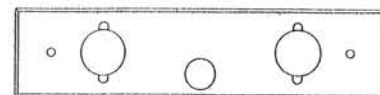


Fig. 6

Clear plastic faceplates arranged for snap-on mounting. Used in Federal Aviation Agency Centers. Dimensions shown on Fig. 1 are applicable to all number 17 type faceplates.

17A: Has six holes which are arranged to accommodate key buttons of number 547 type or number 552 type keys. Used with 395A Key Mounting. Provided with blank paper translucent designation card. The designation card may be obtained with stamping when specified in the order.

Comcode: 100 368 075

17B: Blank plate. Provided with blank gray designation card. Used with 395A Key Mounting. See Fig. 2.

Comcode: 100 368 083

17C: Rear of plate has a gray finish. Has two holes arranged to accommodate 53A Lamp Sockets. Used with 306A Lamp Socket Mounting. See Fig. 3.

Comcode: 100 368 091

17D: Has four holes which are arranged to accommodate key buttons of number 547 types or number 552 type keys. Used with 395A Key Mounting. See Fig. 4.

Comcode: 100 368 109

17E: Has six holes which are arranged to accommodate key buttons of number 547 type or number 552 type keys. Used with 395A Key Mounting. See Fig. 5.

Comcode: 100 368 117

17F: Has three holes, one of which is arranged to accommodate the key buttons of one number 547 type or number 552 type key and two to accommodate 53A Lamp Sockets. Used with 306B Lamp Socket Mounting. See Fig. 6.

Comcode: 100 368 125



PLATES

Face

20 Type

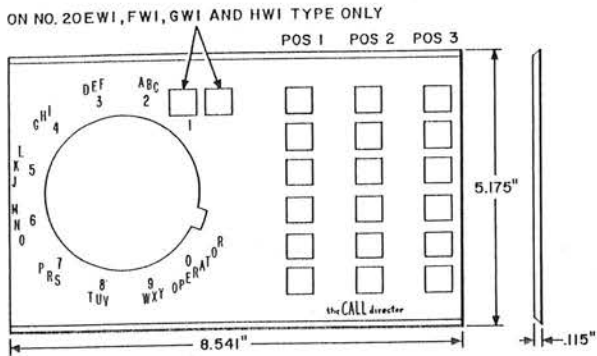


FIG. 1

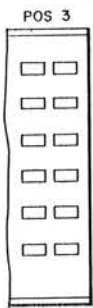


FIG. 2  
(OTHERWISE SAME AS FIG. 1)



FIG. 3  
(OTHERWISE SAME AS FIG. 1)

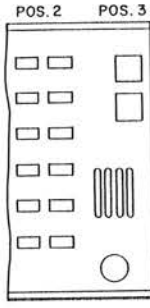


FIG. 4  
(OTHERWISE SAME AS FIG. 1)



FIG. 5  
(OTHERWISE SAME AS FIG. 1)

Clear nonglare plastic face plates each containing openings to accommodate a dial, key buttons and/or a transmitter, and switch knobs when specified, on associated telephone sets or consoles.

Provided with three face mats colored silver, gold and a coordinated color as indicated in the table, corresponding to the color of the associated apparatus, unless otherwise specified.

The mats contain openings corresponding to those on the face plates, openings for illumination from lamp sockets, and markings shown on illustration.

Arranged for insertion into snap-on bezels which are part of the associated apparatus.

Used with 618BW, 630DW, 632CW, 634DW, 636CW, and 638CW type telephone sets and 14AW1 and 14AW3 Telephone Consoles.

Code No.	Comcode	Fig. No.	Color	Arranged for Key		
				Pos. 1	Pos. 2	Pos. 3
20AW1-70	101 163 970	1	Charcoal	(a)	(a)	(a)
20AW1-71	101 163 988	1	Light green			
20AW1-72	101 163 996	1	Light yellow			
20AW1-73	101 164 002	1	Light gray			
20AW1-75	101 164 028	1	Muted beige			
20BW1-70	101 164 051	2	Charcoal	(a)	(a)	617A
20BW1-71	101 164 069	2	Light green			
20BW1-72	101 164 077	2	Light yellow			
20CW1-70	101 164 135	3	Charcoal	(a)	(a)	(b)
20CW1-71	101 164 143	3	Light green			
20CW1-72	101 164 150	3	Light yellow	(a)	617A	(b)
20DW1-70	101 164 218	4	Charcoal			
20DW1-71	101 164 226	4	Light green			
20DW1-72	101 166 031	4	Light yellow	(a)	(a)	617A
(c)20EW1-70	101 166 098	1	Charcoal			
(c)20EW1-71	100 166 106	1	Light green			
(c)20EW1-72	101 166 114	1	Light yellow			
(c)20FW1-70	101 166 171	2	Charcoal			
(c)20FW1-71	101 166 189	2	Light green			
(c)20FW1-72	101 166 197	2	Light yellow			

## PLATES

## Face

Code No.	Comcode	Fig. No.	Color	Arranged for Key		
				Pos. 1	Pos. 2	Pos. 3
(c)20GW1-70	101 166 254	3	Charcoal	(a)	(a)	(b)
(c)20GW1-71	101 166 262	3	Light green			
(c)20GW1-72	101 166 270	3	Light yellow			
(c)20GW1-73	101 166 288	3	Light gray			
(c)20HW1-70	101 166 338	5	Charcoal	(a)	(a)	(d)
(c)20HW1-71	101 166 346	5	Light green			
(c)20HW1-72	101 166 353	5	Light yellow			
(c)20HW1-73	101 166 361	5	Light gray			
(c)20HW1-75	101 166 387	5	Muted beige	(a)	(a)	(d)
20JW1-70	101 166 411	5	Charcoal			
20JW1-71	101 166 429	5	Light green			
20JW1-72	101 166 437	5	Light yellow			
20JW1-73	101 166 445	5	Light gray	(a)	(a)	(a)
20JW1-75	101 166 460	5	Muted beige			
(e)20NW1-70	101 338 440	1	Charcoal			
(e)20NW1-71	101 338 457	1	Light green			
(e)20NW1-72	101 338 465	1	Light yellow	(a)	(a)	(a)
(e)20NW1-73	101 338 473	1	Light gray			
(e)20NW1-75	101 338 499	1	Muted beige			

(a) Number 598 type or number 599 type key or 105B Apparatus Blank.

(b) 661A or 667A Transmitter.

(c) Arranged for flash and release key buttons.

(d) 59A Lamp Socket.

(e) Same as 20AW1 except mats do not have Call Director trademark.

## PLATES

## Face

## 21 Type

ON NO. 21GW1, HW1, JW1, KW1 AND MW1 TYPE ONLY

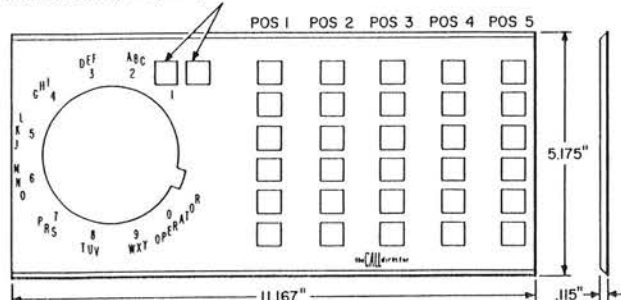
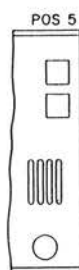
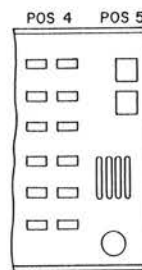
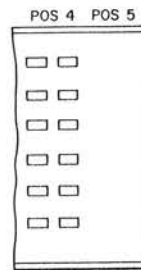


FIG. 1

FIG. 2  
(OTHERWISE  
SAME AS FIG. 1)FIG. 3  
(OTHERWISE  
SAME AS FIG. 1)FIG. 4  
(OTHERWISE  
SAME AS FIG. 1)FIG. 5  
(OTHERWISE  
SAME AS FIG. 1)FIG. 6  
(OTHERWISE  
SAME AS FIG. 1)

Clear plastic face plates, each containing openings to accommodate a dial, key buttons, and/or a transmitter, on associated telephone sets. Provided with three face mats colored silver, gold, and a color coordinated with the telephone set color.

Mats contain openings corresponding to those on the

face plates, openings for illumination from lamp sockets, and the marking shown on the illustration.

Arranged for insertion into snap-on bezels which are part of the telephone sets.

Used with 608CW, 631DW, 635CW, 637DW, and 639DW type telephone sets and 15AW1 and 15AW3 Telephone Consoles.

Code No.	Comcode	Fig. No.	Color	Arranged for Key				
				Pos. 1	Pos. 2	Pos. 3	Pos. 4	Pos. 5
21AW1-70	101 168 813	1	Charcoal	(a)	(a)	(a)	(a)	(a)
21AW1-71	101 168 821	1	Light green					
21AW1-72	101 168 839	1	Light yellow					
21AW1-73	101 168 847	1	Light gray					
21AW1-75	100 168 862	1	Muted beige	(a)	(a)	(a)	(a)	617A
21BW1-70	101 168 896	2	Charcoal					
21BW1-71	101 168 904	2	Light green					
21BW1-72	101 168 912	2	Light yellow					
21BW1-73	101 168 920	2	Light gray	(a)	(a)	(a)	(a)	(b)
21BW1-75	101 168 946	2	Muted beige					
21CW1-70	101 168 979	3	Charcoal					
21CW1-71	101 168 987	3	Light green					
21CW1-72	101 168 995	3	Light yellow	(a)	(a)	(a)	(a)	(b)
21CW1-73	101 169 001	3	Light gray					
21CW1-75	101 169 027	3	Muted beige					
21DW1-70	101 169 050	4	Charcoal	(a)	(a)	(a)	617A	(b)
21DW1-71	101 169 068	4	Light green					
21DW1-72	101 169 076	4	Light yellow					
21DW1-73	101 169 084	4	Light gray					
21DW1-75	101 169 100	4	Muted beige	(a)	(a)	(a)	617A	(c)
21EW1-70	101 169 134	5	Charcoal					
21EW1-71	101 169 142	5	Light green					
21EW1-72	101 169 159	5	Light yellow					
21EW1-73	101 169 167	5	Light gray	(a)	(a)	(a)	617A	(c)
21EW1-75	101 169 183	5	Muted beige					

## PLATES

## Face

Code No.	Comcode	Fig. No.	Color	Pos. 1	Arranged for Key				
					Pos. 2	Pos. 3	Pos. 4	Pos. 5	
21FW1-70	101 169 217	6	Charcoal	(a)	(a)	(a)	(a)	(c)	
21FW1-71	101 169 225	6	Light green						
21FW1-72	101 169 233	6	Light yellow						
21FW1-73	101 169 241	6	Light gray						
21FW1-75	101 169 266	6	Muted beige	(a)	(a)	(a)	(a)	(a)	
(d)21GW1-70	101 169 290	1	Charcoal						
(d)21GW1-71	101 169 308	1	Light green						
(d)21GW1-72	101 169 316	1	Light yellow						
(d)21GW1-73	101 169 324	1	Light gray	(a)	(a)	(a)	(a)	(a)	
(d)21GW1-75	101 169 340	1	Muted beige						
(d)21HW1-70	101 169 373	2	Charcoal						
(d)21HW1-71	101 169 381	2	Light green						
(d)21HW1-72	101 169 399	2	Light yellow	(a)	(a)	(a)	(a)	617A	
(d)21HW1-73	101 169 407	2	Light gray						
(d)21HW1-75	101 169 423	2	Muted beige						
(d)21JW1-70	101 169 456	5	Charcoal						
(d)21JW1-71	101 169 464	5	Light green	(a)	(a)	(a)	617A	(c)	
(d)21JW1-72	101 169 472	5	Light yellow						
(d)21JW1-73	101 169 480	5	Light gray						
(d)21JW1-75	101 169 506	5	Muted beige						
(e)21NW1-70	101 338 523	1	Charcoal	(a)	(a)	(a)	(a)	(a)	
(e)21NW1-71	101 338 531	1	Light green						
(e)21NW1-72	101 338 549	1	Light yellow						
(e)21NW1-73	101 338 556	1	Light gray						
(e)21NW1-75	101 338 572	1	Muted beige						

(a) Number 598 type or number 599 type key or 105B Apparatus Blank.

(b) 661A or 667A Transmitter.

(c) 59A Lamp Socket.

(d) Arranged for flash and release key buttons.

(e) Same as 21AW1 except mats do not have Call Director trademark.





## PLATES

## Face

29AW1, BW1, and 30BW1, and 31AW1, BW1

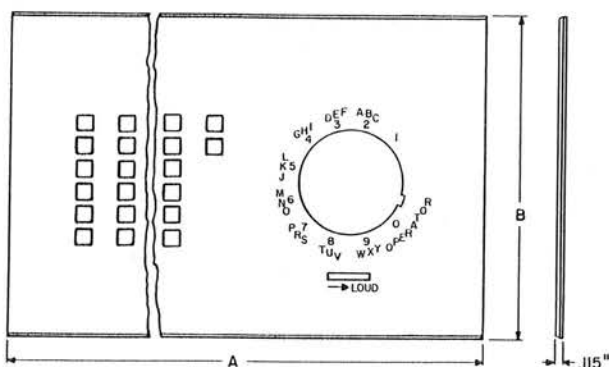


Fig. 1

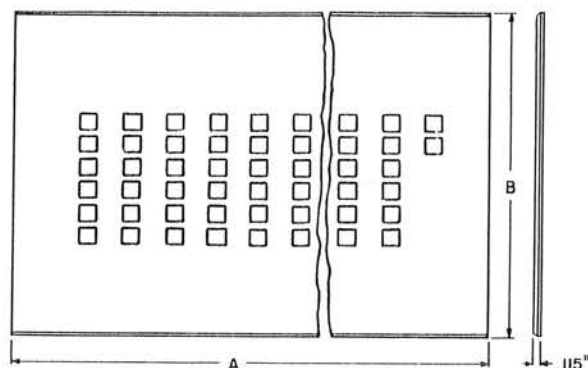


Fig. 2

Clear plastic face plates each containing openings to accommodate key buttons or key buttons and a dial on associated key mountings and subscriber sets. Top surfaces are finished to provide a nonglare effect.

Provided with two face mats (gold and silver) for use under the face plate. The mats have openings corresponding to the face plate openings and markings shown on illustrations.

Arranged for insertion into snap-on bezels which are part of the associated apparatus.

Used in custom installations of the 1A1 and 6A Key Telephone Systems equipped with 236A Key Telephone Units for line concentrator service where large fields of recess mounted keys are required.

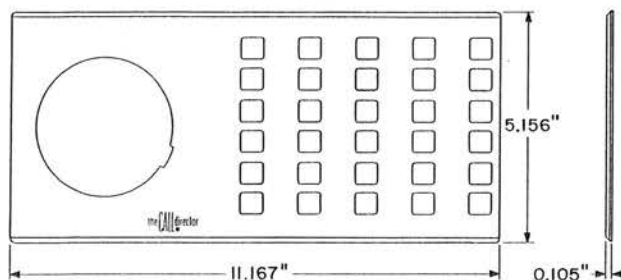
Code No.	Comcode	Fig. No.	Dimensions (Inches)		No. of Keys Arranged for		Forms a Part of	
			A	B	598 or 599 Type Keys(a)	621A or 622A Key	Key Mtg. No.	Subscriber Set No.
29AW1	101 154 268	2	10.478	9.786	5	1	423AW2	—
29BW1	101 154 276	1	12.034	9.786	2	1	421AW3	690AW2
30BW1	101 154 292	1	17.043	9.786	5	1	423AW3	690AW3
31AW1	101 154 300	2	23.608	9.786	15	1	425AW2	—
31BW1	101 154 318	1	23.608	9.786	10	1	424AW3	690AW3

(a) or 105B Apparatus Blanks.

## PLATES

## Face

## 42AW1



mats contain openings corresponding to those on the face plate.

Arranged for insertion into snap-on bezels which are part of the associated apparatus.

Used in the 14AW2 and 14AW4 Telephone Consoles.

Code No.	Comcode	Color
120NW1-70	101 338 689	Charcoal
120NW1-71	101 338 697	Light green
120NW1-72	101 338 705	Light yellow
120NW1-73	101 338 713	Light gray
120NW1-75	101 338 739	Muted beige

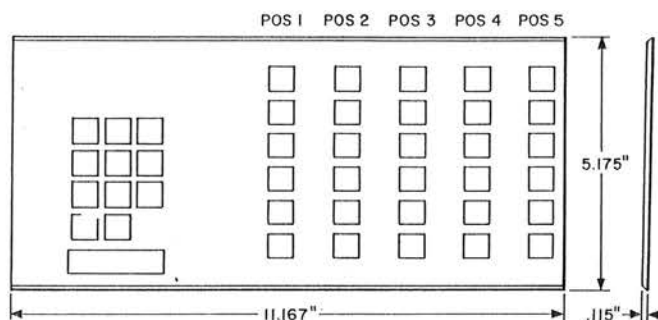
Clear plastic face plates, each containing openings to accommodate a dial and key buttons on associated telephone set.

Provided with three face mats colored gold, silver, and one coordinated with the telephone set color. The following table indicates the colors available.

Used in the 617BW-15 type telephone set.

Code No.	Comcode	Color
42AW1-70	101 314 003	Charcoal
42AW1-71	101 314 011	Light green
42AW1-72	101 314 029	Light yellow
42AW1-73	101 314 037	Light gray
42AW1-75	101 314 052	Muted beige

## 121NW1



Clear plastic, nonglare type face plates each containing openings to accommodate a dial, key buttons and/or a transmitter, on associated telephone sets.

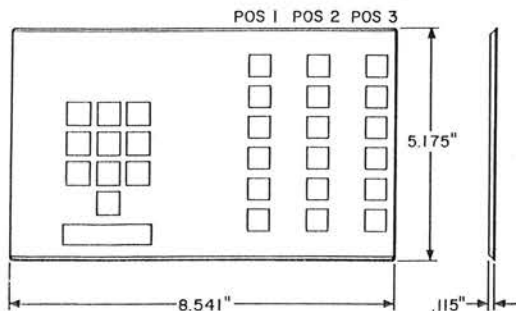
Provided with three paper mats colored silver, gold, and one having the color corresponding to the dash number of the face plate. For use under the face plates to provide a choice of color contrast with the telephone sets. The mats contain openings corresponding to those on the face plate.

Arranged for insertion into snap-on bezels which are part of the associated apparatus.

Used in the 15AW2 and 15AW4 Telephone Consoles.

Code No.	Comcode	Color
121NW1-70	101 338 846	Charcoal
121NW1-71	101 338 853	Light green
121NW1-72	101 338 861	Light yellow
121NW1-73	101 338 879	Light gray
121NW1-75	101 338 895	Muted beige

## 120NW1

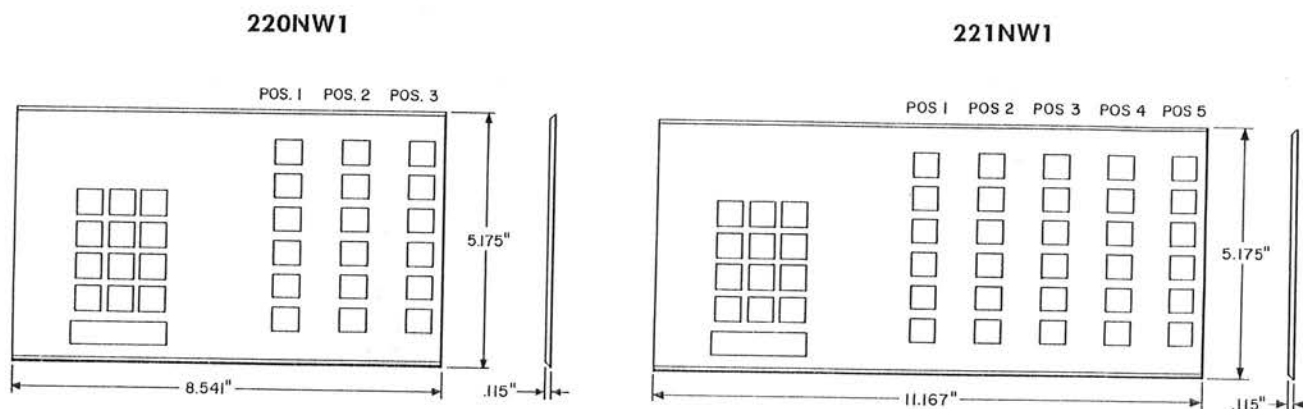


Clear plastic, nonglare type face plates each containing openings to accommodate a dial, key buttons and/or a transmitter, on associated telephone sets.

Provided with three face mats colored silver, gold, and one having the color corresponding to the dash number of the face plate. For use under the face plates to provide a choice of color contrasts with the telephone sets. The

## PLATES

## Face



Clear plastic, nonglare type face plates, each containing openings to accommodate a dial and key buttons on associated telephone sets.

Provided with three face mats colored silver, gold, and one having the color corresponding to the dash number of the face plate. The mats are for use under the face plate to provide a choice of color contrast with the telephone sets.

Arranged for insertion into snap-on bezels which are part of the associated apparatus.

Used in the 14AW5 and 14AW6 Telephone Consoles.

Clear plastic, nonglare type face plates, each containing openings to accommodate a dial and key buttons on associated telephone sets.

Provided with three face mats colored silver, gold, and one having the color corresponding to the dash number of the face plate. The mats are for use under the face plate to provide a choice of color contrast with the telephone sets.

Arranged for insertion into snap-on bezels which are part of the associated apparatus.

Used in the 15AW5 and 15AW6 Telephone Consoles.

Code No.	Comcode	Color
220NW1-70	101 337 806	Charcoal
220NW1-71	101 337 814	Light green
220NW1-72	101 337 822	Light yellow
220NW1-73	101 337 830	Light gray
220NW1-75	101 337 855	Muted beige
220NW1-76	101 337 863	Muted blue

Code No.	Comcode	Color
221NW1-70	101 338 366	Charcoal
221NW1-71	101 338 374	Light green
221NW1-72	101 338 382	Light yellow
221NW1-73	101 338 390	Light gray
221NW1-75	101 338 416	Muted beige
221NW1-76	101 338 424	Muted blue



## PLATES

### Mounting

150A, 150B, and 150C

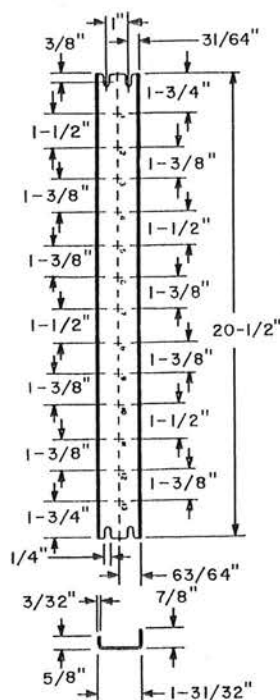


Fig. 1

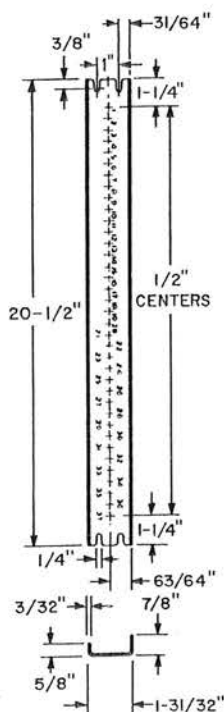


Fig. 2

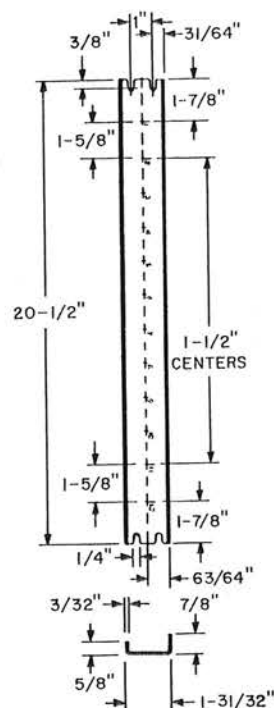


Fig. 3

Metal plates used to mount relays, resistors, and other apparatus. Orders must contain information for all positions, stating what apparatus or drilling is required for each and which, if any, shall be undrilled.

Screws must be ordered separately and of a length to suit local conditions.

150A and C: Drilled to mount U-type relays as indicated in table on centers as shown and having not more than two winding terminals at either the top or bottom.

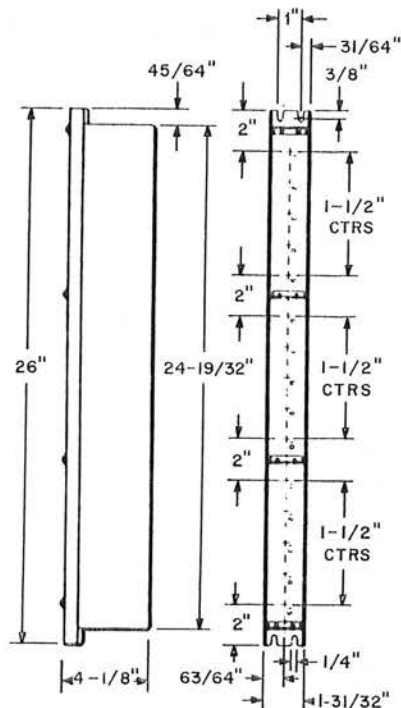
150B: Intended to mount 37 resistors or capacitors.

Code No.	Comcode	Fig. No.	Relays per Plate
150A	100 370 154	1	13
150B	100 370 162	2	—
150C	100 370 170	3	12

## PLATES

## Mounting

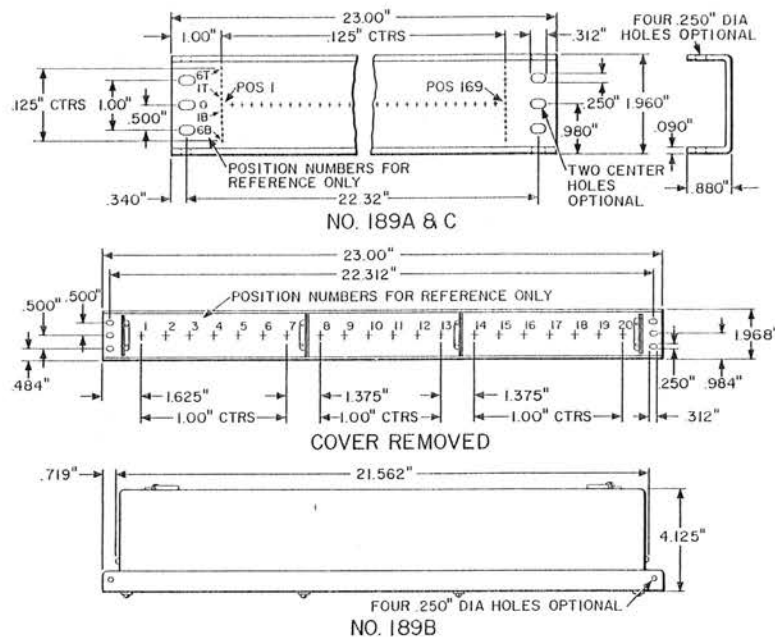
153E



Metal plate drilled to mount 15 U- or Y-type relays on centers as shown with the U-type relay having no more than three winding terminals at either the top or bottom and the Y-type having no more than two winding terminals at either the top or bottom.

Comcode: 100 370 998

189A, B, and C



Channel type metal plates.

189A: Has 2197 positions on 0.125 inch centers. Arranged in 13 rows of 169 positions each. The plate has a zinc finish. Number 50 type mounting plate covers may be used on this mounting plate.

Used initially in mounting apparatus in the number 5 crossbar dial telephone systems.

Orders must contain information regarding which positions shall be drilled and stating what apparatus or drilling is required for these positions. Positions not mentioned in the order will not be drilled.

Comcode: 100 371 707

189B: Drilled to mount 20 "E" or "R" type relays. The plate has a zinc finish.

Used initially on miscellaneous relay rack units in step-by-step dial telephone systems.

Comcode: 100 371 988

189C: Same as 189A except has a gray enameled finish. Used initially in all systems.

Comcode: 101 153 161

## PLATES

## Mounting

## 218A, 219A, and 220A

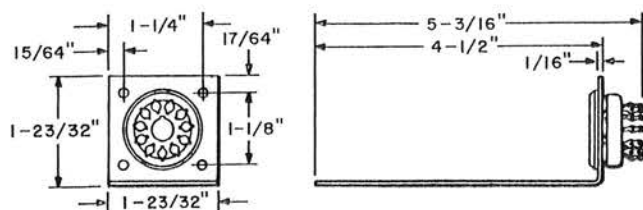


Fig. 1

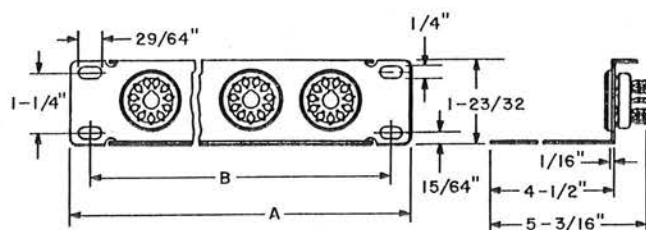


Fig. 2

The 218A, 219A, and 220A Mounting Plates are equipped with one, ten, and twelve KS-13930L4 Sockets, respectively.

For use as mountings for voice frequency amplifiers on other mounting plates or panels in telephone repeaters for toll telephone systems.

Code No.	Comcode	Fig. No.	Dimensions (Inches)	
			A	B
218A	100 372 218	1	—	—
219A	100 372 226	2	18-31/32	18-5/16
220A	100 372 234	2	23	22-5/16

## 600, 606, 609, and 627 Type



Flat metal plate used to mount relays, resistors, and other apparatus.

Orders must contain information for all positions, stating what apparatus or drilling is required for each and which, if any, shall be undrilled.

Code No.	Comcode	Relays Resistors		Length (Inches)	Width (Inches)
		per Plate	per Plate		
600A	100 373 661	10	—	19	1-23/32
600F	100 373 737	10	10	19	1-23/32
600H	100 373 745	2	20	19	1-23/32
600N	100 373 752	8	—	19	1-23/32
606R	100 374 628	12	12	21-5/8	1-23/32
606S	100 374 636	16	—	21-5/8	1-23/32
606T	100 374 651	15	—	21-5/8	1-23/32
609B	100 375 047	12	—	23	1-23/32
609D	100 375 096	3	36	23	1-23/32
609K	100 375 104	17	—	23	1-23/32
627A	100 376 193	10	—	26	1-23/32
627B	100 376 201	8	24	26	1-23/32
627C	100 376 219	19	—	26	1-23/32
627D	100 376 235	10	14	26	1-23/32
627E	100 376 243	12	20	26	1-23/32

## PLATES

## Mounting

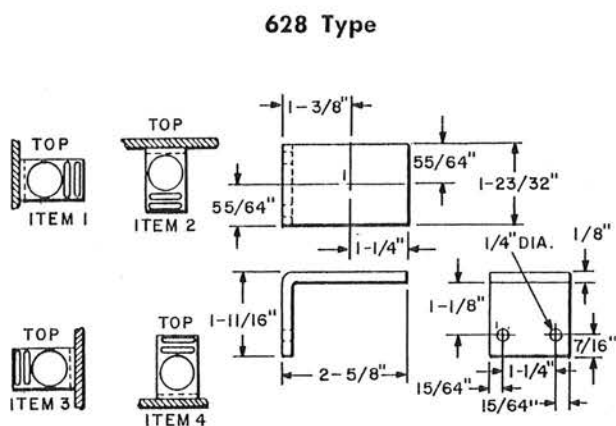


Fig. 1

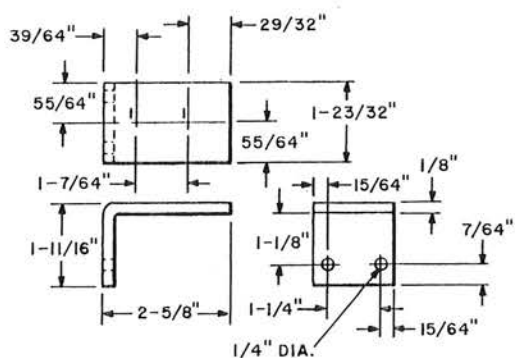


Fig. 2

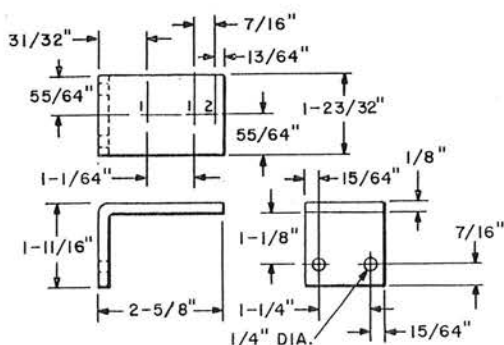


Fig. 3

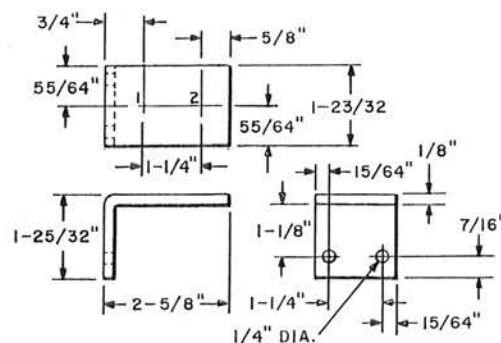


Fig. 4

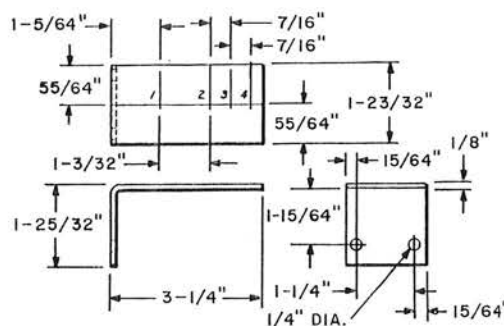


Fig. 5

Angle type metal plates used to mount relays, resistors, and other apparatus.

Orders must contain information for all positions, stating what apparatus or drilling is required for each and which, if any, shall be undrilled. Item number must also be specified.

Code No.	Comcode	Fig. No.	Relays Per Plate	Resistors Per Plate
628A (a)	100 376 292	1	1	—
628B (a)	100 376 334	2	1	1
628C (a)	100 376 342	3	1	2
628D (a)	100 376 359	4	2	—
628 (a) (b)	100 376 367	5	—	3

(a) See illustration for dimensions.

(b) Provides for one capacitor per plate.



## PLATES

## Mounting

## 677Y and AA

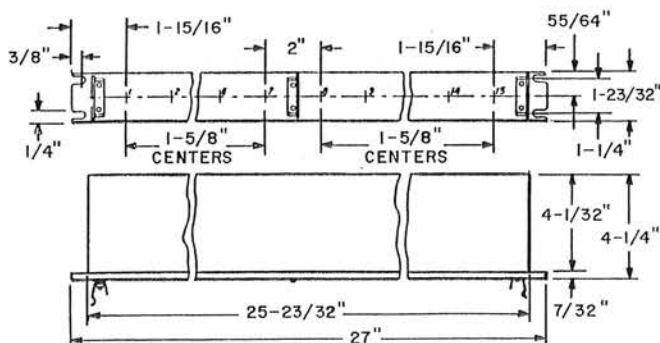


Fig. 1

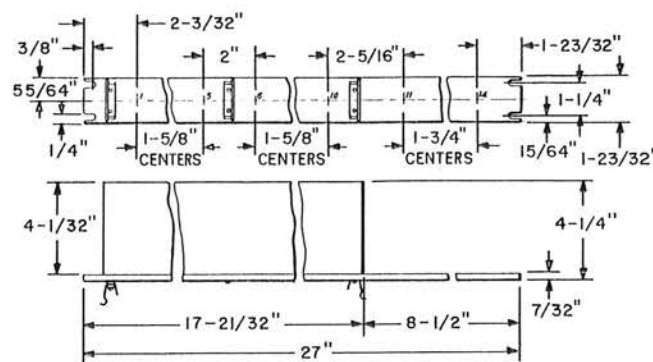


Fig. 2

Angle type metal plates used to mount relays, resistors, and other apparatus.

Orders must contain information for all positions, stating what apparatus or drilling is required for each and which, if any, shall be undrilled.

Code No.	Comcode	Fig. No.	Relays Per Plate	Resistors Per Plate	Length (Inches)	Width (Inches)
677Y(a)(b)	100 377 084	1	15	—	27	4-1/32
677AA(a)(b)	100 377 092	2	14	—	27	4-1/4

(a) See illustration for dimensions.

(b) Provided with battery and ground clips.

## 737, 745, and 750 Type



Channel type mounting plates consisting of punched frames equipped with dust proof covers. Recommended when individual relay covers are not furnished or where relays are to be mounted in exposed location.

The following are galvanized finished metal mounting plates 1-23/32 inches wide with aluminum finished dust proof covers 4-1/8 inches in depth.

Code No.	Comcode	Relays Per Plate	Mounting Centers (Inches)	Length (Inches)	Will Mount Interchangeably with Mtg Plates Code No.
ARRANGED FOR A, E, or F RELAYS					
737A(a)	100 377 399	20	3/4	19	600
737C(b)	100 377 415	20	3/4	19	600
745A	100 377 597	24	3/4	21-5/8	606, 607, 756
750A	100 377 688	24	3/4	23	602

## PLATES

## Mounting

Code No.	Comcode	Relays Per Plate	Mounting Centers (Inches)	Length (Inches)	Will Mount Interchangeably with Mtg Plates Code No.
ARRANGED FOR A, E, F, or R RELAYS					
737B	100 377 407	10	1-1/2	19	600
737F	100 377 431	16	1	19	—
745B	100 377 605	18	1	21-5/8	606, 607, 756
750C	100 377 704	20	1	23	602
750F(c)	100 377 720	20	1	23	602
ARRANGED FOR U AND Y RELAYS HAVING HORIZONTAL MOUNTING CENTERS NOT EXCEEDING THOSE INDICATED					
737J(a)(b)(e)(f)	100 377 456	10	1-1/2	19	—
737K(a)(b)(e)(f)	100 377 464	5	1-3/4	19	—
	—	5	1-1/4	19	—
737L(a)(b)(e)(f)	100 377 472	6	1-3/4	19	—
	—	3	1-1/2	19	—
737M(a)(b)(d)(e)(f)	100 377 480	3	1-1/2	19	—
	—	6	1-3/4	19	—
737N(c)(d)(g)(h)	100 377 498	8	1-7/8	19	—
737P(a)(b)(e)(f)	100 377 506	5	1-1/4	19	—
	—	5	1-3/4	19	—
737R(a)(b)(e)(f)	100 377 514	11	1-1/4	19	—
750J(c)(d)(g)(h)	100 377 761	10	1-7/8	23	—
ARRANGED FOR R RELAYS					
750K	100 377 779	10	1-1/8	23	—

- (a) Provided with battery and ground clips.  
 (b) Same as 737A except battery and ground clips not provided.  
 (c) Same as 750C except cover pulls not provided.  
 (d) Does not have cover.  
 (e) U-type not having more than two winding terminals, top or bottom.

- (f) Y-type not having more than one winding terminal, top or bottom.  
 (g) U-type not more than three winding terminals, top or bottom.  
 (h) Y-type not more than two winding terminals, top or bottom.

## PLATES

## Mounting

823A and B

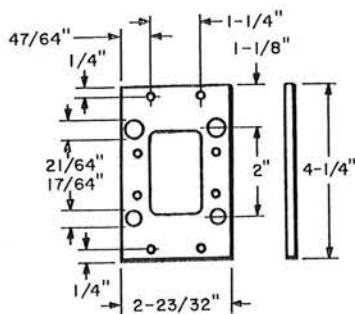


Fig. 1

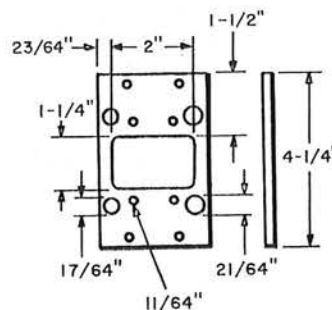


Fig. 2

Metal plate for use in conjunction with number 18 type connecting blocks and number 209 and number 215 type relays.

To be mounted so that the relay armature will be in a vertical plane.

Code No.	Comcode	Fig. No.
823A	100 378 272	1
823B	100 378 280	2

## PLATES

## Mounting

ED-69143-70, Groups 1 and 2



Steel bars  $3/16$ -inch thick by  $5/8$ -inch wide. Each (Group 1 and Group 2) consists of an upper and lower bar differing only in the location of the mounting slots in ends of each bar. Each bar has six slanted mounting surfaces  $1-1/16$  inch by  $5/8$ -inch in groups of two (three sets)  $2-5/8$  inch between each group. Six .190-32 NF-1 tapped holes are provided for mounting angle-bracket type key telephone units on 23-inch relay racks in 4, 11, 18, 26, and 45-plate apparatus cabinets. Four mounting screws  $.216-24 \times 3/8$  inch are furnished. Overall length is 19 inches for Group 1 and 23 inches for Group 2.

## Code No.

## Comcode

ED-69143-70, Group 1  
ED-69143-70, Group 2

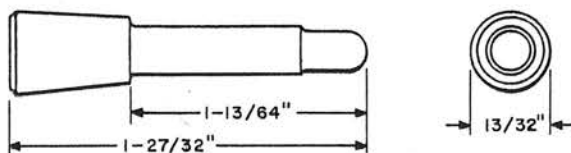
600 003 297  
600 017 222





## PLUGS

165 Type

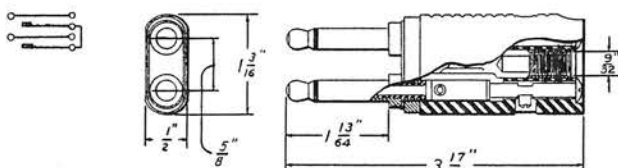


Dummy plug made of insulating material. May be used with jacks that take number 47, 116, or similar type plugs.

Designed for switchboard cutover work and for use at test boards.

Code No.	Comcode	Color	Replaces
165C	100 394 923	Black	—
165E	101 437 317	White	—
165F	101 437 309	Red	165D

241 Type



Twin plugs with the fingers mounted in a brass frame which serves as a common connection for the two plug sleeves.

241A: Black plug having fingers with brass tips.

Comcode: 100 395 235

241B: Red plug having fingers with brass tips.

Comcode: 100 395 243

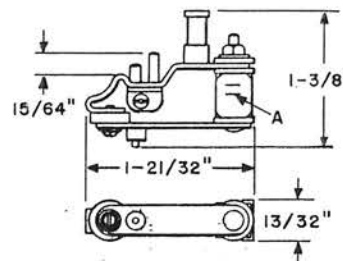
241D: Black plug having fingers with silver tips.

Comcode: 100 395 268

Arranged for tip and sleeve cord connections with P1H, R2ET, P2T, S3F, P2AA, W2S, W2BP, P3J, P3N, and P4AD Cords.

For use with number 99, 215, 297, and similar type jacks.

252A and B



Intended for use with the W4AG and W4P Cords as test plugs in connection with the protectors of main distributing frames of manual and dial offices.

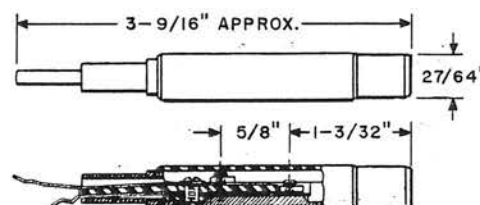
252A: Has T stamped on both sides located at A, as indicated on the illustration.

Comcode: 100 395 359

252B: Has R stamped on both sides located at A, as indicated on the illustration.

Comcode: 100 395 367

257A and B



257A: Arranged for jacks with tip springs on the right.

Comcode: 100 395 375

257B: Arranged for jacks with tip springs on the left.

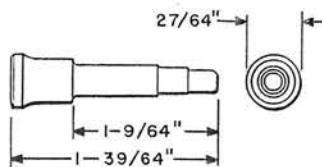
Comcode: 100 395 383

A white line on the shell indicates side of plug to be uppermost when making test.

Used as test plugs to function with number 141 Jack.

## PLUGS

## 258 Type

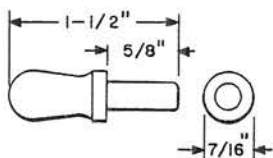


Dummy plugs made of colored insulating material.

Code No.	Comcode	Color	Replaces
258C	100 395 391	Black	—
258E	100 395 417	White	—
258F	101 437 911	Bright red	258D
258G	101 634 574	Bright green	—

Intended to use with jacks that take number 310 or similar type plugs.

## 261A

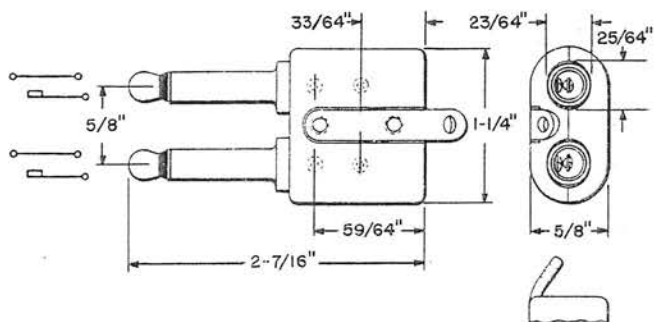


A dummy plug of insulating material. May be used with jacks that take number 310 or similar type plugs.

Used with jack in multiple practice drills.

Comcode: 100 395 425

## 289B

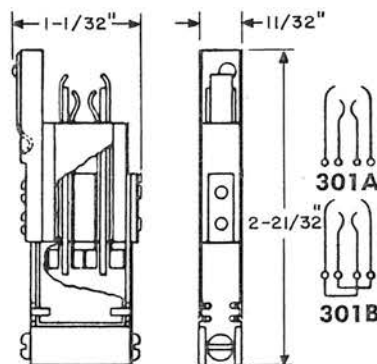


Flexible, twin double conductor plugs with black shells. Constructed so that there is sufficient play between the plug bodies to take up any variation between the jack centers and arranged so that each plug body may be turned 90 degrees in the shell to present a new surface for wear. Equipped with a bracket for cord stay.

Used with 223A Jack plus a 168A Adapter.

Comcode: 100 395 664

## 301A and B



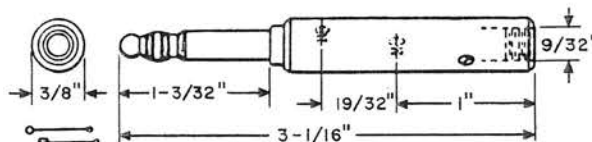
301A: A test plug with contacts insulated from each other. Provided with sleeve and spring for holding the plug in position in jack. Can be used on right or left side of jack. Engages with number 444 or 452 type jack. Used with P2BK and W4AL Cords.

Comcode: 100 395 714

301B: Same as 301A except that alternate terminals are strapped. Used primarily in reversing the tip and ring side of a line at number 444 type jack on main distributing frames.

Comcode: 100 395 722

## 309



A three-conductor plug with a red shell. Equipped with a long shell which covers the cord end of the plug body to provide additional insulation.

Used with number 92, 229, 246, 248, 249, 292, 323, and 445 Jacks.

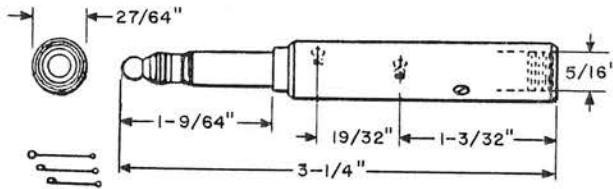
Comcode: 100 998 830 E/W Red Shell

101 021 475 E/W Black Shell

101 021 483 E/W Gray Shell

## PLUGS

310

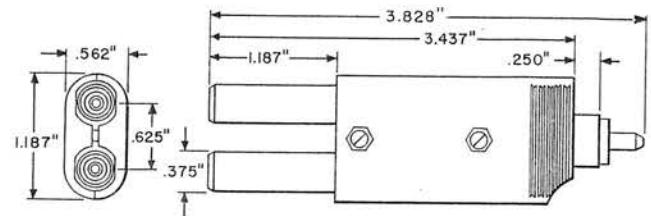


A three-conductor plug equipped with a long shell which covers the cord end of the plug body to provide additional insulation.

Used with number 49, 50, 70, 138, 141, 238, 245, 267, 275, 280, 284, 285, 289, 290, 291, 293, 295, 308, 324, 326, 347, 359, 360, 362, 363, 365, 372, 382, 387, and 446 Jacks.

Comcode: 101 352 078 E/W Red Shell  
 100 960 780 E/W Black Shell  
 100 960 798 E/W Gray Shell  
 100 960 806 E/W Green Shell

345C



Flexible, twin coaxial type plugs.

Consists of a pair of coaxial plug fingers assembled in a metal shell with means for connecting cable. The two outer contacts of the fingers are electrically connected together and to the shell. The two inner contacts of the fingers are insulated from each other and from the shell.

Arranged for mating with two adjacent number 464 or similar type jacks mounted on 5/8 inch centers.

A KS-15712L12 shield connector is shipped loose.

Used with 761A Cable in L Carrier and L Multiplex Systems.

Comcode: 100 396 357

319C and D

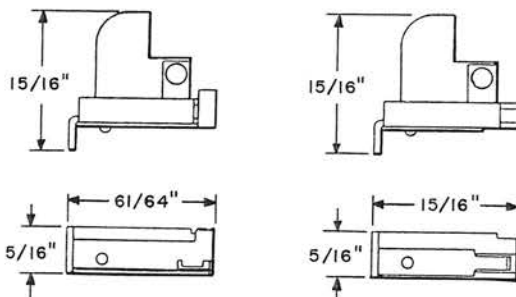


Fig. 1

Fig. 2

319C: Dummy plug of brown insulating material with a metal guide which is provided with a spring for locking the plug in place. See Fig. 1.

Comcode: 100 395 938

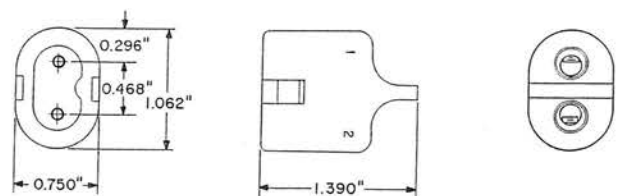
319D: Dummy plug is nonlocking and the plug body is black. See Fig. 2.

Comcode: 100 395 946

Both plugs are designed so that the jack springs may be tested with a test pick while the plug is in place. Intended for use in opening lines to be temporarily disconnected from service.

Used with number 444 type jack.

346A



Polarized plug consisting of a black, molded body equipped with two pin type contacts which mate with the No. 471A jack. Each contact is designed to accommodate a No. 130 or similar cord tip, and set screws are provided for holding the cord tie and has two notches to provide partial locking with the springs of the jack.

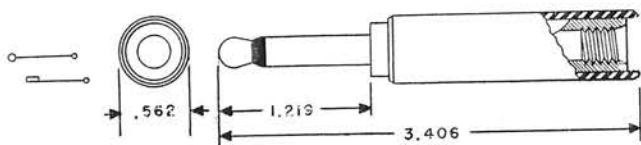
Intended for use in the 1014AW Hand Set.

Comcode: 100 396 365



## PLUGS

347C and D

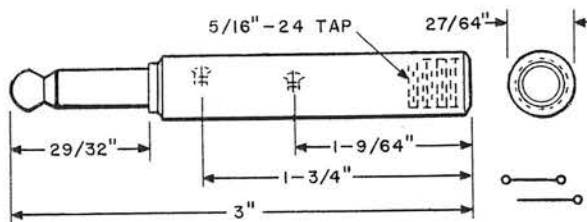


Each is a two-conductor plug with a 0.250 inch nominal diameter of finger. Equipped with a long shell which covers the cord end of the plug body to provide additional insulation.

Used initially with number 99 and similar type jacks.

Code No.	Comcode	Color of Shell	Replaces
347C	101 335 123	Red	347A
347D	101 335 131	Black	347B

359A



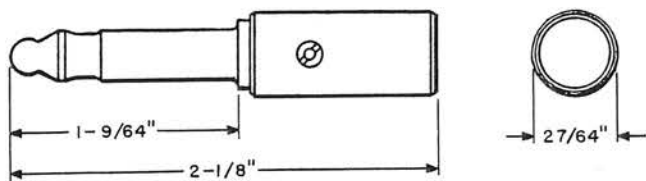
Two-conductor plug with a red shell. Arranged so that the sleeve of the plug makes contact with the sleeve of the associated jack, and the tip of the plug makes contact with the ring spring of the jack. No contact is made with the tip spring of the jack.

Intended for use in telegraph service board.

Used with the 141 or similar type jacks.

Comcode: 100 396 589

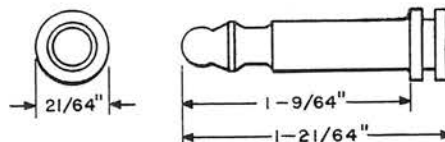
349A



Solid metal finger plug. For use with number 49 and similar type jacks.

Comcode: 100 396 407 E/W Red Shell  
100 396 415 E/W Green Shell

375A

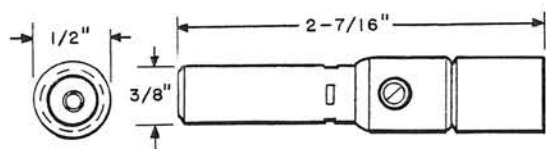


Solid metal finger plug. Short circuits tip, ring, and sleeve of number 49 jacks. Body is grooved to accommodate a number 274 Tool.

Intended for use in outgoing trunk test boards to make busy spare or unused trunks.

Comcode: 100 396 787

358A

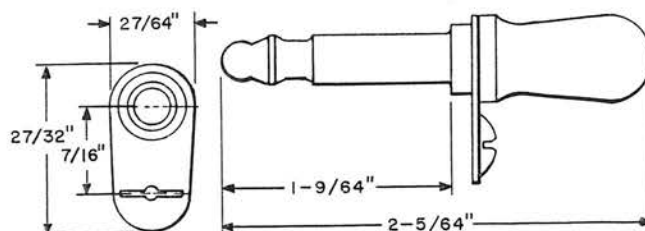


Coaxial type plug arranged for solderless shield connection to the connecting cable by means of a sleeve which is furnished as a loose part. It will provide a good impedance match for 75-ohm coaxial cable up to 100 megacycles. Tested on 2000 volts ac.

Arranged for 477A, 478A, or similar type jacks.

Comcode: 100 396 563

376A



## PLUGS

Solid metal finger plug with black insulated handle. Short circuits tip, ring, and sleeve of number 49 Jacks. Equipped with small shield which obscures light from lamp.

Used at the panel sender make busy frame for holding sender busy and shielding a lamp while correcting trouble in panel office.

Comcode: 100 396 795

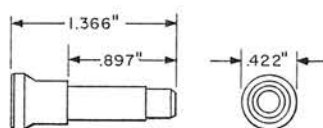
Code No.	Comcode	Color
(a) 396A-3	100 397 033	Black
(b) 396A-50	101 634 582	Ivory
(c) 396A-51	100 397 041	Green
(c) 396A-58	100 397 058	White
(c) 396A-60	100 397 066	Light beige
(c) 396A-61	100 397 074	Light gray

(a) Forms a part of 52H and J Head Telephone Sets.

(b) Forms a part of G3CR-50 Hand Set.

(c) Form part of the G3L type hand set.

## 394A, B, and C



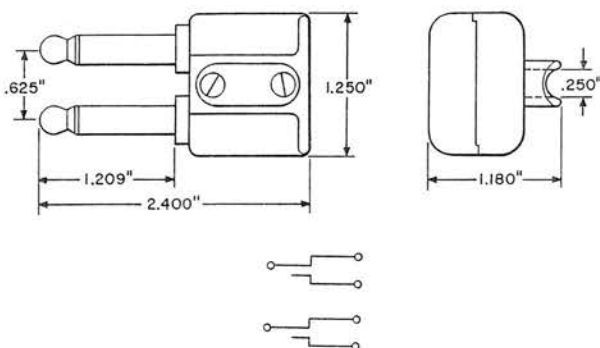
NO. 394A

ALSO GENERAL DESIGN  
AND DIMENSION OF  
NO. 394 B AND C)

Dummy plugs of insulating material. Used with jacks that take number 310 or similar type lugs. Will open the ring spring only of the jack.

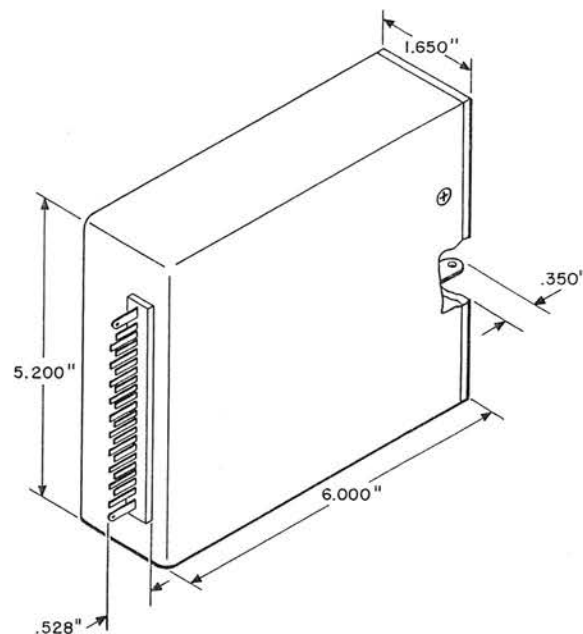
Code No.	Comcode	Color
394A	100 397 017	Black
394B	101 623 023	White
394C	101 623 015	Bright red

## 396A



A twin, two conductor plug having a shell of insulating material. Arranged for an H4CU or L4BL Cord. Used with number 364 and similar type jacks.

## 437A



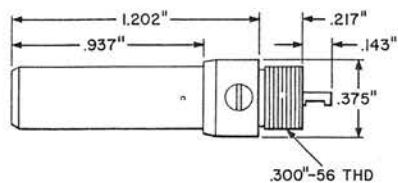
Consists of wire strapping mounted on a printed wiring board and assembled into a metal can. Terminated in a 503A plug.

Used in place of a number 1 type terminating set when four-wire to four-wire facility is required on either the J98615AK or J98615AN shelf. Arranged to be removed from a mounting panel by a 602D tool.

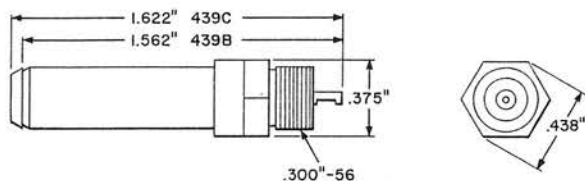
Comcode: 100 397 512

## PLUGS

439A, B, and C



NO. 439A



NO. 439B AND C

**439A:** A single coaxial plug consisting of a metal cylindrical body having a metal contact finger assembled concentrically with the body by means of an insulator for connection to a jack at one end. The body, with the contact finger, is assembled to a gold plated metal shell. The shell is chromium plated for identification purposes while the body and contact are gold plated.

Insulated metal parts shall be capable of withstanding a 2000 volt ac breakdown test.

Used initially in the Mastergroup Multiplex, L4 Coaxial System.

Comcode: 100 846 153

**439B:** Same as 439A Plug except plug body and shell are machined in one piece and it is provided with a hexagonal shoulder to permit a wrench to hold plug when tightening nut.

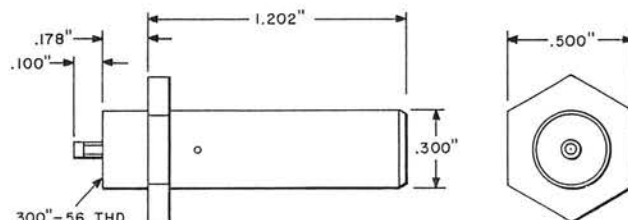
Comcode: 101 383 685

**439C:** Same as 439B Plug except a teflon bushing is assembled in the front end of the body. Used for plug-in equipment. The teflon bushing acts to align associated jack contacts.

Comcode: 101 383 693

**439B and C:** Used initially in the 3A Wire Line Entrance Link.

441B



A single coaxial type, 75 ohm, hermetically sealed plug consisting of a metal cylindrical body having a metal contact finger assembled concentrically with the body by means of an insulator for connection to the associated jack at one end. The body, with the contact finger, is assembled to a gold plated metal shell which is positioned so that a portion of the body is exposed. The exposed portion is threaded for assembly to associated apparatus.

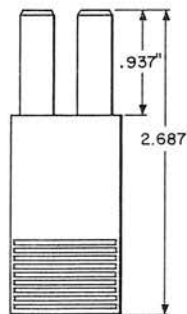
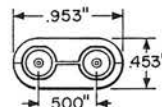
Mates with a 558A Jack.

Insulated metal parts are capable of withstanding a 1500 volt ac breakdown test.

Used initially in the L4 Coaxial System.

Comcode: 101 164 887

443A



Consists of a pair of coaxial plug fingers mounted in a metal shell. The flexible twin coaxial plugs are connected to the inner and outer gold plated contacts, respectively, of the other finger and are not arranged for cord connection.

Mates with two 560A Jacks.

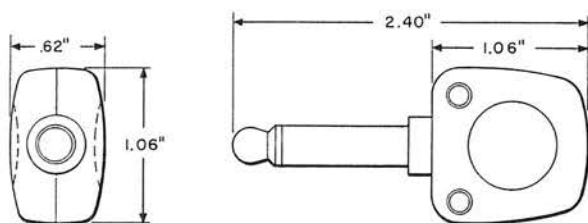
Used initially in the L4 Mastergroup Multiplex.

Comcode: 101 108 843



## PLUGS

## 444A



Consists of a two-conductor plug and has a shell of insulating material. Arranged for an M2ER type cord and used with 517A and similar type jacks.

Available in the colors listed below.

Code No.	Comcode	Color
444A-51	101 413 532	Green
444A-58	101 164 911	White
444A-60	101 164 929	Light beige
444A-61	101 164 937	Light gray

Used with an AE type telephone base in the 3A Communications System.

The following terminals are strapped together using 26 gauge "BU" type wire:

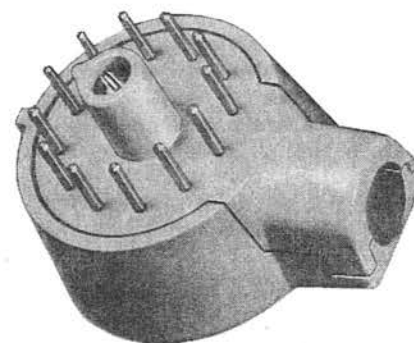
1 and 2	13 and 14
5 and 6	17 and 18
9 and 10	21 and 22

Overall dimensions are 3.036 inches long by 1.775 inches high by 0.616 inch wide.

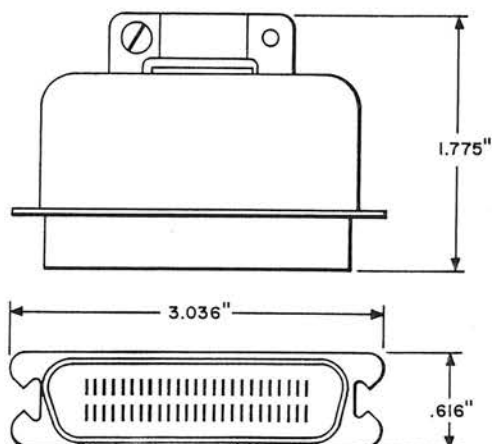
Used with Data Mounting 6A1.

Comcode: 101 215 663

## 504AW Type



## 450A



Consists of a rectangular block of insulating material equipped with 50 gold plated contacts assembled in a front and back metal shell which is equipped with a cable clamp located on the rear of the shell. Polarized to ensure proper mating with locking connectors. Intended for a maximum of 200 operations in a temperature range of +60° to 120°F. (Nonoperating temperature range of -40° to +160°F.) Maximum operating voltages are 125 volts ac and 56 volts dc.

Consists of a block of insulating material containing 12 terminals and a removable cap. Each terminal is equipped with a spring connector which permits friction contact with number 134 or equivalent cord tips. Has a slotted guide for guiding the cord tips into the spring connectors.

Arranged to be inserted into 541A or 547B Jacks in one position only.

Overall dimensions are 2.038 inches long by 1.638 inches wide by 1.310 inches deep.

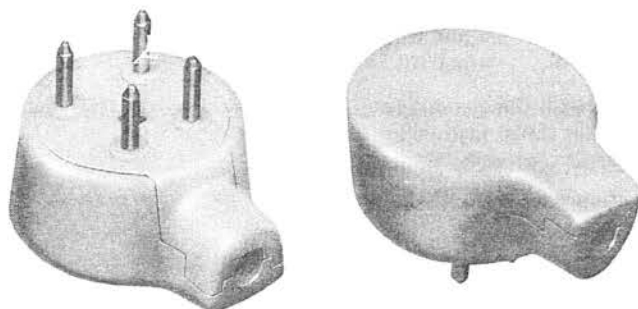
Used with portable telephone sets having two to twelve conductor mounting cords.

Code No.	Comcode	Color
504AW-3	101 336 576	Black
504AW-51	101 336 592	Green
504AW-56	101 336 618	Yellow
504AW-58	101 336 626	White
504AW-60	101 336 642	Light beige
504AW-61	101 336 659	Light gray



## PLUGS

505AW



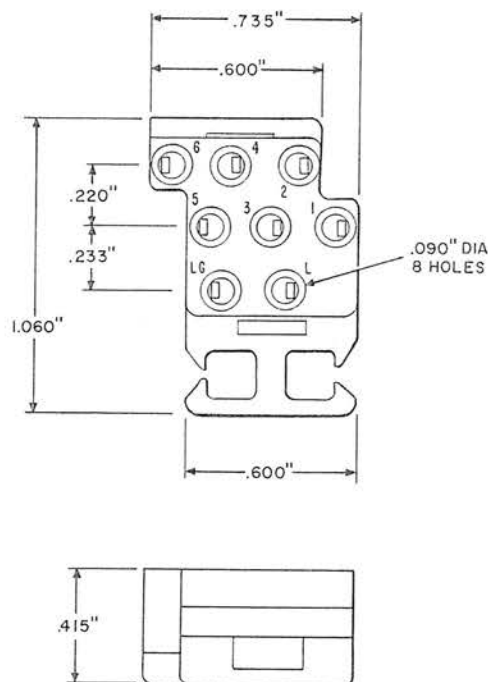
A four contact plug having a plastic shell. Equipped with a cord fastener which holds the cord in place while the spade tips are being connected and also anchors the mounting cord in the assembled plug. Used with portable telephone sets having 2, 3, and 4 conductor mounting cords.

Overall dimensions are approximately 2.038 inches long by 1.638 inches wide by 1.314 inches high including the terminal pins.

Designed to be inserted into associated 493A, 548A, 549A or 550A type jacks in one position only.

Code No.	Comcode	Color
505AW-3	101 211 472	Black
505AW-51	101 211 480	Green
505AW-53	101 333 607	Red
505AW-56	101 211 498	Yellow
505AW-58	101 211 506	White
505AW-60	101 211 399	Light beige
505AW-61	101 211 407	Light gray

508 Type



Each is a molded terminal plug of insulating material arranged for assembly of up to eight blade type cord tipped conductors required for connections to individual buttons of key telephone sets.

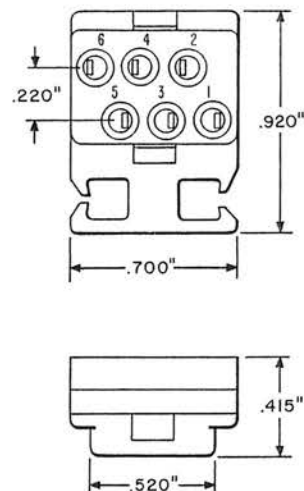
Used to facilitate easy interchangeability of connections to each of the button positions in key telephone sets.

Available in the following colors.

Code No.	Comcode	Color
508A	101 377 984	Aqua blue
508B	101 413 201	Orange
508C	101 413 219	Moss green
508D	101 391 308	Light brown
508E	101 413 235	Light gray
508F	101 413 243	White
508G	101 413 250	Red
508H	101 413 268	Black
508J	101 413 276	Yellow
508K	101 413 284	Violet
508L	101 413 292	Rose pink

## PLUGS

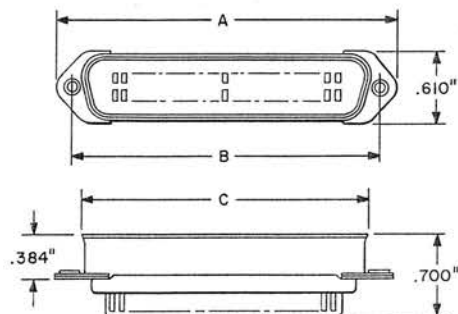
509A



Molded chaining plug of light beige insulating material arranged for assembly of up to six blade type cord tipped conductors required for connections in multi-key telephone sets.

Comcode: 101 389 278

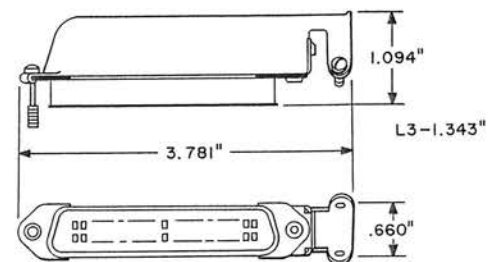
KS-16671L1 and L2



Consists of a molded block of insulating material equipped with gold plated contacts assembled in a front and back metal shell. They are polarized to insure proper mating with their receptacles. They will withstand a maximum of 200 operations operating in a temperature range of  $+60^{\circ}\text{F}$  to  $+120^{\circ}\text{F}$  (nonoperating temperature range of  $-40^{\circ}\text{F}$  to  $+160^{\circ}\text{F}$ ). Maximum operating voltages are 125 ac and 56 dc.

List No.	Comcode	No. of Contacts	Dimensions (Inches)			Mating Connector
			A	B	C	
1	400 215 760	50	3.28	2.947	2.065	KS-16672L1
2	995 192 770	14	1.75	1.417	—	KS-16672L2

KS-16689L1 through L6

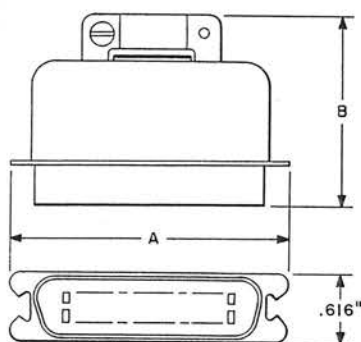


Consists of KS-16671 Plugs equipped with metal hoods. The plugs are polarized to insure proper mating with connectors. L1 and L3 are provided with a hood which accommodates a 0.410 inch and a 0.530 inch diameter cable, respectively, and a locking screw for securing the plug to the connector. L2 is provided with a hood which accommodates a 0.410 inch diameter cable but has no locking screw. L4, L5, and L6 are the same as L1 except that certain terminals are omitted and L6 is provided with an insulating liner. The plugs are designed for a maximum of 200 operations. The operating temperature range is from  $+60^{\circ}\text{F}$  to  $+120^{\circ}\text{F}$  (nonoperating temperature range of  $-40^{\circ}\text{F}$  to  $+160^{\circ}\text{F}$ ). Maximum operating voltages are 125 ac and 56 dc.

List No.	Comcode	No. of Contacts	KS-16671 Plug	Mating Connector
1	400 215 778	50	L3	KS-16690L1
2	400 215 786	50	L7	KS-16690L2, L3
3	400 215 794	50	L3	KS-16690L1
4	997 418 272	34	L4	KS-16690L1
5	400 215 802	40	L5	KS-16690L1
6	997 418 496	20	L6	KS 16690L4

## PLUGS

## KS-16785L1 through L9



Consists of a rectangular block of insulating material equipped with gold plated contacts assembled in a front and back metal shell which is equipped with a cable clamp. The plugs are polarized to insure proper mating with locking connectors. The cable clamp is located on the rear of the shell for all plugs except the L9, where it is located on the side. These plugs are intended for a maximum of 200 operations in a temperature range of  $+60^{\circ}\text{ F}$  to  $+120^{\circ}\text{ F}$  (nonoperating temperature range of  $-40^{\circ}\text{ F}$  to  $+160^{\circ}\text{ F}$ ). Maximum operating voltages are 125 ac and 56 dc.

List No.	Comcode	No. of Contacts	Dimensions (Inches)		Mating Connector	Insulating Liner
			A	B		
1	400 215 810	14	1.50	1.618	KS-16786L1	Yes
2	997 393 681	24	1.925	1.618	KS-16786L2	Yes
3	400 215 828	36	2.436	1.680	KS-16786L3	Yes
4	400 215 836	50	3.036	1.775	KS-16786L4	Yes
5	997 186 186	14	1.50	1.618	KS-16786L1	No
6	400 215 844	24	1.925	1.618	KS-16786L2	No
7	400 215 851	36	2.436	1.680	KS-16786L3	No
8	400 215 869	50	3.036	1.755	KS-16786L4	No
9	400 215 877	14	1.50	1.214	KS-16786L1	Yes

## POWER PLANTS

## J86731 101G

Power plants which provide packaged small capacity ringing and low voltage ac and unregulated dc power supplies without battery reserve.

Most of the various options of these power plants are mounted in small light olive gray cabinets with removable covers and with an ac input cord and plug to be inserted into a building outlet.

These plants are used for supplying the required power for 1A1 and 6A Key Telephone Systems or small PBX.

J86731B-2 List 1, A, B, C, and NP1(101G): A wall mounted power plant 9 inches high by 8-1/4 inches wide by 5-1/4 inches deep. It has the following features and electrical characteristics.

Comcode: 600 016 679

## INPUT

Volts	Hertz	Watts	Supply
111-123 $\pm$ 5%	60	250	AC 60 Hz

## OUTPUT

Voltage Range	Resistance Load Range	Ampere
10 to 11	No load to 0.59 ohms (425-51A Lamps)	17

J86731C-2 List 1, B, D, F and NP1 (101G): May be mounted on a relay rack or in an apparatus cabinet. Dimensions are 7 inches high by 9-1/8 inches wide and it extends 4-1/2 inches in front of mounting. It has the following features and electrical characteristics:

Comcode: 600 018 089

## INPUT

Volts	Hertz	Watts	Supply
111-123	60	25	20 Hz ringing

## OUTPUT

Voltage Range	Resistance Load Range	Ampere
75 to 105	1 to 8 high impedance ringers or 1 to 6 high impedance ringers with condensers	0.05 With 0.5 PF load lagging

J86731C-2 List 2, A, E, C, G, and NP 2 (101G): A wall mounted power plant 9 inches high by 8-1/4 inches wide by 5-1/4 inches deep. It has the same features and electrical characteristics as the J86731-2 List 1 (101G).

Comcode: 600 018 071

J86731D-3 List 1, A, B and NP (101G): May be mounted on a relay rack or in an apparatus cabinet. Dimensions are 7 inches high by 9 inches wide and it extends 4-1/2 inches in front of mounting. It has the same features and electrical characteristics as the J86731A-4 List 6 (101G).

Comcode: 600 016 687



POWER PLANTS

J86736A-2 List 1, A, B, C, D and NP1, 101H

Power plant which provides filtered 20 volts dc and 10 and 18 volt, 60 Hz ac supplies without battery reserve. The unregulated filtered dc is supplied by a semiconductor rectifier and the ac supplies are obtained from a secondary winding on the rectifier transformer for buzzers and lamps.

The power plant has a light olive gray finish and is 7-15/32 inches high by 6-29/32 inches wide by 3-3/8 inches deep. An ac input cord and plug is provided to be inserted into a building outlet.

If backboard is required, order KS-5796L7 Backboard and four P-110911 Screws.

Used for supplying power for small key telephone systems.

Comcode: 600 017 230

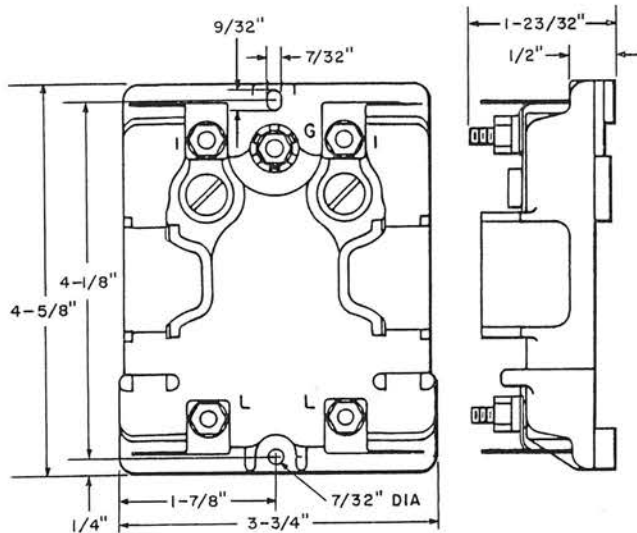
INPUT			
Volts	Cycles	Watts	Supply
105 to 125	60	11	DC TALK AC 60 Hz

OUTPUT (a)		
Voltage Range	Resistance Load Range (Ohms)	Nominal Ampere
14 to 26	140 to 1000	0.150
8.75 to 11	110 to 220	0.09
16 to 21	200 to 410	0.09

(a) The dc load may be supplied simultaneously with either the 10 or 18 volt, 60 cycle load. A total of approximately 0.09 amp may be taken from the 10 or 18 volt winding and, in addition, it is satisfactory to operate, intermittently, a 7AW Buzzer. The dc voltage at no load and 125 volt ac input will be approximately 27 volts.

## PROTECTORS

106C

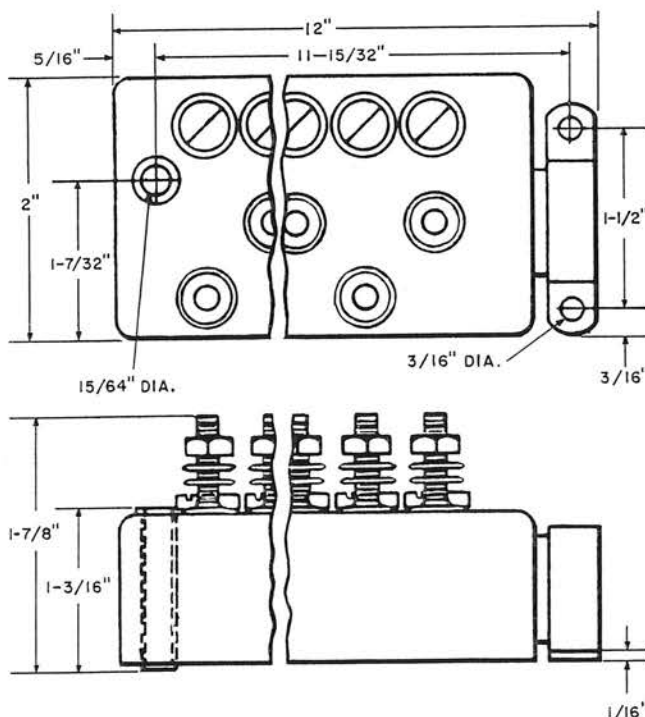


Base of insulating material equipped with two 2A1A Protector Units. Spring assembly, with sufficient current carrying capacity, is included in protector well and makes fuseless operation possible.

Provides high potential and abnormal current protection for one pair of wires.

Comcode: 100 399 799

112A

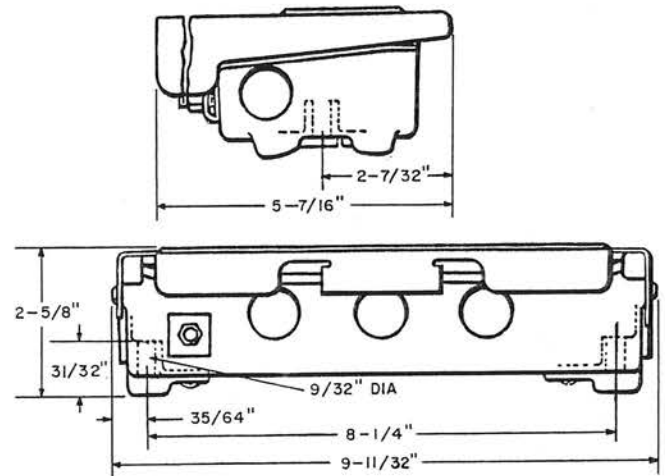


Molded terminal block containing twenty 2A1A Protector Units and binding posts. Screws and lockwashers are provided for mounting.

Used in pole mounted cabinets to provide protection for repeater equipment.

Comcode: 100 399 823

116C



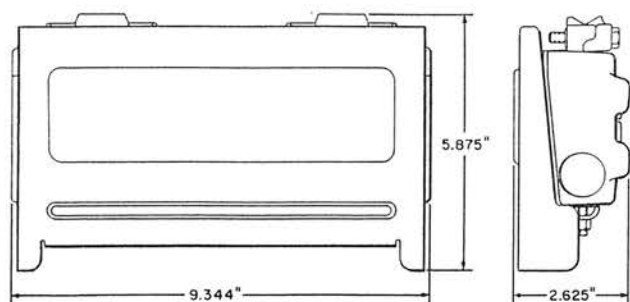
Consists of a cast metal housing having a hinged metal cover and containing twelve 2A1A Protector Units, six pairs of terminals, and two terminals for ringing ground connections. Also equipped with a clamp for connecting a ground wire to the housing to provide protector ground. Can be mounted on poles, crossarms, or walls by means of screws which are not furnished.

Used for protection for six pair multiple drop wire.

Comcode: 100 399 898

## PROTECTORS

116D3B-6



Consists of a cast metal housing having a hinged metal cover and containing a 57A2B-6 Connecting Block. Also equipped with a clamp for connecting a ground wire to the housing to provide protector ground.

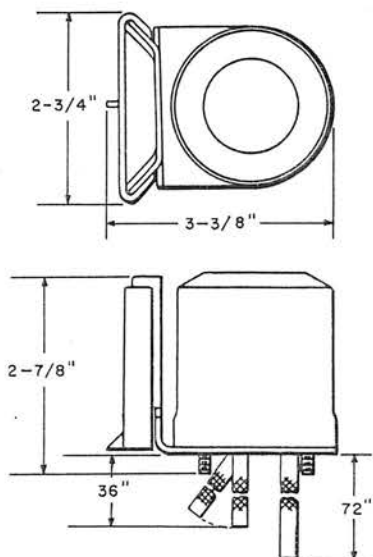
Can be mounted directly on the support wire of multiple line wire by suspension from strand. Knockouts are provided in the housing for pole or crossarm mounting.

Used to provide protection for six pair multiple line wire along an exposed run at points where drop wire is connected to multiple line wire if the station is highly exposed to lightning and at the junction of multiple line wire with open wire lines.

Replaces 116D2B-6 Protector.

Comcode 101 233 161

118A and B



Each consists of three carbon electrodes, having .020 inch gaps, mounted on a porcelain base and enclosed in a metal case.

One electrode is to be connected to ground and the other two to the line. Protector mounts on a pole or crossarm.

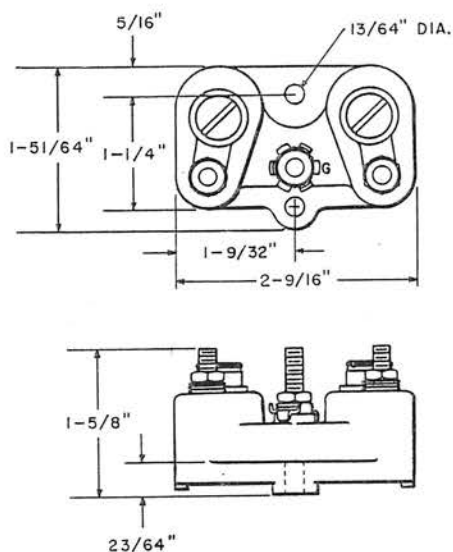
118A: Has number 8 AWG insulated wire leads and is used with open wire lines on joint use poles or as lightning protection for one pair of conductors having high dielectric insulation such as U Bridle Wire.

Comcode: 100 399 930

118B: Has number 14 AWG insulated wire leads and is used with drop wire and C Rural Wire.

Comcode: 100 399 948

123A1A and 1B



123A1A: Consists of a base of insulating material equipped with two 2B1A Protector Units and provides protection up to 500 volts.

Comcode: 100 399 997

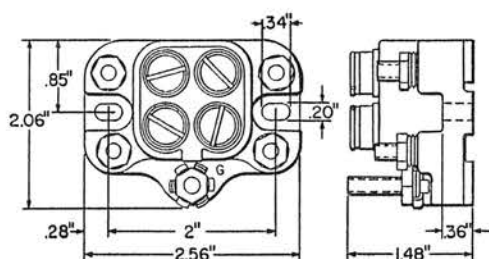
123A1B: Same as 123A1A except equipped with two 2B1B Protector Units and provides protection up to 800 volts.

Comcode: 100 400 001

Used to provide high potential (and abnormal current) protection for one pair of wires.

## PROTECTORS

## 128A1A-2



Consists of a base of molding material equipped with four 2B1A Protector Units.

Used to provide 500 volt (and abnormal current) protection for two pairs of wires.

Comcode: 100 400 076

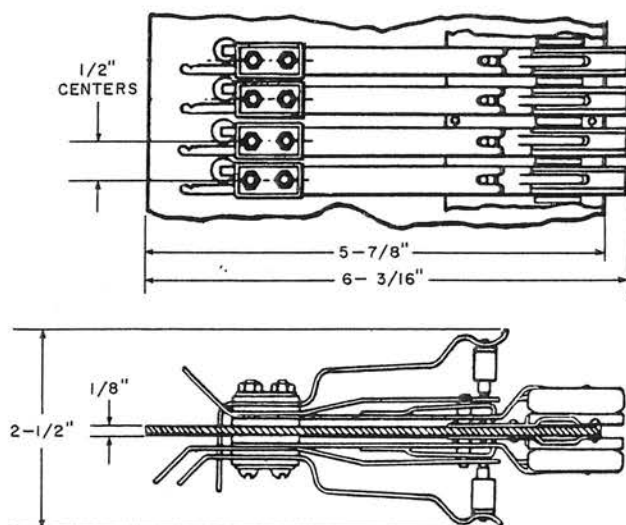
## 1293CW

Consists of a 106C Protector assembled in a 93CW Protector Mounting. Overall dimensions are approximately 7-1/2 inches high by 5-3/8 inches wide by 2-3/4 inches deep.

For use as a station protector where fused protection is needed and it is necessary to install the protector outside. Provides protection for one pair of wires.

Comcode: 100 400 241

## 1268A and B



Consist of one protector mounting, four protector blocks, and two heat coils. Mount on B-type main distributing frames or may be mounted on walls with 736A Mounting Plate, which is not furnished and must be ordered separately.

1268A: Furnished only in strips of 20 protectors.

Comcode: 100 400 191

1268B: Furnished only in strips of 2B protectors.

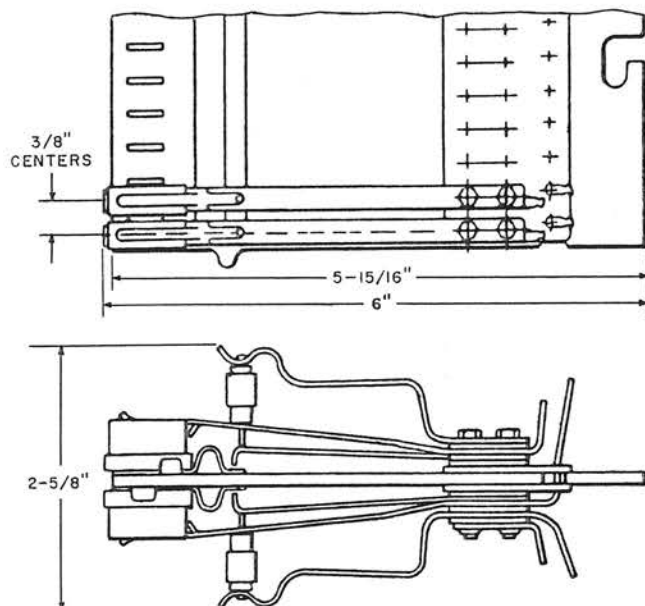
Comcode: 100 400 209

Used to provide high potential and sneak current ar-restor for one pair of wires.



## PROTECTORS

## C50A and C52A



For use on main distributing frames. Overall length is 18-23/32 inches for the C50A and 19-15/32 inches for the C52A.

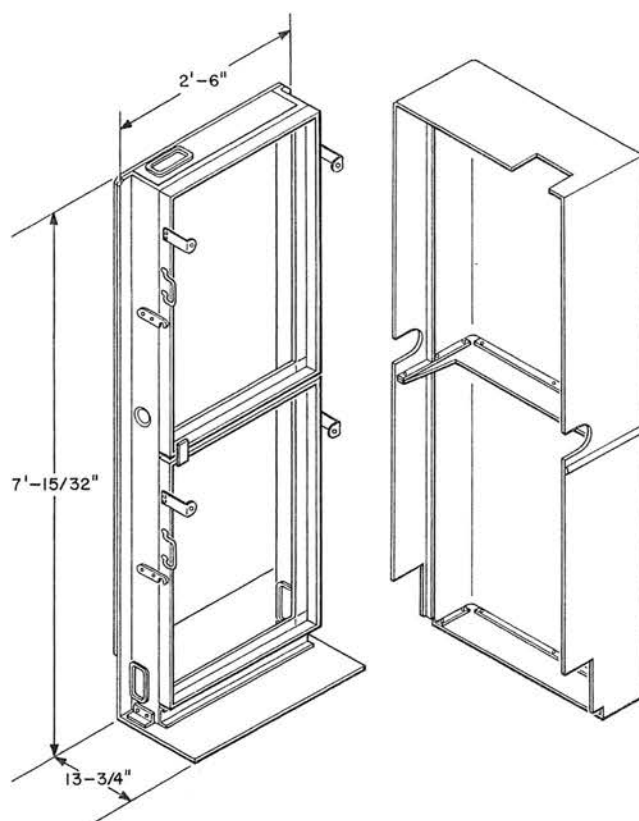
Heat coils and protector blocks are furnished as loose parts.

Code No.	Comcode	Number of Pairs of Wires Accommodated	Protector Mounting	Consist of Protector Blocks		Qty. 76A Heat Coils
				Qty.	Case	
C50A	100 400 258	50	C50	100	28	100
				100	29	
C52A	100 400 266	52	C52	104	28	104
				104	29	

## RACKS

## Wall Relay

ED-69463-50



A station systems wall relay rack with two gates for ready access to mounted apparatus arranged for mounting forty 1-3/4 inch mounting plates 19 or 23 inches long or thirty-four 2 inch mounting plates 23 inches long. Optional mounting materials consist of Groups 2, 3, 4, and 5. The groups required as described below must be specified on the order.

Group	Description
1	One relay rack. Comcode: 600 003 339
2	Material required to mount twenty 1-3/4 inch by 19 inch mounting plates and twenty B-type terminal strips on one gate. Comcode: 600 016 182
3	Material required to mount BL type terminal strips on ED-69463-50 Group 1 framework. Comcode: 600 016 190
4	Material required to mount sixteen 1-3/4 inch by 19 inch mounting plates and sixteen B-type terminal strips on one gate. Comcode: 600 016 208
5	Material required to mount seventeen 2-inch by 23-inch mounting plates on one gate. Comcode: 600 003 347
6 and NP	One wall rack cover. Comcode: 600 016 216

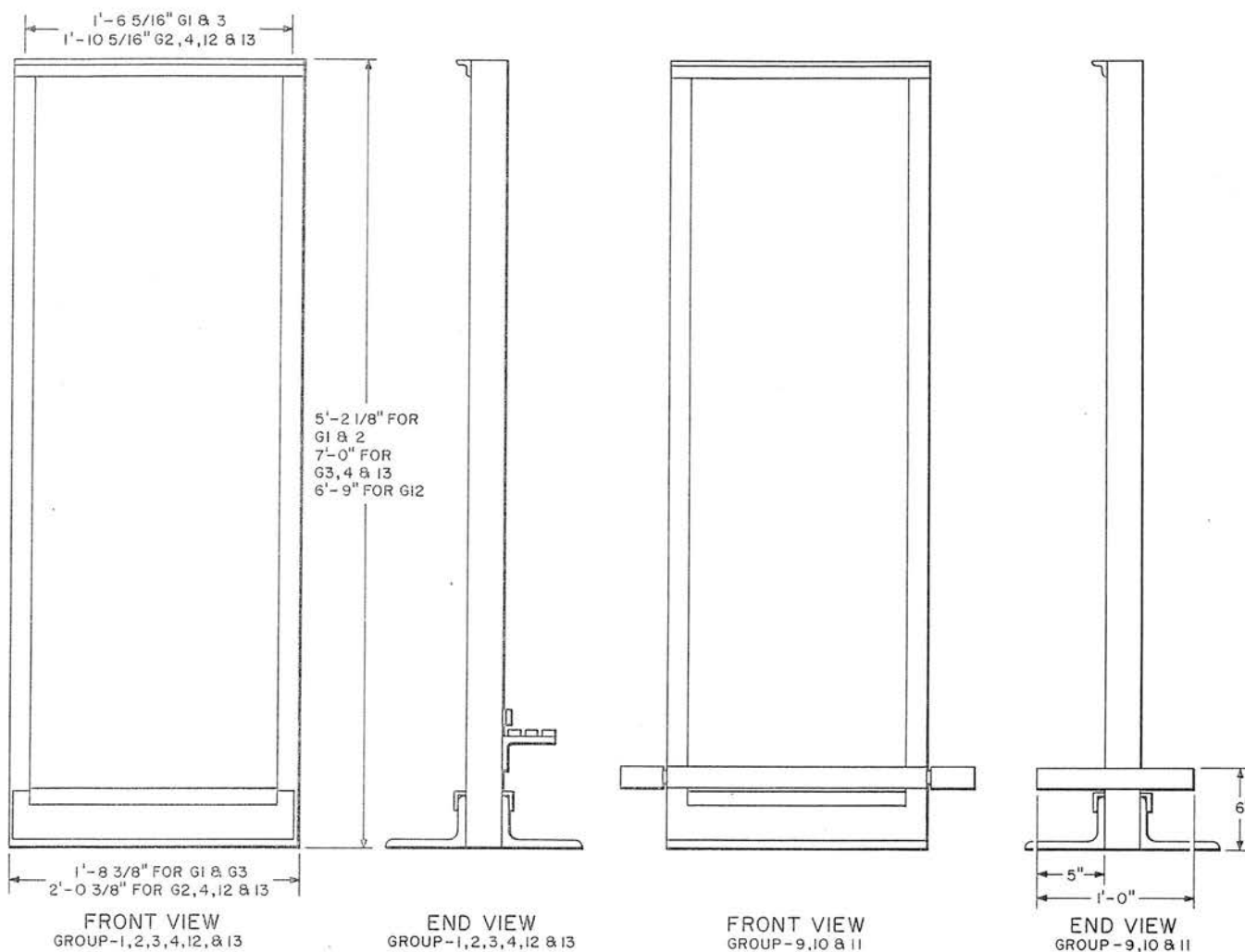
If required the following material should be ordered separately.

- 9—13A Distributing Rings
- 8—13B Distributing Rings
- 3—ED-91786-70 Group 2 Fuse Panels
- 68—P-160643 R.H.W. Screws
- 6—P-160798 R.H.W. Screws

## RACKS

## Relay

ED-90370-73



A floor-supported common systems channel type relay rack arranged for mounting 19-inch or 23-inch by 1-3/4 inch mounting plates or 23-inch by 2-inch mounting plates. Consists of Groups 1, 2, 3, 4, 9, 10, 11, 12, and 13. The groups required as described below must be specified on the order.

Group	Description
1	One bay 5 feet 2-1/8 inches high arranged for thirty-one 1-3/4 inch by 19 inch mounting plates, without guard rails. Comcode: 600 017 248
2	One bay 5 feet 2-1/8 inches high arranged for thirty-one 1-3/4 inch by 23 inch mounting plates, without guard rails. Comcode: 600 017 255

Group	Description
3	One bay 7 feet high arranged for forty-three 1-3/4 inch by 19 inch mounting plates, without guard rails. Comcode: 600 017 263
4	One bay 7 feet high arranged for forty-three 1-3/4 inch by 23 inch mounting plates, without guard rails. Comcode: 600 017 271
9(a)	One set of ladder guard rails for a 19-inch bay. Comcode: 600 017 289
10(a)	One set of ladder guard rails for a 23-inch bay. Comcode: 600 017 297
11(b)	One set of guard rail ends. Comcode: 600 017 305

## RACKS

## Relay

- | Group | Description   |
|-------|---|
| 12    | One bay 6 feet 9 inches high arranged for forty-one 1-3/4 inch by 23 inch mounting plates, without guard rails. |

Comcode: 600 017 313

- |    |   |
|----|---|
| 13 | One bay 7 feet high arranged for thirty-seven 2 inch by 23 inch mounting plates, without guard rails. |
|----|---|

Comcode: 600 017 321

- (a) Ordered only when bays are lined up with 8 foot 8 inch or 11 foot 6 inch bays.  
 (b) For isolated lineups having ladder guard rails.

If required the following material should be ordered separately.

ED-90674-70 Group 24. Cable rack support at top of frame.

ED-65457-30. Details to insulate framework from local ground.

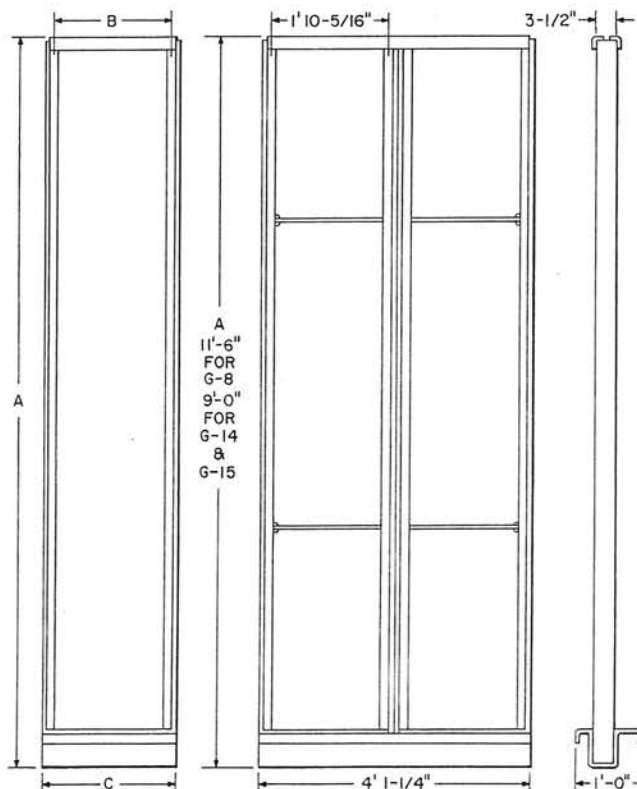
ED-90484-72 Group 25 or 26. Ground bar connections.

ED-90674-70 Group 10 or 11. Cable rack assembly.

ED-90674-70. Cable brackets.

ED-90335-70. Fuse panel adapters and equipment guard.

## ED-90672-70



A common systems channel-type relay rack with floor angle and detachable guard rails. Groups 1 through 6 and 28 and 29 cover the various relay racks. Groups 7 through 16 and 19 through 27 are optional details which must be ordered as required. The groups required as described below must be specified on the order.

Group	A	Dimensions B	C
1	8' 8"	1' 6-5/16"	1' 8-3/8"
2	8' 8"	1' 10-5/16"	2' 3/8"
3	11' 6"	1' 6-5/16"	1' 3-3/8"
4	11' 6"	1' 10-5/16"	2' 3/8"
5	9'	1' 10-5/16"	2' 3/8"
6	11' 6"	1' 10-5/16"	2' 3/8"
28	8' 8"	1' 10-5/16"	2' 3/8"
29	11' 6"	2' 5-13/16"	2' 7-7/8"

- | Group | Description  |
|-------|--|
| 1     | One bay 8 feet 8 inches high arranged for forty-eight 1-3/4 inch by 19 inch mounting plates, without guard rails.<br>Comcode: 600 017 339  |
| 2     | One bay 8 feet 8 inches high arranged for forty-eight 1-3/4 inch by 23 inch mounting plates, without guard rails.<br>Comcode: 600 017 974  |
| 3     | One bay 11 feet 6 inches high arranged for sixty-eight 1-3/4 inch by 19 inch mounting plates, without guard rails.<br>Comcode: 600 016 604 |
| 4     | One bay 11 feet 6 inches high arranged for sixty-eight 1-3/4 inch by 23 inch mounting plates, without guard rails.<br>Comcode: 600 017 349 |
| 5     | One bay 9 feet high arranged for fifty 1-3/4 inch by 23 inch mounting plates, without guard rails.<br>Comcode: 600 017 354                 |
| 6     | One bay 11 feet 6 inches high arranged for sixty-two 2 inch by 23 inch mounting plates, without guard rails.<br>Comcode: 600 017 362       |
| 7     | Angle guard rails for one bay of relay rack for use with group 1 or 3.<br>Comcode: 600 017 370   |
| 8     | Angle guard rails for three bays of relay racks for use with group 1 or 3.<br>Comcode: 600 017 388   |
| 9     | Angle guard rails for five bays of relay racks for use with group 1 or 3.<br>Comcode: 600 017 396  |
| 10    | Angle guard rails for seven bays of relay racks for use with group 1 or 3.<br>Comcode: 600 017 404   |



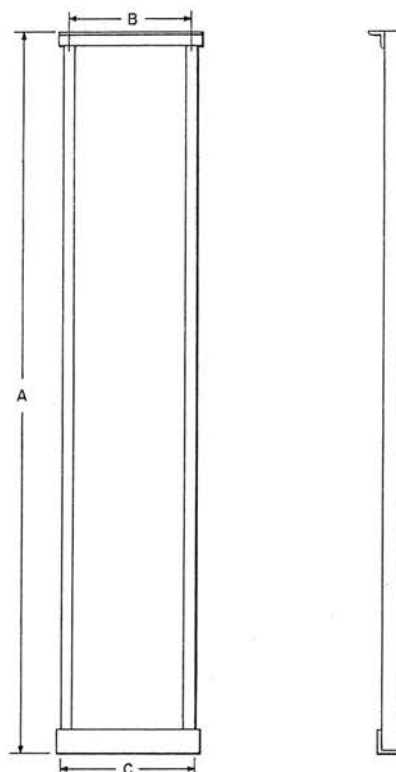
## RACKS

## Relay

## ED-90672-70 (Continued)

## ED-91837-71

Group	Description
11	Angle guard rails for one bay of relay rack for use with group 2, 4, 5, or 6. Comcode: 600 017 412
12	Angle guard rails for three bays of relay racks for use with group 2, 4, 5, or 6. Comcode: 600 017 420
13	Angle guard rails for five bays of relay racks for use with group 2, 4, 5, or 6. Comcode: 600 017 438
14	Angle guard rails for seven bays of relay racks for use with group 2, 4, 5, or 6. Comcode: 600 017 446
15	Details for closing one unequipped 19-inch bay. Comcode: 600 017 453
16	Details for closing one unequipped 23-inch bay. Comcode: 600 017 461
19	One end guard rail support for 1-foot angle guard rails. Comcode: 600 017 479
20	One end guard rail support for 1-foot 3-inch angle guard rails. Comcode: 600 017 487
21	One end guard rail support for 1-foot 8-inch angle guard rails. Comcode: 600 017 495
22	One intermediate guard rail support for 1-foot angle guard rails. Comcode: 600 016 612
23	One intermediate guard rail support for 1-foot 3-inch angle guard rails. Comcode: 600 017 503
24	One intermediate guard rail support for 1-foot 8-inch angle guard rails. Comcode: 600 017 511
25	One-foot sheet metal guard rails for one bay of relay rack 1 foot 8-3/8 inches long. Comcode: 600 017 529
26	One-foot sheet metal guard rails for one bay of relay rack 2 feet 3/8 inches long. Comcode: 600 017 537
27	One frame base filler for 2-inch space for frame with angle type guard rail. Comcode: 600 017 545
28	One bay 8 feet 8 inches high for forty-two 2 inch by 23 inch mounting plates, without guard rails. Comcode: 600 017 552
29	One bay 11 feet 6 inches high for sixty-eight 1-3/4 inch by 30-1/2 inch mounting plates, without guard rails. Comcode: 600 017 560



An angle type relay rack for common systems. Groups 1, 2, 7 through 15, 17 through 20 cover the various relay racks. Groups 16 and 17 cover fillers. Requirements for end guards, cable brackets or guard rails should be specified. The groups required as described below must be specified on the order.

Group	A	Dimensions B	C
1	11' 6"	1' 10-5/16"	2' 5/8"
2	11' 6"	1' 6-5/16"	1' 8-5/8"
7	11' 6"	1' 10-5/16"	2' 5/8"
8	11' 6"	1' 10-5/16"	4' 1-1/4"
9	9'	1' 10-5/16"	2' 5/8"
10	7'	1' 10-5/16"	2' 5/8"
11	9'	1' 10-5/16"	2' 5/8"
12	11' 6"	1' 10-5/16"	2' 5/8"
14	9'	1' 10-5/16"	4' 1-1/4"
15	9'	1' 10-5/16"	4' 1-1/4"
17	9'	1' 10-5/16"	2' 5/8"
18	11' 6"	1' 10-5/16"	2' 5/8"
19	9'	1' 10-5/16"	2' 5/8"
20	9'	1' 10-5/16"	2' 5/8"

## RACKS

## Relay

Group	Description	Group	Description
1	One bay 11 feet 6 inches high arranged for sixty-nine 1-3/4 inch by 23 inch mounting plates. Comcode: 600 017 578	12	One bay 11 feet 6 inches high arranged for sixty-three 2 inch by 23 inch mounting plates, with 5-inch cable rack. Comcode: 600 017 651
2	One bay 11 feet 6 inches high arranged for sixty-nine 1-3/4 inch by 19 inch mounting plates. Comcode: 600 017 586	14	Two bay rack 9 feet high arranged for ninety-six 2 inch by 23 inch mounting plates. Comcode: 600 017 669
5	One frame base filler for 2-inch space. Comcode: 600 017 594	15	Two bay rack 9 feet high arranged for ninety-six 2 inch by 23 inch mounting plates, with 5-inch cable rack. Comcode: 600 017 677
6	One frame base filler for 3-1/2 inch space. Comcode: 600 017 602	16	One frame base filler for 2-inch space. Comcode: 600 017 685
7	One bay 11 feet 6 inches high arranged for sixty-three 2 inch by 23 inch mounting plates. Comcode: 600 017 610	17	One bay 9 feet high arranged for fifty-five 1-3/4 inch by 23 inch mounting plates. Comcode: 600 017 693
8	Two bay rack 11 feet 6 inches high arranged for one hundred and twenty-six 2 inch by 23 inch mounting plates. Comcode: 600 017 628	18	One bay 11 feet 6 inches high arranged for sixty-four 2 inch by 23 inch mounting plates. Comcode: 600 017 701
9	One bay 9 feet high arranged for forty-eight 2 inch by 23 inch mounting plates. Comcode: 600 016 398	19	One bay 9 feet high arranged for sixty-four 2 inch by 23 inch mounting plates. Comcode: 600 017 719
10	One bay 7 feet high arranged for thirty-six 2 inch by 23 inch mounting plates, with 5-inch cable rack. Comcode: 600 017 636	20	One bay 9 feet high arranged for fifty-five 1-3/4 inch by 23 inch mounting plates, with 5-inch cable rack. Comcode: 600 017 727
11	One bay 9 feet high arranged for forty-eight 2 inch by 23 inch mounting plates, with 5-inch cable rack. Comcode: 600 017 644	NP-2	Name plate.

Note: H555-120 Group 6 anchor bolts, if required, must be ordered separately.

# RACKS Relay

ED-92465-70

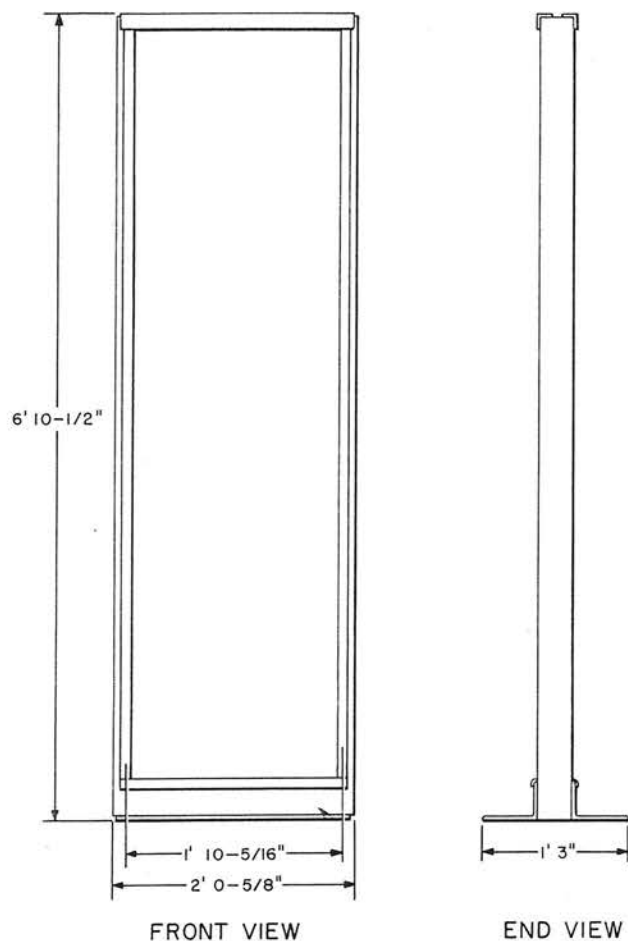


Fig. 1

A floor-supported type relay rack assembly with bulb angle uprights for common systems. Groups 1 and 10 cover relay racks. Groups 2, 3, 7, 8, and 9 cover support materials. The groups required as described below must be specified on the order.

Group	Description
1	One relay rack arranged for mounting thirty-six 2 inch by 23 inch mounting plates. See Fig. 1. Comcode: 600 017 735
2	Number 14 BRC stub lead and parallel gutter tap for grounding frame. Comcode: 600 017 743
3	Battery and ground connecting block assembly. Comcode: 600 017 750

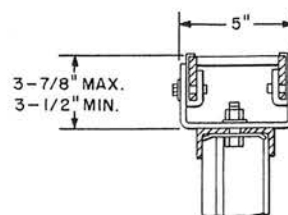


Fig. 2

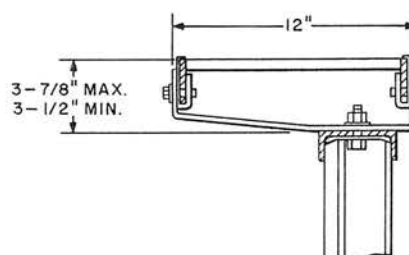


Fig. 3

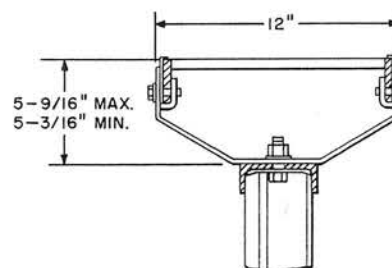


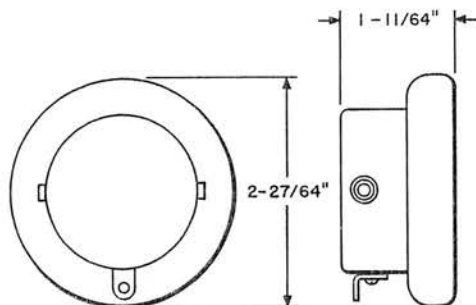
Fig. 4

Group	Description
7	One set of cable rack support material. See Fig. 2. Comcode: 600 017 768
8	One set of cable rack support material. See Fig. 3. Comcode: 600 017 776
9	One set of cable rack support material. See Fig. 4. Comcode: 600 017 784
10	One relay rack arranged for thirty-six 2 inch by 23 inch mounting plates, top angle drilled for mounting fuse panel and ground bar. See Fig. 1. Comcode: 600 017 792



## RECEIVERS

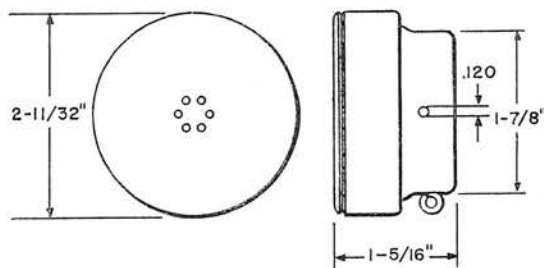
509



Watch case type receiver having a nickel plated metal case and a hard rubber cap. Resistance is approximately 1100 ohms.

Comcode: 100 400 647

## 716 Type



716A: Consists of HA1 Receiver Unit assembled in 11A Receiver Holder which has phenol plastic cap and case having terminal and cording facilities.

Comcode: 100 400 662

716B: Similar to 716A except includes HA2 Receiver Unit.

Comcode: 100 400 670

716C: Similar to 716A except includes HA4 Receiver Unit.

Comcode: 100 400 688

716D: Consists of 716A Receiver equipped with 11A Head Band.

Comcode: 100 400 696

716E: Consists of 716B Receiver equipped with 11A Head Band.

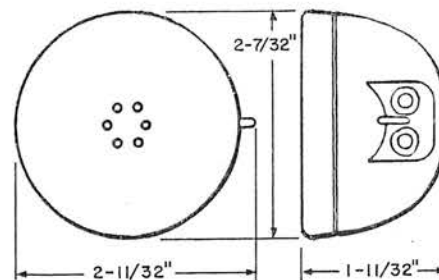
Comcode: 100 400 704

716F: Consists of 11A Receiver Holder, HA3 Receiver Unit, and 11A Head Band.

Comcode: 100 400 712

Note: 15E Head Band will mount two 716A, 716B, or 716C Receivers.

723A



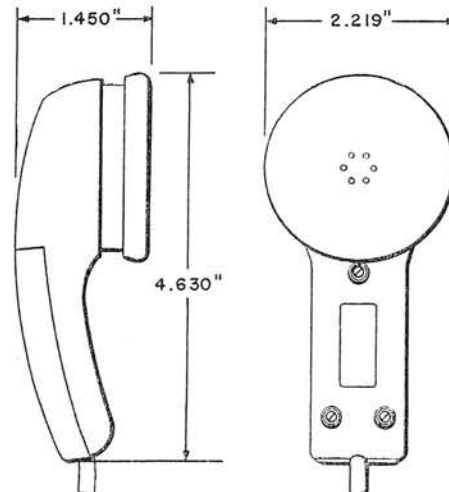
Consists of 12A Receiver Holder and HC3 Receiver Unit which will accommodate cords with number 130 Cord Tips.

Used with 15B and C type head band.

Comcode: 100 400 761

101 226 017 E/W 15F Head band.

731AW-51



Consists of a moss green thermoplastic receiver handle and cap equipped with an HC3 Receiver Unit and R2FL-51 Cord.

Used with the 689AW, BW, CW, DW, and EW Subscriber Sets.

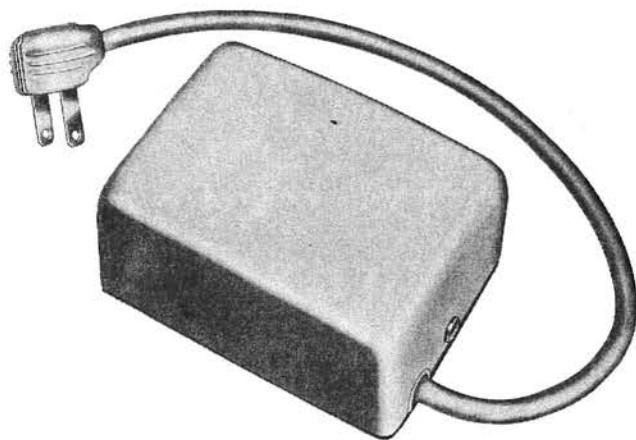
Comcode: 100 400 910





## RECTIFIERS

J87202A2 L1, D and NP



This rectifier is a compact unit designed to convert 117 volts,  $\pm 10$  volts, 60 Hz ac to +11 volts, 0.0750 amp and +25 volts, 0.045 amp dc. The rectifier includes a step-down transformer and a full wave semiconductor rectifier and is equipped with a 12 inch power cord, wall plate, plate mounting screws, and a light olive gray cast zinc cover. Overall dimensions are 3-3/4 inches long by 2 inches high by 2-3/4 inches deep. A 110-volt, 60 Hz ac outlet must be provided. Rectifier maintenance is limited to replacement of blown fuses.

Used with number 106 type loudspeaker sets.



## RELAYS

## Flat Type

**Efficiency of Operation:** Each relay requires minimum current consistent with conditions under which operated. Conditions cover contact pressures necessary during operation and in nonoperative position; speed or time of operation; requirements as to high or low impedance which position in circuit makes necessary. High efficiency attained through careful choice of materials and correct proportioning of parts.

**Permanent and Easy Adjustments:** Spring contacts and armature air gaps are at front end of relay; clearly visible while being adjusted when in place on mountings. Adjustments are permanent over long periods of service, being maintained under widely varied conditions of heat, cold, and humidity.

**Insulation of Contact Springs:** Phenol Fiber used has high dielectric strength of hard rubber; not affected by heat, moisture or deterioration like rubber.

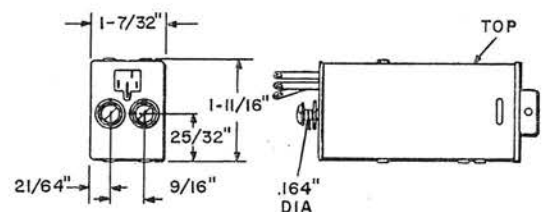
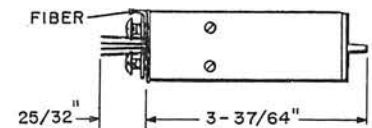
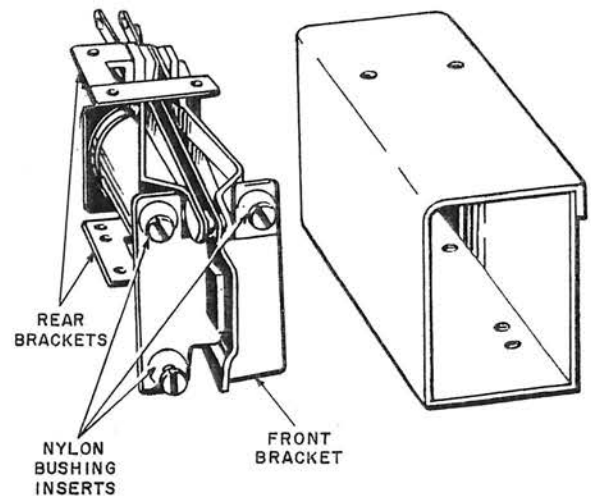
**Self-Cleaning Contacts:** Mounted so that surfaces in vertical plane and dust does not settle on contacts. Maintenance reduced. Difficulties due to poor contacts avoided.

**Durability of Parts:** Magnetic parts are chromium plated. Special alloys used are best material electrically for parts in which utilized; mechanically strong materials from which small parts having great strength may be made. Spoolheads of phenol fiber. Windings highly insulated. Windings will carry continuously without injury, currents greater than required for operation.

**Small Size and Ease of Mounting:** Compact in design; light in weight; occupy small amount of space. Terminals are all at one end, conveniently arranged for making soldered connections. Insulated from their mountings. Fastened in place with two screws. Stability and ruggedness when mounted reduces maintenance costs.

**Armature Suspension:** Flat, reed type spring used secures continuous and unvarying magnetic path between armature and core. By selection of suitable springs, extremely sensitive relays are obtained with this type construction.

B-Type



B-type relays differ from E- and H-types in that they are provided with a micrometer screw adjustment feature which permits extremely accurate adjustments to be made. Individual covers are provided and each has a removable cap which may be placed in position without affecting the adjustment of the relay. Relays are supplied dust and crosstalk proof. When crosstalk shielding is not required, dust-proof covers are supplied.

Mount on 1-1/4 inch horizontal and 1-3/4 inch vertical centers.

Used as supervising relays in switchboard cord circuits and other places where sensitive, highly efficient, reliable relay is required. When used as a series supervisory relay, transmission loss is very low. The relay has superior flashing ability and will operate in a line having as high as 1000 ohms resistance. Use of a supervisory relay of the B-type secures operating advantages which are obtained through sensitive adjustment, small operating current, low transmission loss, and reduced maintenance.



## RELAYS

## Flat Type

## B-Type (Continued)

The following are some representative types:

Code No.	Comcode	Windings	Rated Resistance (Ohms)	Operate (Ampere)	Release (Ampere)
B3	100 415 181	{ Primary Secondary (Non- Ind) Combined	16.4 31 10.7	.015(d)	.005(d)
B10	100 415 249	Single	1.7(b)	.022(d)	.002(d)
B11	100 415 256	{ Primary Secondary	250 3800	.004 .0025	.001 —
B1048	100 419 118	{ Tertiary (Non-Ind) Quaternary (Non- Ind) Primary & Quat Comb. Secondary & Tert Comb.	25. 25. 10.2 10.2	.0087(g)	.0035(g)
B1148(h)	100 419 951	{ Primary Secondary Tertiary (Non- Ind)	7900 375 10450	.0005 .0098	.0002 —
B1151	100 419 985	{ Primary P1, P2 Secondary (Non-Ind)	23(b)	.0118(j)(c)	.0075(j)(c)
B1154(e)(f)	100 420 009	P1, P2 (parallel)	25 each (k)	.0098(a)(c)	.0045(a)(c)

(a) Through inner winding shunted by secondary and tertiary windings in series. Also operates on .020 ampere through inner winding shunted by tertiary only and terminals of secondary short circuited.

(b) Plus or minus 10 percent.

(c) After a soak.

(d) After a soak of .150 ampere.

(e) Equipped with heavy contacts.

(f) Equipped with flexible front and rear contact springs.

(g) Through primary and quaternary in multiple, and secondary and tertiary in multiple, in series aiding.

(h) After a soak of .006 ampere.

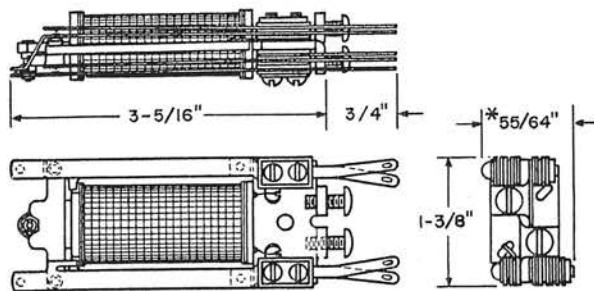
(j) Through primary P1.

(k) Plus or minus 15 percent.

## RELAYS

## Flat Type

## E-Type



Heavy duty all-purpose telephone relays. Designed for two sets of contact springs; may be duplicates or differ in contact arrangement. Make it possible in many cases to use one where two or more of another style would be required.

Mounted on either drilled or punched type mounting plates. Relays are provided with common dust-proof metal covers on 1-3/4 inch vertical and 3/4 or 1 inch horizontal centers (depends upon number of contact springs). When individual dust-proof cover for each relay is desired, E1 Relay Cover should be specified. Relay will then mount on 1-1/4 inch horizontal and 1-3/4 inch vertical centers.

\*This dimension varies according to the number of contact springs and winding terminals on the individual relays.

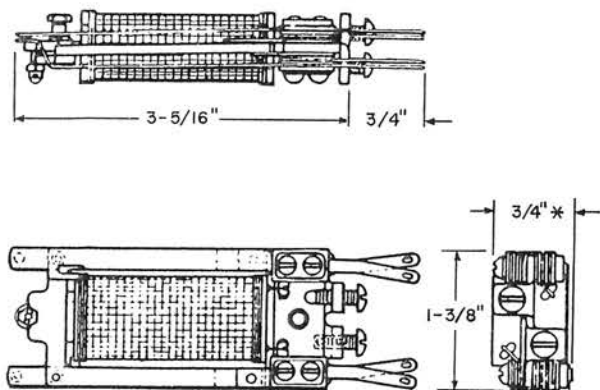
The following are representative types:

Code No.	Comcode	Pri	Sec	Windings		Operate (Amp)	Release (Amp)
				Rated Res (Ohms)	Sec Non-Ind		
E5	100 420 355	—	—	—	—	1000	.008
E12	100 420 397	—	—	—	—	20	.055
E130	100 420 793	87	—	—	1000	—	.066
E148	100 420 884	—	—	—	—	350	.018
E282	100 421 650	32	—	—	—	—	.044
		—	400	—	—	—	.030
E402	100 422 062	250	—	—	—	—	.025
		—	—	120	—	—	—
E931	100 424 373	—	—	—	—	750	.012

## RELAYS

## Flat Type

## F-Type



\*This dimension varies according to the number of contact springs and winding terminals on the individual relays.

Similar to E-type except they are slow releasing due to a winding of bare copper wire over the core and are equipped with adjustable armature stop pin to regulate time of release.

Mount on either channel or flat type mounting plates with common or individual dust-proof covers as required. Insulated from mounting plate. When not equipped with individual covers, will mount on 1-3/4 inch vertical centers, and 3/4 inch or 1 inch horizontal centers.

When individual dust-proof covers are required for each relay the E1 Relay Cover should be specified. In these instances the relay will mount on 1-1/4 inch horizontal centers and 1-3/4 inch vertical centers.

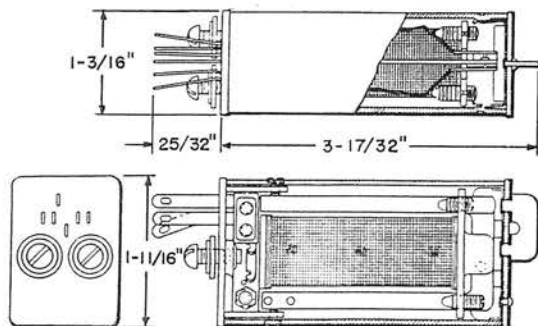
The following are representative types:

Code No.	Comcode	Windings	Rated Res (Ohms)	Operate (Amp)	Release (Amp)
F9	100 432 392	Single	850	.028(a)	.018(a)
F17	100 432 459	Single	1475	.014	.0093
F21	100 432 467	Single	1475	(b)	

(a) After operated by a current of .047 amp, will remain operating for at least .1 second and will release open circuits within .5 second.

(b) With a current of .028 amp will operate and hold on pulses which are .10 second closed and .120 second or on circuit and will operate and release on pulses which are .1 second closed and .35 second open.

## G-Type



Similar to the B-type relays except they have higher impedance at talking frequencies due to laminated construction of cores. Each relay is equipped with cross-talk proof shell with removable cap.

Mount on 1-1/4-inch horizontal and 1-3/4-inch vertical centers. Insulated from mounting plate.

The following are representative types:

## Windings Rated Res (Ohms)

Code No.	Comcode	Pri	Sec	Single	Parallel	Operate (Amp)	Release (Amp)
G1	100 432 475	75	75	—	—	.0078(a)	.005(a)
G28	100 432 640	—	—	365(b)	—	.0037	.001
G29(c)	100 432 657	500	—	—	—	.0022(e)	.0003(e)
		—	3500	—	—	.0025(e)	—
G90(c)	100 433 028	—	—	—	11.5 ea(b)	.0211(a)(d)	.0122(a)(d)

(a) Through both windings in series aiding.

(b) Plus or minus 10 percent.

(c) Equipped with a flexible front contact spring.

(d) After a soak of .150 amp.

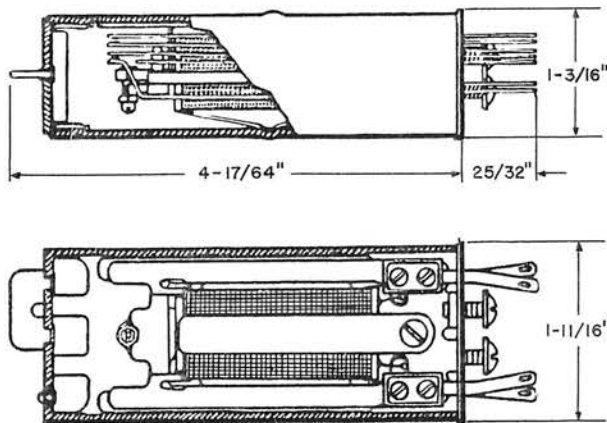
(e) After a soak of .038 amp through primary winding.



## RELAYS

## Flat Type

H-Type



Similar to E-type except they have increased impedance at talking frequencies due to laminated core. Equipped with E2 (crosstalk proof) Relay Covers.

Mount on 1-3/4 inch vertical and 1-1/4 inch horizontal centers. Insulated from mounting plate.

The following are representative types:

Code No.	Comcode	Winding	Rated Res (Ohms)	Operate (Amp)	Re-lease (Amp)
H1	100 433 259	Single	120	.015	—
H19(b)	100 433 358	Primary	250	.026(a)	.007(a)
		Secondary	260	—	—
H50	100 433 549	Single	165	.022	—
H100	100 433 846	Primary	300	.021(a)	—
		Secondary	300	—	—
H125(d)	100 434 059	Primary	215(c)	.0295(a)	—
		Secondary	175(c)	—	—

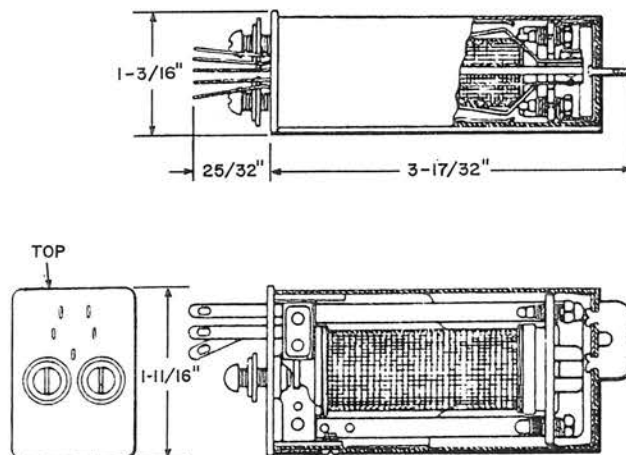
(a) Through both windings in series aiding.

(b) Has .010 inch armature stop pins.

(c) Plus or minus 10 percent.

(d) Primary is wound over and under secondary winding to obtain an impedance balance.

## J-Type



Used with 16 to 20 Hz alternating current. Otherwise similar to B-type relays but have different core, spool-head, and adjusting plate characteristics. Each relay has metal dust-proof cover and removable cap.

Mounts on 1-1/4 inch horizontal and 1-3/4 inch vertical centers. Insulated from mounting plate.

See the following page for representative types:



## RELAYS

## Flat Type

## J-Type (Continued)

Code No.	Comcode	Pri	Windings		Single	Operate (Amp)		Non-Operate (Amp) DC
			Rated Res (Ohms)	Sec		AC(a)	DC	
J2(b)(c)	100 434 083	—	—	—	1090	.0079	—	—
J3(b)(c)	100 434 091	—	—	—	1090	.006	—	—
J7(b)	100 434 109	—	—	—	1090	.006	—	—
J20(b)(c)	101 373 926	—	—	—	1600	.004	—	—
J31(b)(h)	100 434 240	—	—	—	125(d)	.013	—	—
J36(c)(e)	100 434 281	—	—	—	1090	.0042	—	—
J39(e)(h)	100 434 299	—	—	—	1600	.0052	—	—
J54(f)(g)	100 434 414	420	—	—	—	—	.0147	—
		—	3120	—	—	.0041	.0042	.0034

(a) Operating and non-operating values apply at ringing frequencies of from 16 to 20 cycles.

(b) Equipped with a flexible front contact spring.

(c) Equipped with heavy contacts.

(d) Plus or minus 10 percent.

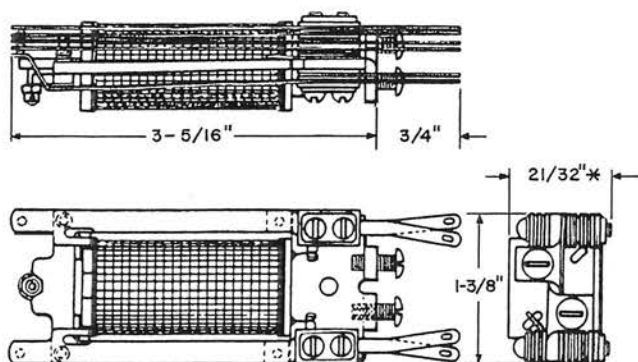
(e) Equipped with flexible front and back contact springs.

(f) Equipped with heavy front contacts.

(g) Equipped with a pendulum type (weighted) flexible front contact spring.

(h) Equipped with palladium contacts.

## R-Type



\*This dimension varies according to the number of contact springs and winding terminals on the individual relays.

Similar to E-type except core, although having same cross-sectional area, is elliptical shaped. Greater winding space and shorter length of turn than on E-type.

Mount on drilled mounting plates on 1-3/4 inch vertical and 1-inch horizontal centers. Mount also on punched mounting plates. Insulated from mounting plate.

When individual cover is required, specify R1 or R2 Relay Covers whose closest horizontal mounting centers are 1-1/4 inch and 1-3/8 inch, respectively, and 1-3/4 inch vertical. R3 Relay Cover is crosstalk proof and has 1-3/8 inch horizontal and 1-3/4 inch vertical mounting centers.

## RELAYS

## Flat Type

## R-Type (Continued)

The following are representative types:

Code No.	Comcode	Pri	Sec	Windings Rated Res (Ohms)			Operate (Amp)	Non- Operate (Amp)
				Sec Non- Ind	Single	Combined		
R132(a)(f)	100 435 775	—	—	—	650	—	.017	.011
R206	100 436 344	430	—	1000	—	301	.028(c)	—
R433	100 438 076	250	—	1000	—	200	.040(e)	—
R512(b)(f)	100 438 720	.33(d)	—	—	—	—	.500	—
		—	325	—	—	—	.017	—
R603(a)	100 439 470	—	—	—	1650	—	.0074	.0027
R656	100 439 900	—	—	—	900	—	.011	—
R857(b)	100 441 336	175	—	—	—	—	.095	—
		—	700	—	—	—	.059	—
R1089(f)	100 443 274	—	—	—	435	—	.0185	.012
R1356	100 445 451	—	—	—	1200	—	.0087	—
R1508(g)(h)	100 446 723	500	—	—	—	—	.020	—
		—	600	—	—	—	.0305	—

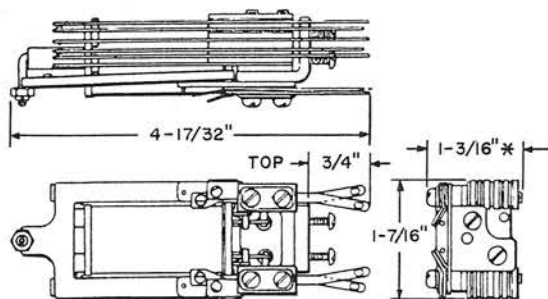
- (a) Has .010-inch armature stop pins.  
 (b) Has no armature stop pins.  
 (c) Through both windings in multiple.  
 (d) Plus or minus 15 percent.

- (e) Through primary and secondary windings in multiple.  
 (f) Equipped with heavy contacts throughout.  
 (g) Contacts 1, 2, and 3 are heavy.  
 (h) Equipped with palladium contacts.

## U-Type

Round core twin-contact general purpose relays capable of operating large spring combinations. Armature stop pins are .005 inches high unless otherwise indicated.

Mount on drilled or punched type mounting plates. Individual covers must be ordered separately. Required when mounting plate is not equipped with a common cover or mounted in a cabinet. Insulated from mounting plate. See following page for horizontal mounting centers.



\*This dimension varies according to the number of contact springs and winding terminals on the individual relays.

## RELAYS

## Flat Type

## U-Type (Continued)

The following are representative types:

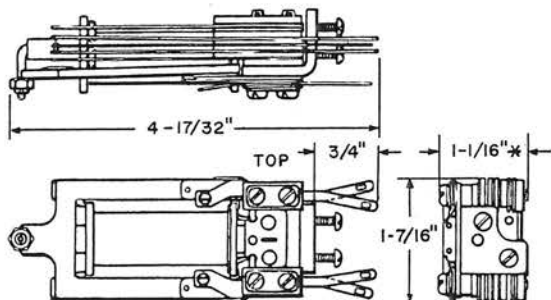
Code No.	Comcode	Windings Rated Res (Ohms)			Operate (Amp)	Non- Operate (Amp)
		Pri	Sec	Single		
U119(f)	100 453 752	—	—	700	.0143	—
U162(e)	100 454 131	—	—	950	.017	—
U199(f)	100 454 495	—	—	2500	.0116	—
U407(e)	100 456 326	—	—	2500	.0059	—
U507(e)	100 457 183	{ 1100(c)	—	—	.018	—
		—	1100(c)	—	.019	—
U566(e)	100 457 639	—	—	2500	.0061	—
U611(g)	100 458 066	—	—	700	.0285	—
U895(a)(d)(f)	100 460 161	—	—	1300	.0245	.018
U916(g)	100 460 252	{ 1100(c)	—	—	.028	—
		—	1100(c)	—	.0295	—
U981(d)(f)	100 460 872	—	—	2000	.017	—
U1017(f)	100 461 227	—	—	450	.026	—
U6030(b)(e)	100 465 483	—	—	700	.018	—

- (a) Has .015-inch armature stop pins.  
 (b) Has .010-inch armature stop pins.  
 (c) Plus or minus 5 percent.  
 (d) Slow acting relay having short circuited sleeve over core.  
 (e) Individual cover is U3.  
 (f) Individual cover is U4.  
 (g) Individual cover is U5.

## Horizontal Mounting Centers (Inches)

Relay Cover No.	With Individual Covers	Without Individual Covers
U3	1-1/2	1-1/4
U4	1-3/4	1-1/2
U5	2-1/8	1-3/4

## Y-Type



\*This dimension varies according to the number of contact springs and winding terminals on the individual relays.

Round core twin-contact relays. Operate large spring combinations. Essentially of same construction as U-type except they are especially designed for slow release operation. Individual relay covers are required when the mounting plate is not equipped with a common cover or is mounted in a cabinet. See U-type relay description for horizontal mounting centers.

The following are representative types:

Code No.	Comcode	Rated Res (Ohms)	Operate	Soak (Ampere)	Hold	Release
Y50(a)	100 466 333	1300	.0170	.0315	.0023	.0012
Y99(a)	100 466 705	2000	.0105	.0180	.0009	.0006
Y149(a)	100 467 034	235	.0390	.0700	.0065	.0026
Y250(c)	100 467 752	830	.0320	.0400	.0058	.0016
Y331(c)	100 468 479	830	.0195	.0400	.0035	.0015

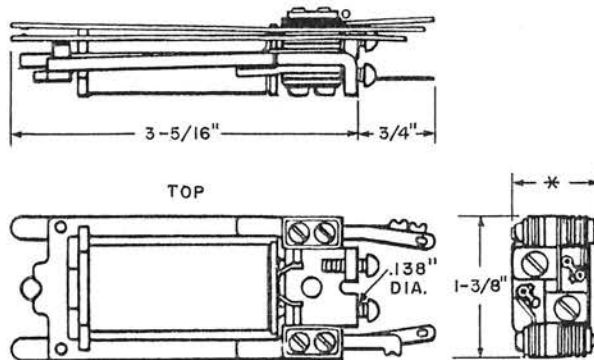
- (a) Individual cover is U3.  
 (b) Individual cover is U4.  
 (c) Individual cover is U5.



## RELAYS

## Flat Type

## EA-Type



\*This dimension varies according to the number of contact springs and winding terminals on the individual relays.

Similar to E-type except have a cellulose acetate filled coil. Armature and core are made from magnetic iron. Contacts are tensioned to minimum 17 grams. Have armature stop discs .009 to .014 inch high. Provided with special terminals arranged to facilitate strapping. Resistance values are held to within 10 percent. Closest recommended horizontal mounting centers are 1 inch and closest recommended vertical centers are 1-3/4 inches. No provision is made for individual relay covers. Relays are insulated from the mounting plate. Air gap at the armature hinge is bridged by a magnetic shunt.

The following are representative types:

Code No.	Comcode	Winding	Rated Resistance (Ohms)	Current (Milliamperes DC)		
				Operate	Non-Operate	Release
EA25	100 477 371	Single	1000	14.7	12	5.2
EA28(b) (g)	100 477 397	P1	1050	26.5	14	—
		P2	1050	—	—	—
EA29(a)	100 477 405	Primary	550	—	—	—
		Secondary	550	36.5	—	—
		Combined	—	15.5	11.5	—
EA30	100 477 413	Single	1000	18.0	—	5.2
EA31(a)	100 477 421	Primary	615(f)	14.2	—	—
		Secondary	1985(N-I) (e)	—	—	—
EA32(a)	100 477 439	Single	615(f)	17.0	—	—
EA33(a) (d)	100 477 447	Single	1150(f)	16.5	—	—
		Primary	550	—	—	—
EA34(a) (d)	100 477 454	Secondary	550	36.5	26	—
		Combined	—	15.5	11.5	—
		Single	1150(f)	18.5	—	—
EA35(a) (d)	100 477 462	Primary	450	—	—	—
		Secondary	500	21.5	18.5	—
		Combined	—	11.3	—	—
EA37	100 477 488	Single	950	9.7	6.6	3.3
EA39(a) (d)	100 995 018	Single	1150(f)	24.0	—	—
EA40(a) (g)	100 477 504	Single	650	20.0	—	—
EA41(a)	100 477 512	Primary	1150(f)	19	—	—
		Secondary	1050(e)	—	—	—
EA42(c) (d)	100 477 520	Primary	550	—	—	—
		Secondary	550	—	—	—
		Combined	—	19	13.3	—
EA43(a)	100 477 538	Primary	3000	9.7	4	—
		Sec (N-I)	100(e)	—	—	—
EA44(c)	100 477 546	Single	500	19	16	—
EA45(a)	100 477 553	Primary	550	—	—	—
		Secondary	550	—	—	—
		Combined	—	18	12.2	—
EA46(a)	100 477 561	Single	1000	13.4	9.2	—
EA47(a) (h)	100 477 579	Single	950	10.6	—	—

- (a) Has .002 to .005 inch high armature stop discs.  
 (b) Contacts are tensioned to minimum 9 grams.  
 (c) Has .005 to .007 inch high armature stop pins.  
 (d) Slow acting relay having a short-circuited sleeve over core.

- (e) Plus or minus 5 percent.  
 (f) Plus 5 percent.  
 (g) Equipped with heavy contacts of palladium.  
 (h) All terminals are arranged for mechanically wrapped connections.



## RELAYS

## Wire Spring Type

## AF Type

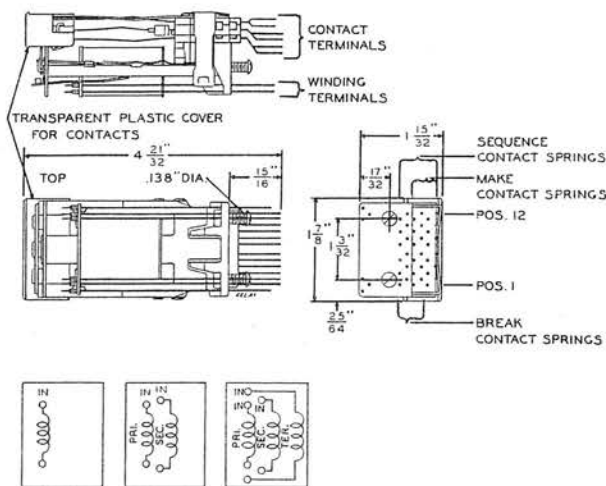


Fig. 1 Fig. 2 Fig. 3

General purpose wire spring relays for normal spring loads. Have two or three parallel rows of wire contact springs, each row molded into an individual base. The wire springs are tensioned during manufacture and are positioned by a fixed card and a moving card. The fixed card is attached to the relay frame and the moving card is actuated by the armature. Relays having two rows of

springs contain only make or break contacts. Relays having three rows of springs contain both make and break contacts. Moving contact springs are arranged in pairs to provide twin contacts, each moving wire having bar contacts with a gold overlay. All terminals are arranged for mechanically wrapped connections.

On some of these relays, the movement of the armature causes one group of contact pairs to make (or break) before a second group of contact pairs make (or break) and the second group of contact pairs to make (or break) before a third group of contact pairs make (or break). ("Group" as used herein should be interpreted to mean one or more.) Those groups of contact pairs which make (or break) last are called "ordinary" contacts, those which make (or break) prior to "ordinary" contacts are called "early" contacts and those which make (or break) prior to "early" contacts are called "preliminary" contacts. Some relays may have only "ordinary" contacts, others may have "ordinary," "early" and "preliminary" contacts.

Current values specified are readjust values. Circuit test values are 105 percent of the operate and hold values and 95 percent of non-operate and release values.

Construction of the relays is such that insulating bushings are not required in the associated mounting plate.

Inductive windings do not vary more than  $\pm 10$  percent and non-inductive windings more than  $\pm 5$  percent from their rated resistance value unless otherwise indicated.

Can be obtained equipped with a 4B Clip, a P-19A890 Flexible Mounting, and a P-19A146 Cross-talk Shield when specified in order.

Will mount on 1-5/8 inch horizontal and 2 inch vertical centers, and, when located adjacent to similar relays, will mount on 1-1/2 inch horizontal centers. Relays equipped with a P-19A146 Cross-talk Shield will mount on 1-3/4 inch horizontal centers.

The following are representative types:

Code No.	Comcode	Winding Arrangement Fig. No.	Number of Pairs of Contacts	Windings	Rated Resistance (Ohms)	Current (Milliamperes DC)			
						Operate	Non-Operate	Release	Hold
AF4	100 468 594	1	6	Single	400	34.5	—	—	—
(*)	100 468 602								
AF8	100 468 651	2	10	Primary	1000	18.5	12.0	—	—
(*)	100 468 669			Secondary	2700	11.1	—	—	—
AF9	100 468 677	1	12	Single	2500	8.2	—	—	—
(*)	100 468 685								
AF11	100 468 719	2	8	Primary	100	61.0	25.5	—	—
(*)	100 468 727			Secondary	1100	—	—	—	—
AF23(c)	100 468 933	1	12	Pri & Sec(d)	—	13.5	—	—	—
(*)	100 468 941			Single	400	69.5	—	—	—
AF66	100 469 550	2	6	Primary	100	61.5	46.0	—	—
(*)	100 469 568			Secondary	1100	17.0	—	—	—

## RELAYS

## Wire Spring Type

Code No.	Comcode	Winding Arrangement Fig. No.	Number of Pairs of Contacts	Windings	Rated Resistance (Ohms)	Current (Milliamperes DC)			
						Operate	Non-Operate	Release	Hold
AF85(b)	100 469 790	1	7	Single	1000(a)	34.0	23.5	10.5	—
(*)100 469 808									
AF87(b)	100 469 832	1	8	Single	2550	13.6	9.5	—	—
(*)100 469 840									
AF89	100 469 873	1	4	Single	34	45.0(e)	29.5(e)	17.5(e)	—
(*)100 469 881									
AF123(f)	100 470 491	2	12	Primary	1175	—	—	—	—
(*)100 470 509				Secondary	1075	—	—	—	—
				Pri & Sec(d)	—	8.8	—	—	—
AF124	100 470 517	1	7	Single	500(a)	16.0	—	—	—
(*)100 470 525									
AF127	100 470 574	2	11	Primary	335(a)	—	—	—	—
(*)100 470 582				Secondary	335(a)	—	—	—	—
				Pri & Sec(d)	—	27.5	14.5	8.1	—
AF157	100 471 168	1	12	Single	180	44.5	20.0	12.0	26.0
(*)100 471 176									
AF528	100 471 952	2	6	Secondary	1100	17.5	—	—	—
(*)100 471 960				Primary	550	46.5	—	—	—
AF529	100 471 978	3	13	Secondary	550	49.0	—	—	—
(*)100 471 986				Tertiary	525	49.0	—	—	—

(\*) E/W 4B Clip.

(a) Plus or minus 5 percent.

(b) Slow acting relay having a short-circuited sleeve over case.

(c) Stationary contact springs have bar type contacts with a gold overlay.

(d) In series aiding.

(e) After soak of 130 milliamperes.

(f) Frame of relay grounded by mounting screws.

Unless the ground is required for circuit reasons, this relay is not recommended for general use.

## RELAYS

## Wire Spring Type

## AG Type

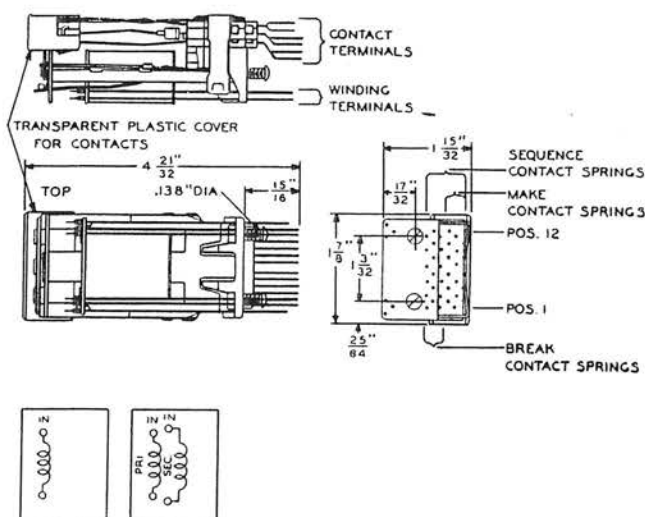


Fig. 1 Fig. 2

Slow release wire spring relays equipped with short-circuited sleeves over the cores, unless otherwise specified.

Each has two or three parallel rows of wire contact springs, each row molded into an individual base. The wire springs are tensioned during manufacture and are positioned by a fixed card and a moving card. The fixed card is attached to the relay frame and the moving card is actuated by the armature. Relays having two rows of springs contain only make or break contacts. Relays having three rows of springs contain both make and break contacts. Moving contact springs are arranged in pairs to provide twin contacts, each moving wire having bar contacts with a gold overlay. All terminals are arranged for mechanically wrapped connections.

On some of these relays, the movement of the armature causes one group of contact pairs to make (or break) before a second group of contact pairs make (or break) and the second group of contact pairs to make (or break) before a third group of contact pairs make (or break). ("Group" as used herein should be interpreted to mean one or more.) Those groups of contact pairs which make (or break) last are called "ordinary" contacts, those which make (or break) prior to "ordinary" contacts are called "early" contacts and those which make (or break) prior to "early" contacts are called "preliminary" contacts. Some relays may have only "ordinary" contacts, others may have "ordinary," "early" and "preliminary" contacts.

Current values specified are readjust values. Circuit test values are 105 percent of the operate and hold values and 95 percent of the non-operate and release values.

Construction of the relays is such that insulating bushings are not required in the associated mounting plate.

Inductive windings do not vary more than  $\pm 10$  percent and non-inductive windings more than  $\pm 5$  percent from their rated resistance value unless otherwise indicated.

Can be obtained equipped with a 4B Clip, a P-19A890 Flexible Mounting, and a P-19A146 Cross-talk Shield when specified in order.

Will mount on 1-5/8 inch horizontal and 2 inch vertical centers, and, when located adjacent to similar relays, will mount on 1-1/2 inch horizontal centers. Relays equipped with a P-19A146 Cross-talk Shield will mount on 1-3/4 inch horizontal centers.

The following are representative types:

Code No.	Comcode	Winding Arrangement Fig. No.	Number of Pairs of Contacts	Windings	Rated Resistance (Ohms)	Current (Milliamperes DC)			
						Operate	Non-Operate	Release	Hold
AG1	100 472 133	1	12	Single	1050	12.1	—	1.6	2.5
(*)100 472 141									
AG14(b)	100 472 372	2	6	{ Primary	400	30.0	—	3.6(a)	4.4(a)
(*)100 472 380				{ Secondary	210(c)				
AG21(b)	100 472 513	2	7	{ Primary	450	46.0	—	4.6(a)	5.7(a)
(*)100 472 521				{ Secondary	57				
AG58(b)	100 473 230	2	4	{ Primary	700	13.8	7.3	1.5	2.0
(*)100 473 248				{ Secondary	700				

(\*) E/W 4B Clip.

(a) With secondary winding short-circuited.

(b) Has no short-circuited sleeve over core.

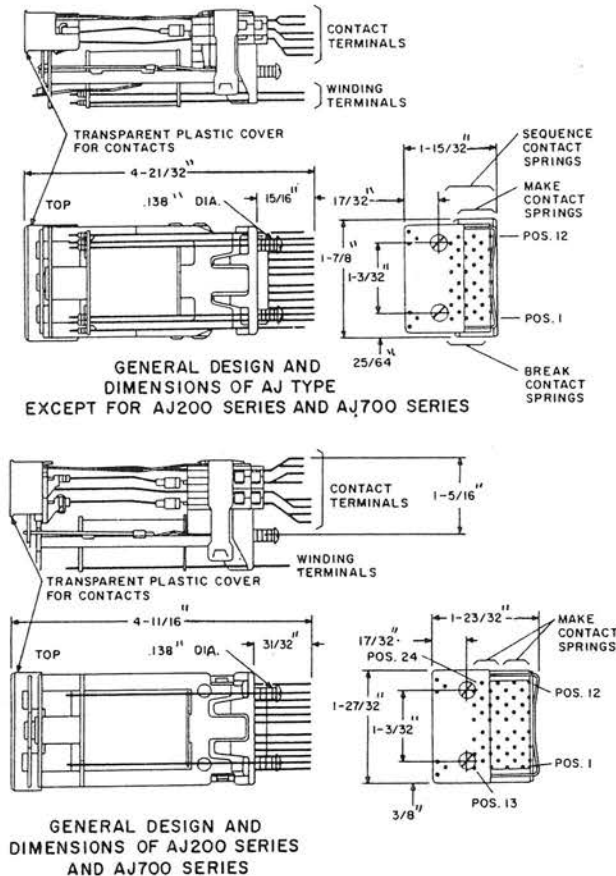
(c) Plus or minus 3 percent.



## RELAYS

## Wire Spring Type

## AJ Type



General purpose wire spring relays for sensitive, marginal, or heavier springs loads.

Each has two or three parallel rows of wire contact springs, each row molded into an individual base. The wire springs are tensioned during manufacture and are positioned by a fixed card and a moving card. The fixed card is attached to the relay frame and the moving card is actuated by the armature. Relays having two rows of springs contain only make or break contacts. Relays having three rows of springs contain both make and break contacts. Moving contact springs are arranged in pairs to provide twin contacts, each moving wire having bar contacts with a gold overlay. All terminals are arranged for mechanically wrapped connections.

On some of these relays, the movement of the armature causes one group of contact pairs to make (or break) before a second group of contact pairs make (or break) and the second group of contact pairs to make (or break) before a third group of contact pairs make (or break). ("Group" as used herein shall be interpreted to mean one or more.) Those groups of contact pairs which make (or break) last are called "ordinary" contacts, those which make (or break) prior to "ordinary" contacts are called "early" contacts and those which make (or break) prior to "early" contacts are called "preliminary" contacts. Some relays may have only "ordinary" contacts, others may have "ordinary," "early" and "preliminary" contacts.

Current values specified are readjust values. Circuit test values are 105 percent of the operate and hold values and 95 percent of the non-operate and release values.

Construction of the relays is such that insulating bushings are not required in the associated mounting plate.

Inductive windings do not vary more than  $\pm 10$  percent and non-inductive windings more than  $\pm 5$  percent from their rated resistance value unless otherwise indicated.

All types except AJ200 and AJ700 series can be obtained equipped with a 4B Clip, a P-19A890 Flexible Mounting, and a P-19A146 Cross-talk Shield when specified in the order.

Will mount on 2-inch vertical centers. All relays, except AJ200 and AJ700 series, will mount on 1-5/8 inch horizontal centers and when mounted adjacent to similar relays will mount on 1-1/2 inch horizontal centers. The closest recommended mounting centers for the AJ200 and the AJ700 are 2-1/2 inches. Closer centers down to 1-3/4 inches may be used but may result in congested wiring.

Relays equipped with a P-19A416 Cross-Talk Shield will mount on 1-3/4 inch horizontal centers. Codes in the AJ500 and AJ700 series have long life features.

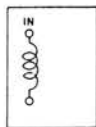


Fig. 1

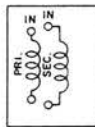


Fig. 2



## RELAYS

## Wire Spring Type

## AJ-Type (Continued)

The following are representative types:

Code No.	Comcode	Winding Arrangement Fig. No.	Number of Pairs of Contacts	Windings	Rated Resistance (Ohms)	Current (Milliamperes DC)			
						Operate	Non-Operate	Release	Hold
AJ1	100 473 297	2	2	{ Primary	200	—	—	—	—
	(*)100 473 305			{ Secondary	200	—	—	—	—
				{ Pri & Sec (a)	—	19.0	—	10.8	—
AJ23	100 473 644	2	1	{ Primary	200	—	—	—	—
	(*)100 473 651			{ Secondary	200	—	—	—	—
				{ Pri & Sec (a)	—	13.5	10.0	6.5	—
AJ90	100 474 949	1	12	Single	16	100.0	—	—	53.0
	(*)100 984 491								
AJ200	100 475 821	1	24	Single	500	28.5	—	—	—
	(*)100 475 839								
AJ500	100 475 920	1	20	Single	950	17.0	—	—	—
	(*)100 475 938								
AJ510	100 476 126	2	5	{ Primary	2.70 (b)	240.0	215.0	—	—
	(*)100 476 134			{ Secondary	690 (b)	47.0	—	—	—
AJ700(c)	100 476 340	1	24	Single	270	85.0	—	—	—
	(*)100 476 357								

(\*) E/W 4B Clip.

(a) In series aiding.

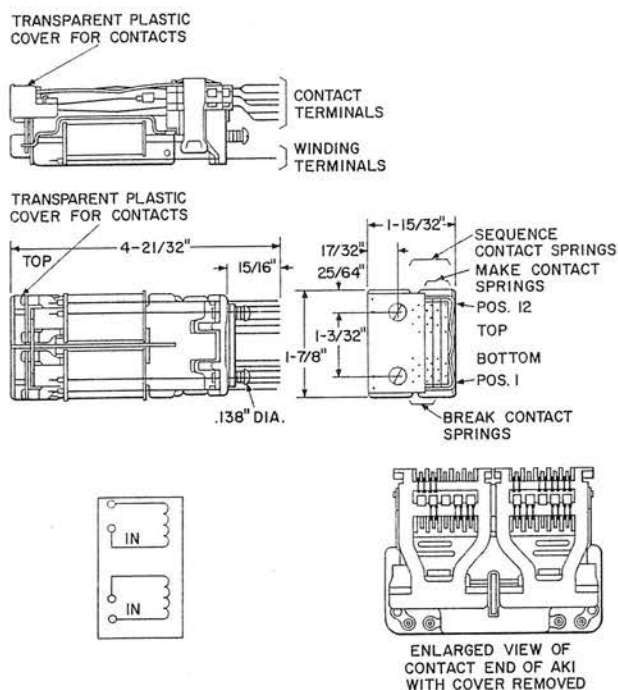
(b) Plus or minus 15 percent.

(c) Closest recommended mounting centers are 2-1/2 inches.

## RELAYS

## Wire Spring Type

## AK Type



The AK type relays are generally the same as the AF type, except they are designed to mount interchangeably with the AF type and there are two independent relay units. To effect a space saving, they may be used as a substitute for two AF type relays, each of which has a single winding coil and five or less sets of contacts.

Can be obtained equipped with a 4B Clip when specified in the order.

Will mount on 1-5/8 inch horizontal and 2 inch vertical centers, unless otherwise indicated by footnote. When located adjacent to similar relays, will mount on 1-1/2 inch horizontal centers.

The following are representative types:

Code No.	Comcode	Number of Pairs of Contacts	Relay Position	Windings	Rated Resistance (Ohms)	Operate	Current (Milliamperes DC)				Release Time Open Circuit (Second)	
							Non-Operate	Release	Hold	Soak	Max	Min
AK1(a)	100 476 407	13	TOP	Single	410	24.5	—	—	—	—	—	—
(*)	100 476 415		BOT	Single	315	36.5	—	—	4.9	46.0	—	.060
AK3	100 476 449	8	TOP	Single	185	31.0	—	—	—	—	—	—
(*)	100 476 456		BOT	Single	280	26.0	—	—	—	—	—	—
AK6	100 476 506	20	TOP	Single	640	27.5	—	—	—	—	—	—
(*)	100 476 514		BOT	Single	640	27.5	—	—	—	—	—	—
AK25	100 476 886	6	TOP	Single	640	13.5	—	2.0	—	—	—	—
(*)	100 476 894		BOT	Single	640	13.5	—	2.6	—	—	—	—
AK33	100 477 041	13	TOP	Single	2450	10.4	—	—	3.5	—	—	—
(*)	100 477 058		BOT	Single	2450	12.6	—	—	1.5	—	—	—
AK35	100 477 082	18	TOP	Single	2450	11.8	—	—	—	—	—	—
(*)	100 477 090		BOT	Single	680	30.0	—	—	4.2	48.0	—	.050

(\*) E/W 4B Clip.

(a) Bottom relay unit is slow release and has a copper sleeve over the bottom core.

## RELAYS

## Miniature Flat Spring Type

## MA Type

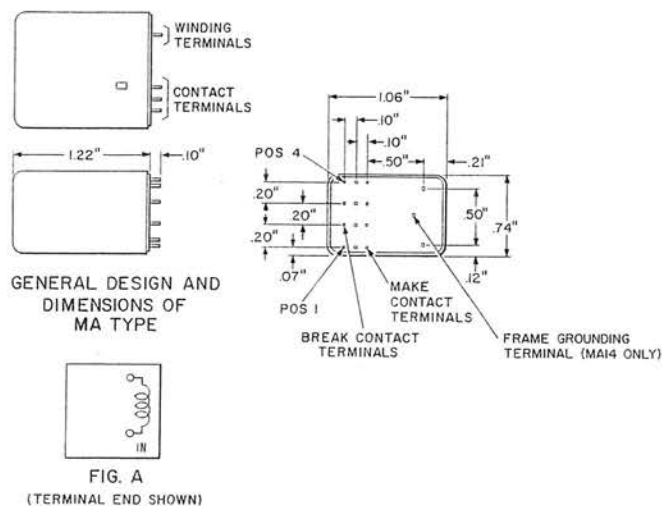
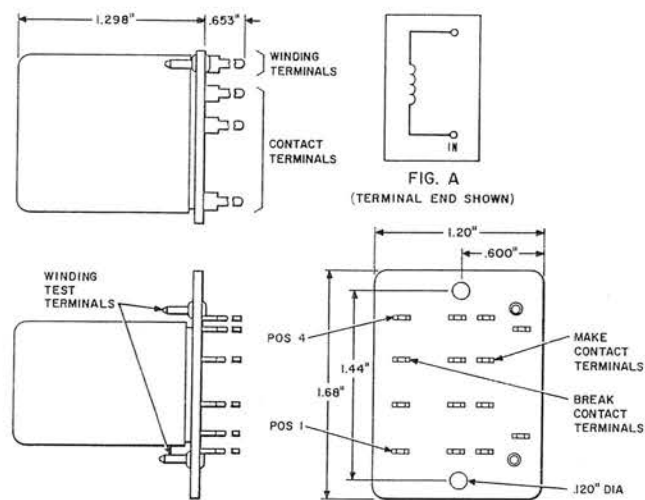


Fig. 1



MA1, MA3 thru MA16, MA19 thru MA22 & 27: Miniature card-operated flat spring relays arranged to mount on printed wiring boards. Terminal cross-sections are 0.025 inch square and 0.030 inch by 0.006 inch. Each has two or three parallel rows of flat contact springs. Relays having two rows of springs contain only make or break contacts. Relays having three rows of springs contain both make and break contacts. Stationary contact springs have bar type contacts of number 2 metal. Moving contact springs are arranged in pairs to provide twin contacts. Each moving spring has bar contacts of number 2 metal with a good overlay.

On some of these relays, the movement of the armature causes one group of contact pairs to make (or break) before a second group of contact pairs makes (or breaks). ("Group" as used herein should be interpreted to mean one or more). Those groups of contact pairs which make (or break) last are called "ordinary" contacts and those which make (or break) prior to "ordinary" contacts are called "early" contacts. Some relays may have only "ordinary" contacts and others may have both "ordinary" and "early" contacts. In the following table, the contacts of a relay are identified by a "Spring Combination Number" which is referred to in connection with a description of the relays. Spring combination numbers from 1 to 49 are assigned to single-stage (short travel) relays and 100 to 199 to two-stage (intermediate travel) relays.

Current values specified are readjust values. Circuit test values are 105 percent of the operate and hold values and 95 percent of the nonoperate and release values.

On new or repaired relays, inductive windings do not vary more than plus or minus 5 percent from their rated resistance value unless otherwise indicated by footnote.

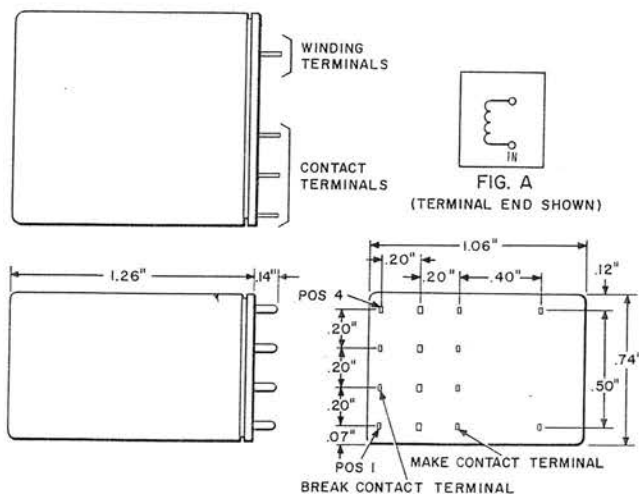


Fig. 2



## RELAYS

## Miniature Flat Spring Type

Will mount on 1.1 inch horizontal and 0.8 inch vertical centers.

MA1A and MA3A thru MA13A & MA23A: Consists of MA1 and MA3 through MA13 relays, respectively, equipped with an insulated plate adapter arranged for increased spacing and length of the relay terminals. Will mount on 1.1 inch horizontal and 1.05 inch vertical centers.

MA1C, MA3C thru MA13C and MA15C: Consists of MA1, MA3 through MA13, and MA15 relays, respectively, equipped with an insulator having solderless wrapped terminals. Also winding test terminals have been added on the apparatus side. Arranged to mount on 2 inch channel type mounting plates. Will mount on 1.25 inch horizontal and 1.75 inch vertical centers.

Spring Combination No.	No. of Pairs of Contacts	1	(a) Positions 2	3	4
1	4	M	M	M	M
2	4	M	B	B	M
3	5	BM	M	M	M
4	2	B	—	—	M
100	8	EBM	EBM	EBM	EBM
101	8	EMB	EBM	EBM	EBM
102	8	EMB	EBM	EBM	EMB
104	5	EBM	M	M	M
105	6	EMB	M	M	EBM
106	6	EBM	M	M	EBM

(a) Position numbers are for reference only and do not appear on the relay.

M — Make

B — Break

BM — Break-Make (nonsequence transfer)

EBM — Early Break-Make (sequence transfer)

EMB — Early Make-Break (continuity)

Code No.	Comcode	Fig. No.	Winding Arrange- ment Fig.	Number of Pairs of Contacts	Spring Combi- nation No.	Windings	Rated Resistance (Ohms)	Current (Milliamperes DC) Operate	Non- Operate	Re- lease	Hold
MA1	100 477 595	1	A	8	100	Single	915	16.0	—	—	—
MA3	100 477 611	1	A	4	2	Single	590	13.0	9.0	1.5	—
MA4	100 477 629	1	A	8	101	Single	915	16.0	—	2.0	—
MA5	100 477 637	1	A	8	100	Single	590	20.0	—	—	—
MA6	100 477 645	1	A	8	100	Single	(a)2100	12.0	—	—	—
MA7	100 477 652	1	A	5	3	Single	(a)2100	7.8	—	—	—
MA8	100 477 660	1	A	2	4	Single	915	10.4	—	—	—
MA9	100 477 678	1	A	8	101	Single	590	21.0	—	—	—
MA10	100 477 686	1	A	8	101	Single	330	29.5	—	—	—
MA11	100 477 694	1	A	8	102	Single	590	21.0	—	—	—
MA12	100 477 702	1	A	4	1	Single	915	12.0	—	—	—
MA13	100 477 710	1	A	2	4	Single	590	15.0	—	—	—
(b)MA14	100 477 728	1	A	8	100	Single	590	20.0	—	—	—
MA15	100 477 736	1	A	5	104	Single	(a)2100	9.5	—	—	—
MA16	100 477 744	1	A	6	105	Single	330	26.0	—	—	—
MA19	100 477 769	1	A	6	105	Single	915	16.0	—	1.2	—
MA20	101 162 111	1	A	4	1	Single	330	19.5	—	—	8.0
MA21	101 163 129	1	A	4	2	Single	(a)3800	5.7	—	—	—
MA22	101 202 588	1	A	8	107	Single	590	21.0	—	—	—
MA27	101 593 572	1	A	3	6	Single	(a)3600	6.2	4.5	—	—
MA1A	100 477 777	2	A	8	100	Single	915	16.0	—	—	—
MA3A	100 477 785	2	A	4	2	Single	590	13.0	9.0	1.5	—
MA4A	100 477 793	2	A	8	101	Single	915	16.0	—	2.0	—
MA5A	100 477 801	2	A	8	100	Single	590	20.0	—	—	—
MA6A	100 477 819	2	A	8	100	Single	(a)2100	12.0	—	—	—
MA7A	100 477 827	2	A	5	3	Single	(a)2100	7.8	—	—	—
MA8A	100 477 835	2	A	2	4	Single	915	10.4	—	—	—
MA9A	100 477 843	2	A	8	101	Single	590	21.0	—	—	—
MA10A	100 477 850	2	A	8	101	Single	330	29.5	—	—	—
MA11A	100 477 868	2	A	8	102	Single	590	21.0	—	—	—



## RELAYS

## Miniature Flat Spring Type

## MA Type (Continued)

Code No.	Comcode	Fig. No.	Winding Arrangement Fig.	Number of Pairs of Contacts	Spring Combination No.	Windings	Rated Resistance (Ohms)	Current (Milliamperes DC)			
								Operate	Non-Operate	Re-lease	Hold
MA12A	100 477 876	2	A	4	1	Single	915	12.0	—	—	—
MA13A	100 477 884	2	A	2	4	Single	590	15.0	—	—	—
MA23A	101 496 388	2	A	4	108	Single	(b) 750	15.5	—	—	—
MA1C	100 478 031	3	A	8	100	Single	915	16.0	—	—	—
MA3C	100 478 049	3	A	4	2	Single	590	13.0	9.0	1.5	—
MA4C	100 478 056	3	A	8	101	Single	915	16.0	—	2.0	—
MA5C	100 478 064	3	A	8	100	Single	590	20.0	—	—	—
MA6C	100 478 072	3	A	8	100	Single	(a) 2100	11.0	—	—	—
MA7C	100 478 080	3	A	5	3	Single	(a) 2100	7.8	—	—	—
MA8C	100 478 098	3	A	2	4	Single	915	10.4	—	—	—
MA9C	100 478 106	3	A	8	101	Single	590	21.0	—	—	—
MA10C	100 478 114	3	A	8	101	Single	330	29.5	—	—	—
MA11C	100 478 122	3	A	8	102	Single	590	21.0	—	—	—
MA12C	100 478 130	3	A	4	1	Single	915	12.0	—	—	—
MA13C	100 478 148	3	A	2	4	Single	590	15.0	—	—	—
MA15C	100 478 155	3	A	5	104	Single	(a) 2100	9.5	—	—	—

(a) Plus or minus 10 percent.

(b) Plus or minus 5 percent.

RELAYS

Miniature Flat Spring Type

MB Type

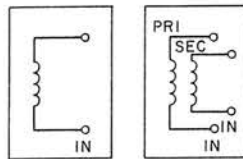
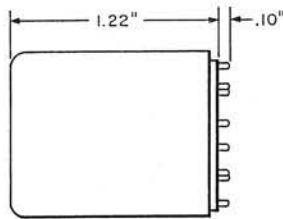
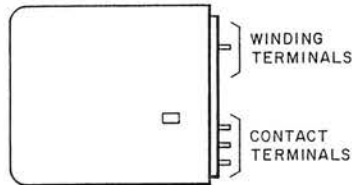


FIG. A  
FIG. B  
TERMINAL ENDS SHOWN

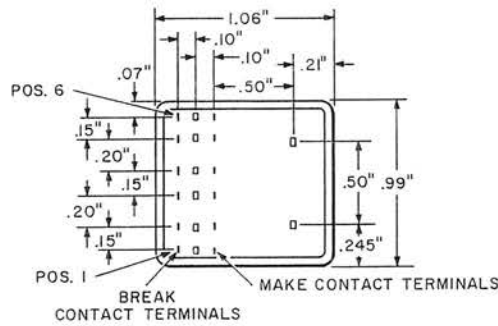


FIG. 1A

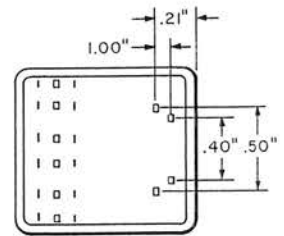


FIG. 1B  
(OTHERWISE SAME AS FIG. 1A)

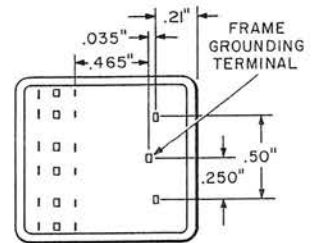


FIG. 1C  
(OTHERWISE SAME AS FIG. 1A)

Fig. 1

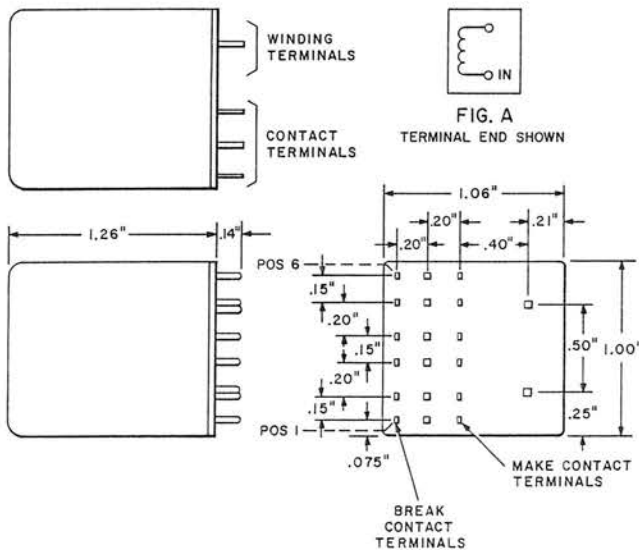


Fig. 2

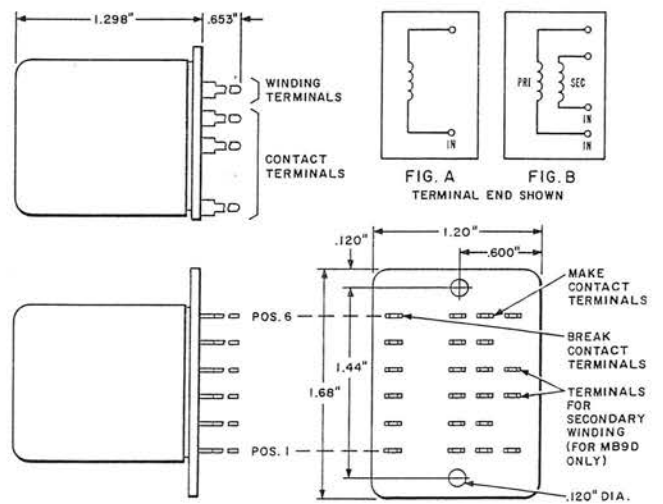


Fig. 3

## RELAYS

## Miniature Flat Spring Type

## MB Type (Continued)

MB1 thru MB14 and MB16 thru MB18: Miniature card-operated flat spring relays arranged to mount on printed wiring boards. Terminal cross sections are 0.25 inch square and 0.030 inch by 0.006 inch. Have two or three parallel rows of flat contact springs. Relays having two rows of springs contain only make or break contacts. Relays having three rows of springs contain both make and break contacts. Stationary contact springs have bar type contacts of number 2 metal. Moving contact springs are arranged in pairs to provide twin contacts. Each moving spring has bar contacts of number 2 metal with a gold overlay.

On some of these relays, the movement of the armature causes one group of contact pairs to make (or break) before a second group of contacts make (or break). ("Group" as used herein should be interpreted to mean one or more). These groups of contact pairs which make (or break) last are called "ordinary" contacts and those which make (or break) prior to "ordinary" contacts are called "early" contacts. Some relays may have only "ordinary" contacts, and others may have both "ordinary" and "early" contacts. In the following table, the contacts of a relay are identified by a "Spring Combination Number" which is referred to in connection with a description of the relays. Spring com-

bination numbers from 50 to 99 are assigned to single-stage (short travel), and 200 and up to two-stage (intermediate travel) relays.

Current values specified are readjust values. Circuit test values are 105 percent of the operate and hold values and 95 percent of the nonoperate and release values.

On new or repaired relays, inductive windings do not vary more than plus or minus 5 percent from their rated resistance value unless otherwise indicated by footnote.

Will mount on 1.1 inch horizontal and 1.05 inch vertical centers.

MB1A thru MB8A, MB10A and MB12A: Same as MB1 through MB8, MB10 and MB12, respectively, except they are equipped with an insulated adapter arranged for increased spacing and length of relay terminals.

MB1D thru MB10D and MB12D thru MB14D: Same as MB1 through MB10 and MB12 through MB14, respectively, except they are equipped with an insulated adapter provided with solderless wrapped terminals and are intended for general purpose use on 2-inch channel-type mounting plates. Will mount on 1.250 inch horizontal and 1.750 inch vertical centers.

Spring Combination No.	No. of Pairs of Contacts	(a) Positions					
		1	2	3	4	5	6
50	6	M	M	M	M	M	M
200	12	EBM	EBM	EBM	EBM	EBM	EBM
201	8	EBM	M	M	M	M	M
202	9	B	EBM	M	M	EBM	EBM
203	12	EBM	EBM	EBM	EBM	EBM	EBM
204	7	EBM	—	EB	M	M	EBM
205	12	EBM	EBM	EBM	EBM	EBM	EBM
207	9	EBM	EBM	—	EBM	EBM	EB
208	12	EBM	EBM	EBM	EBM	EBM	EBM
209	9	M	M	M	EBM	EBM	EBM

(a) Position numbers are for reference only and do not appear on the relay.

M — Make

B — Break

EB — Early Break

EBM — Early Break-Make (sequence transfer)

EBM — Early Make-Break (continuity)



## RELAYS

## Miniature Flat Spring Type

Code No.	Comcode	Fig. No.	Winding Arrangement Fig.	Number of Pairs of Contacts	Spring Combination No.	Windings	Rated Resistance (Ohms)	Current (Milliamperes DC)			
								Operate	Non-Operate	Re-lease	Hold
MB1	100 478 163	1A	A	12	200	Single	590	24	—	—	—
MB2	100 478 171	1A	A	8	201	Single	915	18	—	—	—
MB3	100 478 189	1A	A	9	202	Single	915	18	10.5	—	5
MB4	100 478 197	1A	A	6	50	Single	915	16	—	—	—
MB5	100 478 205	1A	A	12	203	Single	590	24	—	—	—
MB6	100 478 213	1A	A	7	204	Single	915	17.5	—	—	—
MB7	100 478 221	1A	A	12	205	Single	590	24	—	—	—
MB8	100 478 239	1A	A	9	207	Single	330	31	—	—	—
MB9	100 478 247	1B	B	12	200	{ Pri.	(a) 440	40	—	—	12
						{ Sec.	(a) 350	48.5	—	—	—
MB10	100 478 254	1A	A	12	200	Single	(a) 2100	13.5	—	—	—
(b) MB11	100 478 262	1C	A	12	200	Single	590	24	—	—	—
MB12	100 478 270	1A	A	12	208	Single	(a) 2100	13	—	—	—
MB13	100 478 288	1A	A	8	201	Single	590	22.5	—	—	—
MB14	100 478 296	1A	A	12	208	Single	590	25	—	—	—
MB16	100 478 312	1A	A	8	201	Single	750	19	—	1.3	—
MB17	100 478 320	1A	A	12	203	Single	750	20	12.5	—	7
MB18	101 163 137	1B	B	9	209	{ Pri.	(a) 355	43.0	—	—	—
						{ Sec.	(a) 435	33.0	—	—	11.0
MB1A	100 478 338	2	A	12	200	Single	590	24	—	—	—
MB2A	100 478 346	2	A	8	201	Single	915	18	—	—	—
MB3A	100 478 353	2	A	9	202	Single	915	18	10.5	—	5
MB4A	100 478 361	2	A	6	50	Single	915	16	—	—	—
MB5A	100 478 379	2	A	12	203	Single	590	24	—	—	—
MB6A	100 478 387	2	A	7	204	Single	915	17.5	—	—	—
MB7A	100 478 395	2	A	12	205	Single	590	24	—	—	—
MB8A	100 478 403	2	A	9	207	Single	330	31	—	—	—
MB10A	100 478 411	2	A	12	200	Single	(a) 2100	13.5	—	—	—
MB12A	100 478 437	2	A	12	208	Single	(a) 2100	13	—	—	—
MB1D	100 478 577	3	A	12	200	Single	590	24	—	—	—
MB2D	100 478 585	3	A	8	201	Single	915	18	—	—	—
MB3D	100 478 593	3	A	9	202	Single	915	18	10.5	—	5
MB4D	100 478 601	3	A	6	50	Single	915	16	—	—	—
MB5D	100 478 619	3	A	12	203	Single	590	24	—	—	—
MB6D	100 478 627	3	A	7	204	Single	915	17.5	—	—	—
MB7D	100 478 635	3	A	12	205	Single	590	24	—	—	—
MB8D	100 478 643	3	A	9	207	Single	330	31	—	—	—
MB9D	100 478 650	3	B	12	200	{ Pri.	(a) 440	40	—	—	12
						{ Sec.	(a) 350	48.5	—	—	—
MB10D	100 478 668	3	A	12	200	Single	(a) 2100	13.5	—	—	—
MB12D	100 478 676	3	A	12	208	Single	(a) 2100	13	—	—	—
MB13D	100 478 684	3	A	8	201	Single	590	22.5	—	—	—
MB14D	100 478 692	3	A	12	208	Single	590	25	—	—	—

(a) Plus or minus 10 percent.

(b) Same as MB1 except provided with a frame grounding terminal.



## RELAYS

## Polarized Type

## 209 Type

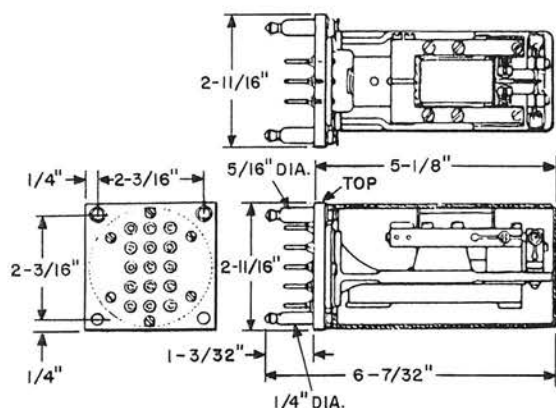


Fig. 1

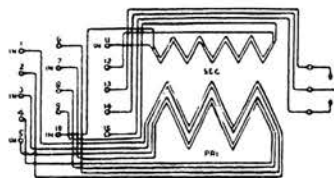


Fig. 2

Highly sensitive polarized relays equipped with reed type armatures and dust-proof covers.

Mount on number 823, 824, or similar mounting plates through medium of 18A Connecting Blocks. Insulated from mounting plates. Mount mechanically on 2-3/4 inch vertical and horizontal centers; but due to sensitiveness to magnetic interference with respect to other relays or other magnetic apparatus, mounting centers should be given special consideration in each case. 18A Connecting Block must be ordered separately. Schematic for 209FD is shown in Fig. 1 and 209FG is shown in Fig. 2.

Used in telegraph circuits.

Code No.	Comcode	Primary Each	No. of Windings	Resistance (Ohms)		No. of Windings	Operate (Amp) Minimum
				Each	Secondary		
209FD	100 404 722	675 ( $\pm 15\%$ )	3	—	—	—	.00175(a)
209FG(b)	100 404 748	185 Approx	4	115 (+12%, -10%)	—	2	.001(c)

- (a) Through each one of the three parallel windings.
- (b) Equipped with extra heavy contacts on armature.
- (c) Through 4 primary windings in series aiding.

## RELAYS

## Polarized Type

## 314A and B Type

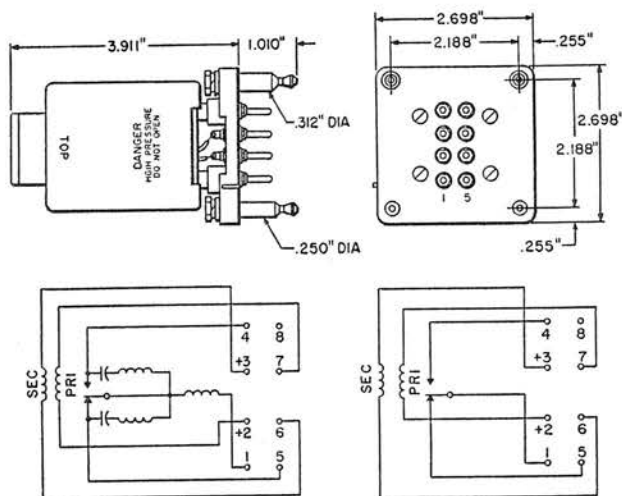


Fig. 1

Fig. 2

Plug-in type latching relay consisting of a switch (having biasing permanent magnets) within a coil, and capacitors and inductors potted in a metal can and assembled on a base of insulating material. Switch provides a transfer consisting of one back contact, one front contact, and a swinger which are continuously coated with mercury and enclosed in an atmosphere of hydrogen in a sealed glass tube. At all practical operating rates, there will be a period during the transfer in either direction when all switch contacts will be electrically open. This transfer interval is at least .04 millisecond.

Relay does not vary more than  $\pm 10$  percent from the rated resistance.

Positive potential should be connected as indicated.

Can be operated in a horizontal position (with the orientation mark at the top) or in a vertical position (with the handle at the top). Closest recommended mounting centers are 2-3/4 inches. Arranged to mount on a number 823, 884, or similar type mounting plate by means of an 18B Connecting Block which must be ordered separately.

314A has built-in contact protection and is used on all carrier telegraph systems for send and receiving positions. 314B is not provided with contact protection and is used on carrier telegraph systems for send positions only.

Code No.	Comcode	Fig. No.	Winding	Rated Resistance (Ohms)	Test Current Flow Values (Milliamperes DC)			
					Operate	Non-Operate	Hold	Release
314A	100 414 663	1	Primary	136	—	—	—	—
			Secondary	136	—	—	—	—
			Pri & Sec(a)	—	+1.2(b)	+3(b)	-.3(b)	-1.2(b)
314B	100 414 671	2	Primary	136	—	—	—	—
			Secondary	136	—	—	—	—
			Pri & Sec(a)	—	+1.2(b)	+3(b)	-.3(b)	-1.2(b)

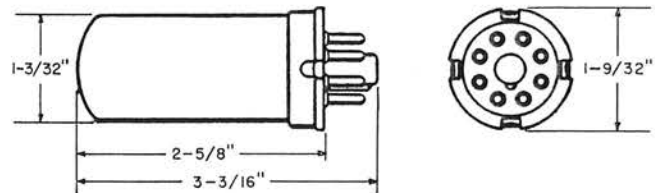
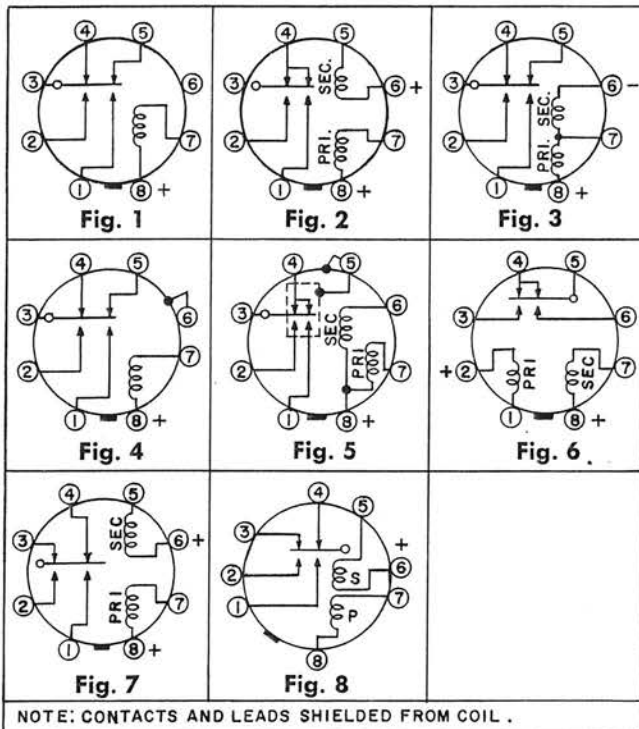
(a) In series aiding.

(b) With current applied between terminals 2 and 6 with terminals 3 and 7 strapped.

## RELAYS

## Nonadjustable Type

## 275 and 276 Type



275 Type

Dimensions of 276 type are the same as 275 type except for the length which is 3-21/32 inches.

Each consists of a switch within a solenoidal coil contained in a metal electron tube shell equipped with a small wafer octal base. The switch provides a transfer consisting of two front contacts, two back contacts, and a single swinger which are continuously coated with mercury and enclosed in an atmosphere of hydrogen in a sealed glass tube. At all practical operating rates there will be a period during the transfer in either direction when all switch contacts will be electrically connected or bunched. This bunching interval is not expected to exceed one millisecond.

Relays do not vary more than  $\pm 10$  percent from the rated resistance unless otherwise indicated by footnote.

Positive potential should be connected as indicated.

Should be mounted in a vertical position or within 30 degrees of the vertical.

Code No.	Comcode	Fig. No.	Windings	Rated Resistance (Ohms)	Test Current Flow Values (Milliamperes DC)				
					Soak	Operate(a)	Non-Operate	Hold	Release
275A	100 412 196	1	Single	2500	—	10.1	—	—	4.5
275B	100 412 204	1	Single	4000	—	8.1	—	—	3.6
275C	100 412 212	3	{ Pri.	700	—	32.0	—	—	14.2
			{ Sec.	3300	—	12.9	—	—	—
275D	100 412 220	1	Single	700	—	20.0	—	—	8.9
275E	100 412 238	1	Single	2(b)	—	315	—	—	140
275F	100 412 246	8	{ Pri.	120	—	55.0	—	—	24.5
			{ Sec.	125	—	80.0	—	—	—
276A	100 412 253	1	Single	90	50.0	16.0	12.8	—	1.3
276B	100 412 261	1	Single	4000	9.0	3.0	2.3	—	0.2
276(c)	100 412 279	1	Single	4000	—	—	—	—	—
276D	100 412 287	1	Single	4000	—	1.5	—	—	1.5
276E	100 412 295	1	Single	4000	—	(d)	(d)	—	—
276F	100 412 303	1	Single	1000	17.0	5.6	4.5	—	0.4



## RELAYS

## Nonadjustable Type

Code No.	Comcode	Fig. No.	Windings	Rated Resistance (Ohms)	Test Current Flow Values (Milliamperes DC)				
					Soak	Operate(a)	Non-Operate	Hold	Release
276G	100 412 311	3	{ Primary	700	35.0	14.2	—	5.1	2.8
			{ Secondary	3300	12.0	5.7	—	—	—
276H	100 412 329	1	Single	90	50.0	32.0	—	18.5	15.0
276J	100 412 337	1	Single	4000	9.0	4.70	2.90	2.3	1.7
276K	100 412 345	4	Single	4000	—	(d)	(d)	—	—
276L(e)	100 412 352	5	{ Primary	1020	23.0	14.0	—	7.5	5.9
			{ Secondary	970	23.0	16.0	—	—	—
276M	100 412 360	1	Single	4000	9.0	5.9	—	3.4	2.8
276N	100 412 378	3	{ Primary	700	—	6.0	—	—	—6.0
			{ Secondary	3300	—	2.4	—	—	—2.4
276R	100 412 386	7	{ Primary	100	—	13.0	—	—	—13.0
			{ Secondary	1100	—	4.5	—	—	—
276S	100 412 394	1	Single	34	—	90.0	80.0	—	—
276T	100 412 402	2	{ Primary	2500(f)	20.0	6.7	—	—	0.5
			{ Secondary	2500(f)	20.0	7.8	—	—	—
276U	100 412 410	1	Single	1000	17.0	6.0	4.8	—	0.6
276W	100 412 428	1	Single	4000	9.0	4.0	—	2.7	1.1
276Y	100 412 436	1	Single	34	80.0	41.5	—	—	15.5

(a) After soak.

(b) Plus or minus 15 percent.

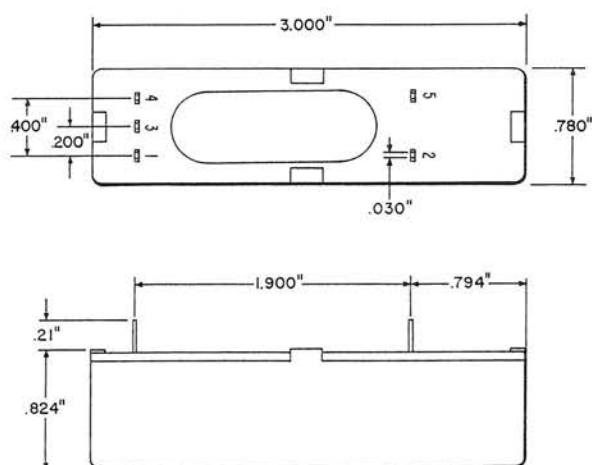
(c) Has special requirements.

(d) A 60 cps. 18.5 volt rms sinusoidal voltage applied to the winding will cause the armature to transfer from one pair of contacts to the other pair of contacts, and then return to the original contacts 60 times a second, with approximately equal time of dwell on the front and back contacts.

(e) Switch is electrostatically shielded.

(f) Plus or minus 5 percent.

## 323A



A nonadjustable relay consisting of a mercury wetted, sealed contact, having biasing permanent magnets housed within a solenoidal coil contained in a rectangular metal case. The sealed contacts provide two makes from a common swinger which are continuously coated with mercury and enclosed in an atmosphere of hydrogen in a sealed glass tube. It is a single winding relay having a rated resistance of 1650 ohms  $\pm 10\%$ . Has the following test current flow values in ma dc:

Soak	Operate (a)	Hold	Release
24.0	7.5 (b)	3.5	3.5

(a) After soak.

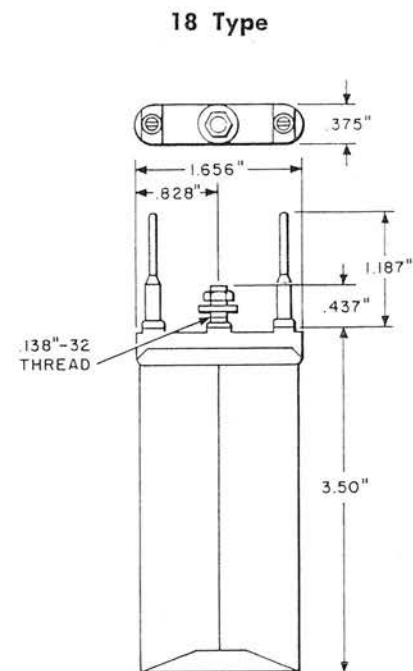
(b) With current applied between terminals 1 and 4, with terminal 1 positive.

It is arranged for mounting on printed wiring boards. Used for lamp power in 1A2 Key Telephone System. Comcode: 100 414 903





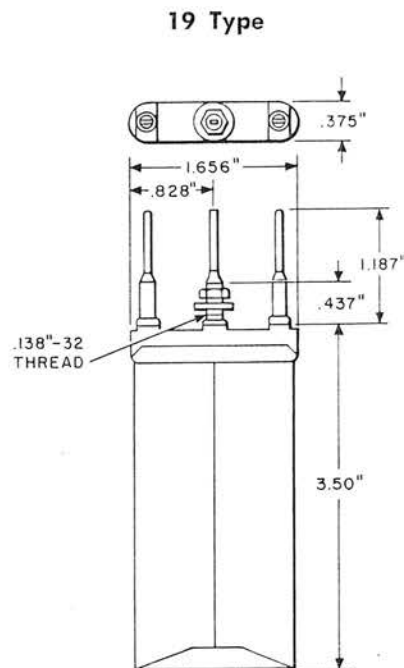
## RESISTORS



Single winding resistor. Winding is wound on a non-magnetic metal core. Resistor has a cover of insulating material. Terminals are tinned and arranged for mechanically wrapped connections.

May be obtained in varying resistance values from 0.3 ohm to 10,000 ohms having a tolerance of  $\pm 5$  percent. Tolerances of  $\pm 0.1$  of 1 percent,  $\pm 0.25$  percent,  $\pm 0.5$  percent, 1 percent, 2 percent, and 3 percent are available on some values. Available resistance values and tolerances may be established by referring to the table of preferred resistor values found at the end of the resistor section.

The normal power rating is 5.1 watts at  $150^{\circ}\text{F}$ . For each degree  $\text{F}$  that the ambient temperature exceeds  $150^{\circ}\text{F}$ , the power rating decreases about 1 percent. Trouble power rating is 12 watts at  $75^{\circ}\text{F}$ . For each degree that the ambient temperature exceeds  $75^{\circ}\text{F}$ , the trouble power rating decreases about  $1/2$  percent.



Two winding resistor. Each winding is wound on a non-magnetic metal core. Has three terminals, the center terminal being common to both windings. Has a cover of insulating material. Terminals are tinned and are arranged for mechanically wrapped connections.

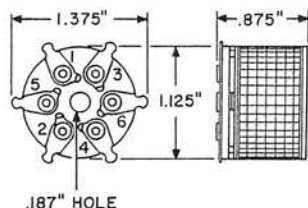
Closest recommended mounting centers are .4375 inch by 1.750 inches.

May be obtained in varying resistance values from 0.2 ohm in the low resistance section to 7560 ohms in the high resistance section having a tolerance of  $\pm 5$  percent. Tolerances of  $\pm 0.1$  of 1 percent,  $\pm 0.25$  percent,  $\pm 0.5$  percent, 1 percent, 2 percent, 4.2 percent, and 10 percent are available on some values. Available resistance values and tolerances may be established by referring to the table of preferred resistor values found at the end of the resistor section.

Normal total power rating distributed over the two resistor sections is 5.1 watts maximum at  $150^{\circ}\text{F}$ . For each degree  $\text{F}$  that the ambient temperature exceeds  $150^{\circ}\text{F}$ , the normal total power rating decreases approximately 1 percent. Trouble total power rating distributed over the two resistor sections is 12 watts at  $75^{\circ}\text{F}$ . For each degree that the ambient temperature exceeds  $75^{\circ}\text{F}$ , the trouble total power rating decreases approximately  $1/2$  percent.

## RESISTORS

36 Type

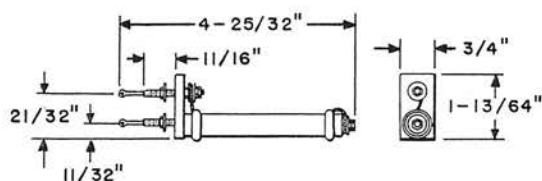


Consists of one or more windings noninductively wound on a spool having brass core and phenol fibre spoolhead.

Mounts by means of a screw which passes through the core. The mounting screws must be ordered separately. Closest recommended mounting centers are 1.625 inch.

The resistor has six terminals and from one to five different value resistances may be taken from one resistor. Resistors may be obtained in varying values from 10 ohms per section to 6500 per section. Tolerances of  $\pm 1/4$  of 1 percent,  $1/2$  of 1 percent, 1 percent, and 4 percent are available on some values. Available resistance values and tolerances may be established by referring to the table of preferred resistor values found at the end of the resistor section.

59 Type



Enameled porcelain type resistors capable of withstanding high temperatures.

Resistance values are held within limits of  $\pm 5$  percent except where indicated by footnote in table.

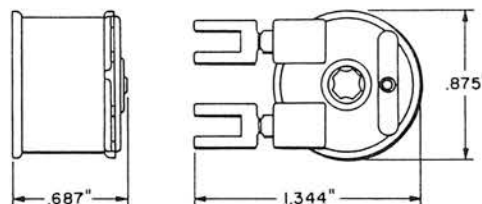
Arranged for mounting on mounting plates. Will mount on .875 inch horizontal centers and 1.3125 inch vertical centers. Except for horizontal centers, will mount on panels drilled for number 19 type resistors.

Code No.	Comcode	Nominal Resistance (Ohms)
59A	100 495 019	3000
59B	100 495 027	3500
59C	100 495 035	200
59D	100 495 043	115
59E	100 495 050	150
59F	100 495 068	240

Code No.	Comcode	Nominal Resistance (Ohms)
59G	100 495 076	60
59H	100 495 084	190
59K	100 495 092	112
59L	100 495 100	600
59M	100 495 118	850
59N	100 495 126	1000
59P	100 495 134	90
59R	100 495 142	107.5
59S	100 495 159	28(a)
59T	100 495 167	103.5(a)
59U	100 495 175	24(a)
59W	100 495 183	98(a)
59Y	100 495 191	110.5(a)

(a)  $\pm 1$  percent.

63 Type



Noninductive resistors wound on a spool of insulating material. Terminals are arranged for mechanically wrapped connections.

Arranged to mount by means of a number 6 screw through the core. The spool heads are formed so as to mesh with one another and thereby orient the terminals of adjacent resistors either in the same direction or in a diametrically opposite direction when mounted in multiple (stacked) on a single screw.

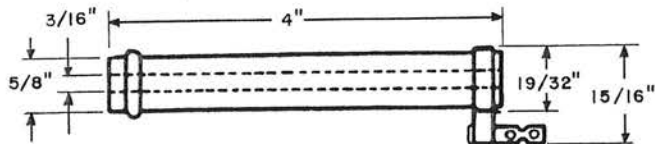
May be obtained in varying values from 3 ohms to 21,300 ohms with tolerance of  $\pm 5$  percent. Tolerances of  $\pm 0.5$  percent,  $\pm 0.6$  percent,  $\pm 1$  percent,  $\pm 2$  percent, and  $\pm 2$  ohms are available on some values. Available resistance values and tolerances may be established by referring to the table of preferred resistor values found at the end of the resistor section.

Power rating is 1 watt in free air and 2 watts when mounted singly on metal plates at an ambient temperature of  $150^{\circ}$  F. Maximum continuous operating temperature is  $250^{\circ}$  F.



## RESISTORS

## 67 Type



Enameled porcelain type resistor capable of withstanding high temperatures.

Mounts on 3/4 inch centers of number 4 type resistor mounting. Each resistor has one soldering terminal and the other connection is made through the number 4 type resistor mounting.

Power rating is 22 watts at 25° C ambient temperature. Resistance values are held to within limits of  $\pm 5$  percent, except where indicated by footnote in table.

Code No.	Comcode	Resistance (Ohms)
67A	100 496 421	2000
67B	100 496 439	120
67C	100 496 447	600
67D	100 496 454	1100
67E	100 496 462	1500
67F	100 496 470	300
67G	100 496 488	1000(a)
67H	100 496 496	3000
67J	100 496 504	800
67K	100 496 512	1300
67L	100 496 520	1750
67M	100 496 538	10
67N	100 496 546	856(a)

(a)  $\pm 1$  percent.

## 89 Type

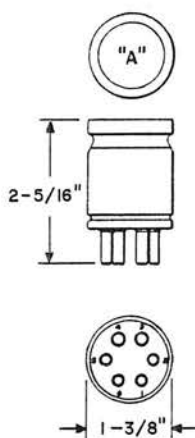


Fig. 1

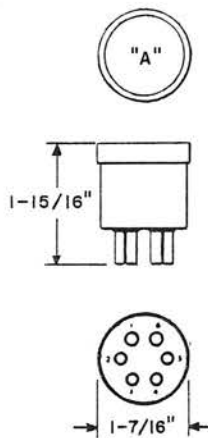


Fig. 2

Consists of resistor units potted in a base and connected to metal prongs unless otherwise noted in the footnotes in the tables.

Arranged to mount in a number 144 type electron tube socket.

TABLE I

Code No.	Comcode	Fig. No.	Nominal Resistance Value (Ohms)		(a)
			Between Terminals 1 & 2	Between Terminals 3 & 4	
89A(d)	100 497 411	1	Zero(b)	Infinite(c)	Zero
89B(d)	100 497 429	1	Infinite(c)	Zero(b)	Infinite
89C	100 497 437	1	17.9	10000	.5
89D	100 497 452	1	27.5	6545	.75
89E	100 497 460	1	36.5	4931	1
89F	100 497 478	1	46.6	3859	1.25
89G	100 497 486	1	56.5	3186	1.5
89H	100 497 494	1	67.2	2687	1.75
89J	100 497 502	1	77.75	2315	2
89K	100 497 510	1	89	2021	2.25
89L	100 497 528	1	100.3	1796	2.5
89M	100 497 536	1	111.9	1609	2.75
89N	100 497 544	1	123.8	1454	3
89P	100 497 551	1	136.5	1319	3.25
89R	100 497 569	1	149.1	1207	3.5
89S	100 497 577	1	162	1110	3.75
89T	100 497 585	1	174.8	1030	4
89U	100 497 593	1	189	952.1	4.25
89W	100 497 601	1	203.7	883.4	4.5
89Y	100 497 619	1	218.4	823.8	4.75
89AA	100 497 627	1	233.4	771.2	5
89AB	100 497 635	1	248.9	723.2	5.25
89AC	100 497 643	1	264.9	679.5	5.5
89AD	100 497 650	1	281.9	638.6	5.75
89AE	100 497 668	1	298.9	602.2	6
89AF	100 497 676	1	316.3	569.2	6.25
89AG	100 497 684	1	334.1	538.8	6.5
89AH	100 497 692	1	352.6	510.6	6.75
89AJ	100 497 700	1	371.1	484.3	7
89AK	100 497 718	1	391.4	459.9	7.25
89AL	100 497 726	1	411.4	437.5	7.5
89AM	100 497 734	1	432.4	416.3	7.75
89AN	100 497 742	1	453.5	396.9	8
89AP	100 497 759	1	475.7	378.4	8.25
89AR	100 497 767	1	498.3	361.2	8.5
89AS	100 497 775	1	521.8	345	8.75
89AT	100 497 783	1	545.5	330	9
89AU	100 497 791	1	571	315.2	9.25
89AW	100 497 809	1	595.5	302.3	9.5
89AY	100 497 817	1	622	289.4	9.75
89BA	100 497 825	1	649	277.3	10
89BB	100 497 833	1	703.9	255.7	10.5
89BC	100 497 841	1	764.4	235.4	11
89BD	100 497 858	1	827.5	217.5	11.5
89BE	100 497 866	1	894.3	201.2	12
89BF	100 497 874	1	965	186.5	12.5
89BG	100 497 882	1	1040	173.1	13
89BH	100 497 890	1	1119	160.8	13.5
89BJ	100 497 908	1	1203	149.6	14



## RESISTORS

## 89 Type (Continued)

TABLE I (Continued)

Code No.	Comcode	Fig. No.	Nominal Resistance Value (Ohms)			(a)
			Between Terminals 1 & 2	and 3 & 4	5 & 6	Stamped at A
89BK	100 497 916	1	1292		139.3	14.5
89BL	100 497 924	1	1387		129.8	15
89BM	100 497 932	1	1487		121.1	15.5
89BN	100 497 940	1	1593		113	16
89BP	100 497 957	1	1705		105.6	16.5
89BR	100 497 965	1	1824		98.7	17
89BS	100 497 973	1	1950		92.3	17.5
89BT	100 497 981	1	2083		86.4	18
89BU	100 497 999	1	2224		80.9	18.5
89BW	100 498 005	1	2374		75.8	19
89BY	100 498 013	1	2532		71.1	19.5
89CA	100 498 021	1	2700		66.7	20
89CB	100 498 039	1	2878		62.5	20.5
89CC	100 498 047	1	3066		58.7	21
89CD	100 498 054	1	3266		55.1	21.5
89CE	100 498 062	1	3477		51.8	22
89CF	100 498 070	1	5030		35.75	25
89CG	100 498 088	1	9190		19.59	30
89CH	100 498 096	1	8.76	20550		.25
89CJ	100 498 104	1	676.6		266.2	10.25
89CK	100 498 112	1	734.5		245	10.75
89CL	100 498 120	1	795.6		226.2	11.25
89CM	100 498 138	1	860.5		209.2	11.75
89CN	100 498 146	1	929.1		193.7	12.25
89CP	100 498 153	1	1002		179.6	12.75
89CR	100 498 161	1	1079		166.8	13.25
89CS	100 498 179	1	1161		155.1	13.75
89CT	100 498 187	1	1248		144.2	14.25
89CU	100 498 195	1	1339		134.4	14.75
89CW	100 498 203	1	1436		125.3	15.25
89CY	100 498 211	1	1539		116.9	15.75
89DA	100 498 229	1	1647		109.2	16.25
89DB	100 498 237	1	1764		102	16.75
89DC	100 498 245	1	1885		95.5	17.25
89DD	100 498 252	1	2015		89.36	17.75
89DE	100 498 260	1	2152		83.66	18.25
89DF	100 498 278	1	2298		78.3	18.75
89DG	100 498 286	1	2452		73.42	19.25
89DH	100 498 294	1	2614		68.84	19.75
89DJ	100 498 302	1	3166		56.86	21.25
89DK	100 498 310	1	3938		45.7	23
89FP	100 498 757	1	7236.0		24.9	28.00
89FR	100 498 765	1	8655.0		22.1	29.00
89FS	100 498 773	1	16570.0		10.9	35.00
89FT	100 498 781	1	2879.0		64.5	20.25
89FU	100 498 799	1	2971.0		60.6	20.75
89FW	100 498 807	1	3372.0		53.4	21.75
89FY	100 498 815	1	3585.0		50.2	22.25
89GA	100 498 823	1	3700.0		48.6	22.50
89GB	100 498 831	1	3818.0		47.2	22.75
89GC	100 498 849	1	5685.0		31.7	26.00
89GD	100 498 856	1	4455.0		40.4	24.00
89GE	100 498 864	1	6416.0		28.05	27.00

(a) Obtained only when associated with other resistors in miscellaneous pads and equalizers, in 600 ohm circuits.

(b) Strapped.

(c) Open.

(d) Contains no resistor units.

TABLE II

Code No.	Comcode	Fig. No.	Type Stamped at A	(a) Attenuation in dB
				Stamped at A
89DL(b)	100 498 328	1	75 Ohm Unbal	Zero
89DM	100 498 336	2	75 Ohm Unbal	1
89DN	100 498 344	2	75 Ohm Unbal	2
89DP	100 498 351	2	75 Ohm Unbal	4
89DR	100 498 369	2	75 Ohm Unbal	7
89DS	100 498 377	2	75 Ohm Unbal	10
89DT(b)	100 498 385	1	Bulge	Zero
89DU	100 498 393	2	Bulge	1
89DW	100 498 401	2	Bulge	2
89DY	100 498 419	2	Bulge	3
89EB	100 498 435	2	Bulge	5
89EC	100 498 443	2	Bulge	6
89ED	100 498 450	2	Bulge	7
89EE	100 498 468	2	Bulge	8
89EF	100 498 476	2	Bulge	9
89EG	100 498 484	2	Bulge	10
89EH	100 498 492	2	Bulge	11
89EK(b)	100 498 518	1	Slope	Zero
89EL	100 498 526	2	Slope	1
89EM	100 498 534	2	Slope	2
89EN	100 498 542	2	Slope	3
89EP	100 498 559	2	Slope	4
89ER	100 498 567	2	Slope	5
89ES	100 498 575	2	Slope	6
89ET	100 498 583	2	Slope	7
89EU	100 498 591	2	Slope	8
89EW	100 498 609	2	Slope	9
89EY	100 498 617	2	Slope	10
89FA	100 498 625	2	Slope	11
89FB	100 498 633	2	Slope	12
89FC(b)	100 498 641	2	1000 Ohm Unbal	Zero
89FD	100 498 658	2	1000 Ohm Unbal	10
89FE	100 498 666	2	1000 Ohm Unbal	20
89FF	100 498 674	2	1000 Ohm Unbal	30
89FG(b)	100 498 682	1	110 Ohm Balanced	Zero
89FH	100 498 690	2	110 Ohm Balanced	1
89FJ	100 498 708	2	110 Ohm Balanced	2
89FK	100 498 716	2	110 Ohm Balanced	4
89FL	100 498 724	2	110 Ohm Balanced	7
89FM	100 498 732	2	110 Ohm Balanced	10
89FN	100 498 740	2	Test	(c)

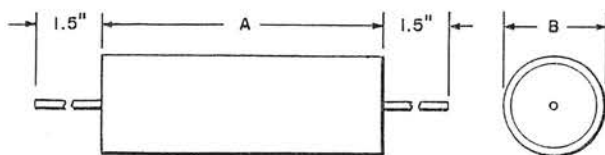
(a) Obtained when used in A2 video amplifier equipment in applications noted under "Type."

(b) Contains no resistor units.

(c) Has no attenuation stamping. Nominal resistance between terminals 3 and 5 is 1000 ohms, and between terminals 4 and 5 is 75 ohms.

## RESISTORS

## 106 and 107 Type



Tubular type resistors having a low reactance. Suitable for use at high frequencies.

Power rating for 106A, B, and C is 0.25 watt at 150° F (66° C) ambient temperature. Power ratings for 107A and B at 150° F (66° C) ambient temperature are as follows: For resistance values up to 60 ohms, 0.25 watt; 60 to 14990 ohms, 0.375 watt; 15,000 to 29,990 ohms, 0.50 watt; 30,000 to 59,990 ohms, 0.75 watt; 60,000 to 89,990 ohms, 1.0 watt; 90,000 to 149,900 ohms, 0.75 watt; 150,000 to 250,000 ohms, 1.0 watt. For each degree F that the ambient exceeds 150° F, the power rating decreases 1 percent.

Equipped with tinned axial terminals by which they can be supported.

Can be obtained in resistance values within the ranges indicated in table. The nominal resistance value desired must be specified in the order.

Code No.	Resistance Tolerance Limits	Allowable Range of Res (Ohms)	Dimensions A B (Inches)	
106A	± 1%	0.4 to 30,000	1	.328
106B(a)	±.25%	3.0 to 30,000	1	.328
106C	±.10%	10.0 to 12,000	1	.328
107A(b)	± 1%	0.4 to 250,000	1.531	.518
107B(b)	±.25%	7.0 to 250,000	1.531	.518

- (a) Because of their relatively high temperature coefficient of resistance, resistors above 12,000 ohms are not recommended for general use.
- (b) Because of their relatively high temperature coefficient resistance, resistors above 90,000 ohms are not recommended for general use.

## 144 Type

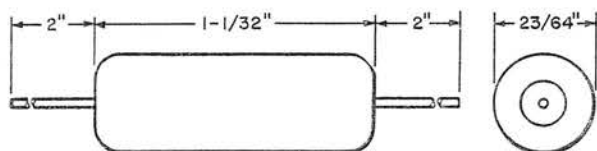


Fig. 1

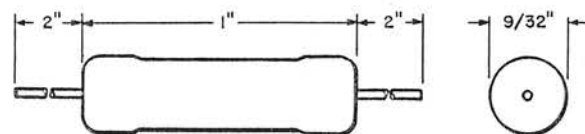


Fig. 2

Each consists of a ceramic core having a coating of deposited carbon. Provided with tinned axial leads.

Can be obtained in resistance values from 50 ohms to 5 megohms. The nominal resistance value desired must be specified in the order.

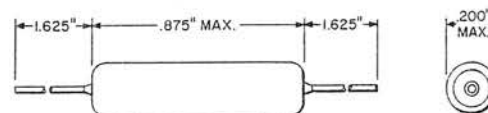
Power rating is 1 watt at 30° C (86° F) ambient temperature. For each degree C that the ambient exceeds 30° C, the power rating decreases about 1 percent. While under load at rated power, the resistance decreases about 2-1/2 percent in resistance value.

144A, B, and C: Have a baked enamel finish.

144E, F, and G: Have a baked enamel finish plus insulating sleeve which also provides protection against mechanical injury.

Code No.	Fig. No.	Resistance Tolerance Limits
144A	1	±1%
144B	1	±2%
144C	1	±5%
144E	2	±1%
144F	2	±2%
144G	2	±5%

## 145 Type



Each consists of a ceramic core having a coating of deposited carbon. Enclosed in a tube of insulating material and provided with tinned axial leads.

Power rating is 0.5 watt at 30° C (86° F) ambient temperature. For each degree C that the ambient exceeds 30° C, the power rating decreases about 1 percent. While under rated power, the resistance decreases about 2 percent in resistance value.



## RESISTORS

## 145 Type (Continued)

Can be obtained only in the preferred resistance values listed in the table of preferred values, found at the end of the Resistors section, and within the tolerances specified by the appropriate suffix letter. Orders will be accepted for nonpreferred values, but the nominal value furnished and marked on the resistor will be the preferred value nearest the ordered value. The nominal value thus furnished will differ no more than 1 percent from whatever nonpreferred value is ordered.

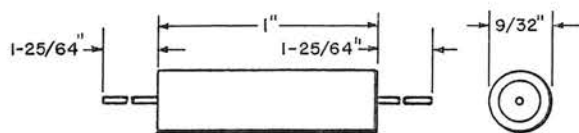
145A, B, and C: Can be obtained over the range of 1.00 ohm through 4.99 megohms.

145E: Can be obtained only over the range of 0.287 ohm through 6980 ohms.

In addition to the code number and suffix letter, the nominal resistance value must be specified in the order.

Code No.	Resistance Tolerance Limits
145A	$\pm(1\% + .01 \text{ ohm})$
145B	$\pm 2\%$
145C	$\pm 5\%$
145E	$\pm(.5\% + .002 \text{ ohm})$

## 146 Type



Consists of a porcelain core having a coating of deposited carbon. Enclosed in a hermetically sealed ceramic shell. Provided with tinned axial leads.

Can be obtained in resistance values within the ranges listed below. The nominal resistance value desired must be specified in the order.

Power rating is 1 watt at 30° C (86° F) ambient temperature except that the dc or 60 cycle rms continuous working voltage is 350 volts maximum. For each degree C that the ambient exceeds 30° C, the power rating decreases about 1 percent. While under load at rated power, the resistance decreases about 3 percent in resistance value.

Code No.	Resistance Tolerance Limits	Resistance Range
146A	$\pm(1\% + .01 \text{ ohm})$	1.0 ohm to 5.0 megohms
146B	$\pm 2\%$	1.0 ohm to 5.0 megohms
146C	$\pm 5\%$	1.0 ohm to 5.0 megohms
	$\pm .02 \text{ ohm}$	0.4 ohm to 3.999 ohms
146E	$\pm(1/2\% + .002 \text{ ohm})$	4.0 ohms to 20,000 ohms

## 147 Type

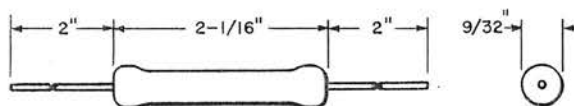


Fig. 1

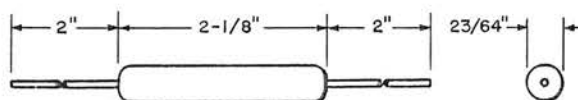


Fig. 2

Each consists of a ceramic core having a coating of deposited carbon. Provided with tinned axial leads.

Can be obtained in resistance values from 50 ohms to 50 megohms, except 147A and D which can be obtained in resistance values from 50 ohms to 30 megohms. The nominal resistance value desired must be specified in the order.

Power rating is 2 watts at 40° C (104° F) ambient temperature. For each degree C that the ambient exceeds 40° C, the power rating decreases about 1-1/4 percent. While under load at rated power, the resistance decreases about 2-1/2 percent in resistance value.

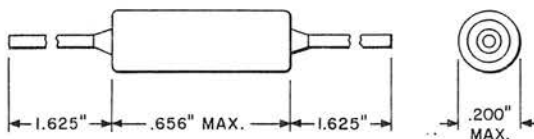
147A, B, and C: Have a baked enamel finish.

147D, E and F: Have a baked enamel finish plus insulating sleeve which also provides protection against mechanical injury.

Code No.	Fig. No.	Resistance Tolerance Limits
147A	1	$\pm 1\%$
147B	1	$\pm 2\%$
147C	1	$\pm 5\%$
147D	2	$\pm 1\%$
147E	2	$\pm 2\%$
147F	2	$\pm 5\%$

## RESISTORS

## 221A

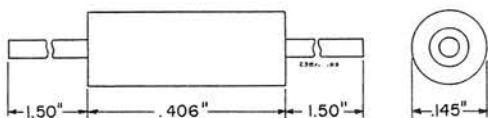


Consists of a ceramic core having a coating of deposited carbon and enclosed in a tube of insulating material. Tinned axial leads are provided.

May be obtained in resistance values from 1.0 ohm to 5 megohms having tolerance limits of  $\pm$  (1 percent + 0.1 ohm). The nominal resistance value desired must be specified in the order.

Power rating is 0.5 watt at 40° C (104° F) ambient temperature. For each degree C that the ambient exceeds 40° C, the power rating decreases 1-1/4 percent. While under load at rated power, the resistance decreases about 3 percent in resistance value. The continuous dc or rms sinusoidal voltage shall not exceed 350 volts. For resistance values in excess of 245,000 ohms, this limitation is controlling and constitutes a further limitation in power dissipation.

## 238A



Consists of a ceramic core having a coating of deposited carbon and encased in a moisture resistance epoxy shell. Provided with tinned axial leads.

Has a temperature coefficient of resistance of minus 0.03 percent plus 0.025 percent per degree C, and a power rating of 0.25 watt at 70 degrees C ambient temperature

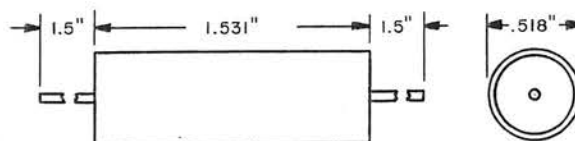
but not exceeding 250 volts dc or rms ac. When operated at ambient temperatures above 70 degrees C, the power rating is derated linearly to 0.125 watt at 125 degrees C and to zero power at 150 degrees C.

Can be obtained in resistance values over the range of 1.0 to 261,000 only in those nominal resistance values listed in the  $\pm$  1 percent column in the table at the end of the resistor section. Initial tolerance limits are  $\pm$  (1% + 0.01 ohm). When operated within the above wattage and temperature rating, they are not expected to change downward by more than two percent nor upward by more than four percent in resistance value.

The code number and resistance value must be specified in the order.

Intended for general use where humid conditions may be encountered.

## 244A and 244B



Tubular type wire wound resistors, each consisting of a noninductive winding on a core of insulating material and covered with impregnated paper tubing. Provided with tinned axial leads.

These resistors have a positive temperature coefficient of resistance of  $5200 \pm 300$  parts per million per °C when referred to the resistance of 30°C. They have a power rating at 66°C (150° F) of 0.25 watt. For each degree that the ambient temperature exceeds 150°F, the power rating decreases 1 percent. These resistors are suitable for use at audio frequencies. The code number and resistance value must be specified on the order.

The 244A Resistor has a preferred resistance value of 1100 ohms with tolerance limits of  $\pm$  1 percent. The 244B Resistor has a preferred resistance value of 2550 ohms with tolerance limits of  $\pm$  2 percent.

## Table of Preferred Resistor Values

The following information should be used only when referred to in this catalog for a specific type of resistor.

In order to keep the number of orders for odd values of resistance to a minimum and to facilitate manufacture and stocking of the above types of resistors, certain specific values have been chosen as preferred, having tolerance limits as indicated, and these values are shown below. It is recommended that resistance values be selected from this preferred list wherever possible. The table gives the first three significant figures only and the decimal point should be placed where required and/or zeros should be added as necessary, within the range specified for the desired code of resistor.

In the case of resistors for which the catalog states that they are available with tolerance limits closer than  $\pm$  1%, it is recommended that nominal resistance values be chosen to agree with the figures in the  $\pm$  1% column of the table where practicable. When necessary, four significant figures may be specified, wherever possible with the first three significant figures the same as those in the  $\pm$  1% column of the table. In either case, the decimal point should be placed where required and/or zeros should be added as necessary, within the range specified for the desired code of resistor.



## RESISTORS

Table of Preferred Resistor Values (Continued)

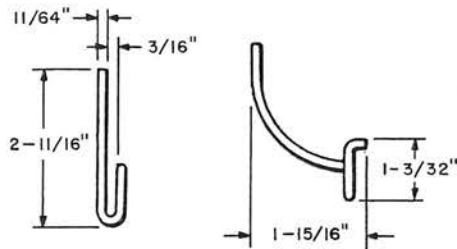
Preferred Resistance Values				Preferred Resistance Values				Preferred Resistance Values				Preferred Resistance Values			
$\pm 1\%$	$\pm 2\%$	$\pm 5\%$	$\pm 10\%$	$\pm 1\%$	$\pm 2\%$	$\pm 5\%$	$\pm 10\%$	$\pm 1\%$	$\pm 2\%$	$\pm 5\%$	$\pm 10\%$	$\pm 1\%$	$\pm 2\%$	$\pm 5\%$	$\pm 10\%$
100	100	100	100	180				324	324			576	576		
101				182	182			328				583			
102	102			184				332	332	332		590	590	590	
104				187	187	187		336				597			
105	105	105		189				340	340			(a)			
106				191	191			344				604	604		
107	107			193				348	348	348	348	612			
109				196	196	196	196	352				619	619	619	619
110	110	110	110	198				357	357			626			
111				200	200			361				634	634		
113	113			203				365	365	365		642			
114				205	205	205		370				649	649	649	
115	115	115		208				374	374			657			
117				210	210			379				665	665		
118	118			213				383	383	383	383	673			
120				215	215	215	215	388				681	681	681	681
121	121	121	121	218				392	392			690			
123				221	221			397				698	698		
124	124			223				402	402	402		706			
126				226	226	226		407				715	715	715	
127	127	127		229				412	412			723			
129				232	232			417				732	732		
130	130			234				422	422	422	422	741			
132				237	237	237	237	427				750	750	750	750
133	133	133	133	240				432	432			759			
135				243	243			437				768	768		
137	137			246				442	442	442		777			
138				249	249	249		448				787	787	787	
140	140	140		252				453	453			796			
142				255	255			459				806	806		
143	143			258				464	464	464	464	816			
145				261	261	261	261	470				825	825	825	825
147	147	147	147	264				475	475			835			
149				267	267			481				845	845		
150	150			271				487	487	487		856			
152				274	274	274		493				866	866	866	
154	154	154		277				499	499			876			
156				280	280			(a)				887	887		
158	158			284				505				898			
160				287	287	287	287	511	511	511	511	909	909	909	909
162	162	162	162	291				517				920			
164				294	294			523	523			931	931		
165	165			298				530				942			
167				301	301	301		536	536	536		953	953	953	
169	169	169		305				542				965			
172				309	309			549	549			976	976		
174	174			312				556				988			
176				316	316	316	316	562	562	562	562				
178	178	178	178	320				569							

(a) 50 ohms and 600 ohms are preferred values only in  $\pm 1\%$  tolerance limits. Other values whose first three significant figures are 500 and 600 (such as 500 and 6000 ohms) are nonpreferred values.

## RINGS

## Distributing

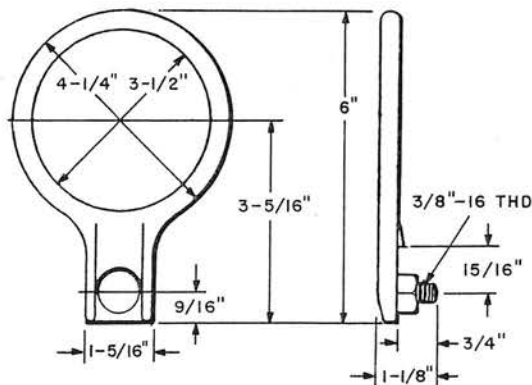
8A



Metal support used in GA, GB, and GC type cable terminal boxes. Mounting screw and washer are furnished.

Comcode: 100 666 627

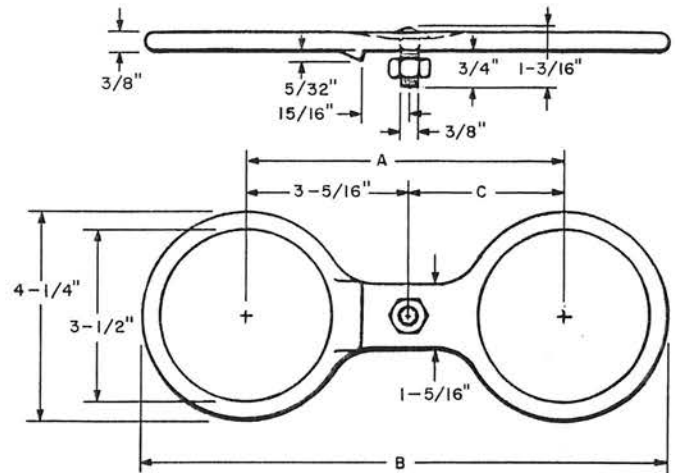
9A



Vitreous enamel insulated metal ring used on distributing frames. Mounting screw and nut are furnished.

Comcode: 100 666 635

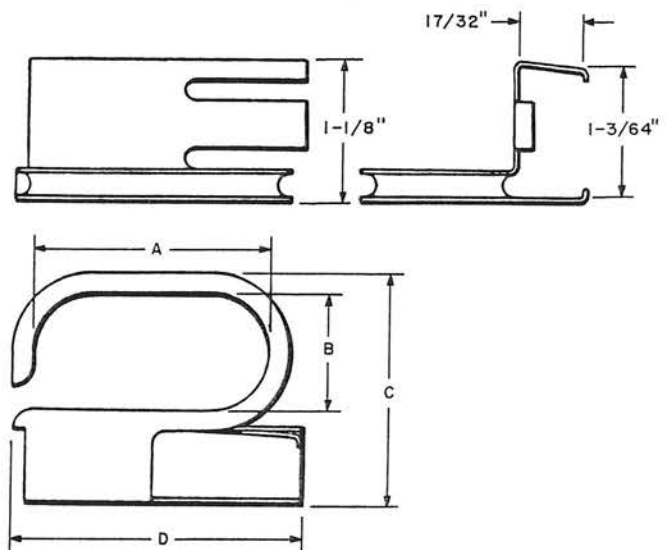
10A and B



Vitreous enamel insulated metal rings used on distributing frames.

Code No.	Comcode	Dimensions (Inches)		
		A	B	C
10A	100 666 643	8	12-1/4	4-11/16
10B	100 666 650	6-1/2	10-3/4	3-3/16

12A, B, and C



## RINGS

## Distributing

## 12A, B, and C (Continued)

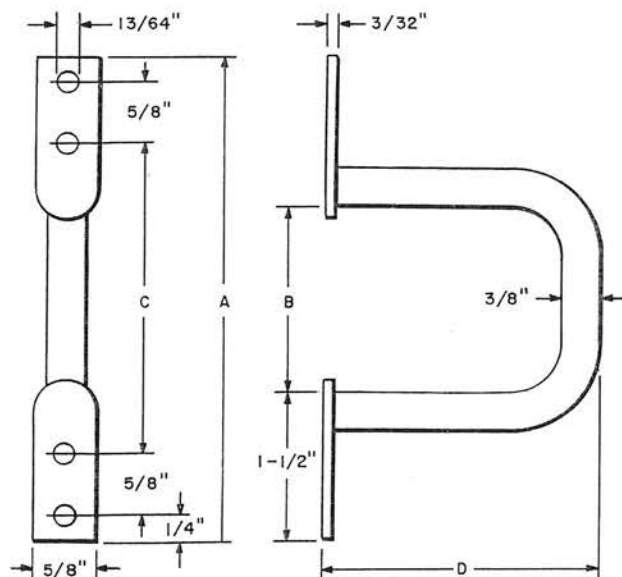
Metal rings having a gray enamel insulating finish.

May be obtained with a P-339722 Adapter for mounting the ring on a 3/8-inch thick transverse arm, when specified in the order.

Used for installing up to 400 pairs of textile insulated conductors from lead covered cables on main distributing frames.

Code No.	Comcode	Capacity (in Cable Pairs)	Dimensions (Inches)			
			A	B	C	D
12A	100 666 668	200	1-7/8	15/16	1-13/16	2-9/32
12B	100 666 676	400	2-3/4	1-3/8	2-1/4	3-5/32
12C	100 666 684	100	1-9/16	13/16	1-11/16	1-27/32

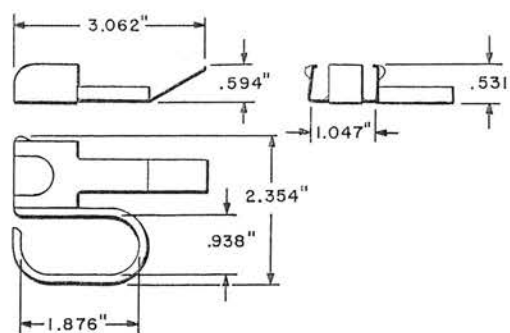
## 13A, B, and C



Light olive gray enameled metal distributing rings for holding wires in building cable terminals.

Code No.	Comcode	Dimensions (Inches)			
		A	B	C	D
13A	100 666 692	4-7/8	1-7/8	3-1/8	2-3/4
13B	100 666 700	6-1/8	3-1/8	4-3/8	3-3/4
13C	100 666 718	8-1/8	5-1/8	6-3/8	3-3/4

## 15A



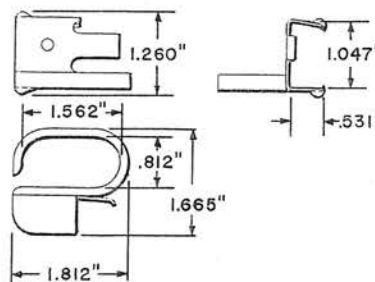
Metal rings having a gray enamel finish.

May be obtained with a P-339722 Adapter for mounting the ring on a 3/8-inch thick transverse arm when specified in the order.

Used to contain and distribute up to 200 pairs of insulated conductors of switchboard cables on the horizontal side of distributing frames using the manual toll and dial switching systems.

Comcode: 100 666 734

## 16A



Metal ring having a gray enamel finish.

May be obtained with a P-339722 Adapter for mounting the ring on a 3/8-inch thick transverse arm when specified in the order.

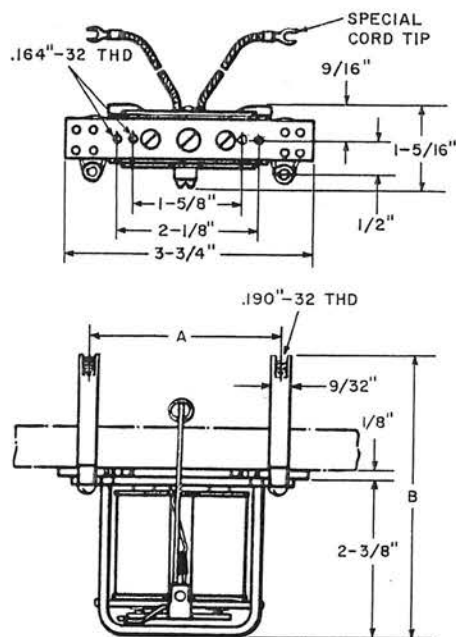
Used to contain and distribute up to 100 pairs of insulated conductors on the vertical side of distributing frames using the manual, toll, and dial switching systems.

Comcode: 100 666 742



## RINGERS

B1D and B1F Type



Provided with two coils having a total dc resistance of 4600 ohms  $\pm 10$  percent. The 900 cps inductance of ringers having red stripes on the coil covers is minimum 9 henries, and the inductance of ringers not having red stripes on the coil covers is minimum 20 henries. Ringers are equipped with red and black leads each 7-1/2 inches long.

Arranged for mounting screws on 1-5/8 inch and 2-1/8 inch centers. Arranged for mounting 2-1/2 and 3 inch diameter gongs, respectively. Gongs and gong mounting screws are not furnished and must be ordered separately.

**B1D Type:** Has a cantilever type spring arranged for three settings and a stroke adjusting stop for adjusting the sound output.

**Comcode:** 100 666 155

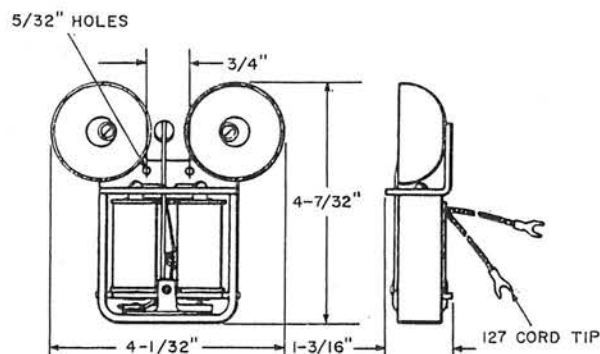
**B1F Type:** Unbiased ringer with a feather type armature spring.

**Comcode:** 100 666 163

Used in subscriber sets.

The A dimension for the B1D is 2-7/8 inches and for the B1F is 3-3/8 inches. The B dimension for the B1D is 4-1/8 inches and for the B1F is 4-3/8 inches.

B1A1 Type



Biased type having a cantilever type biasing spring arranged for three settings and a stroke adjusting stop for adjusting the sound output. Equipped with 8-7/8 inch red lead and 6-7/8 inch black lead.

Provided with two coils having a total dc resistance of 4600 ohms  $\pm 10$  percent. The 900 Hz inductance of ringers having red stripes on the coil covers is minimum 9 henries, and the inductance of ringers not having red stripes on the coil covers is minimum 20 henries.

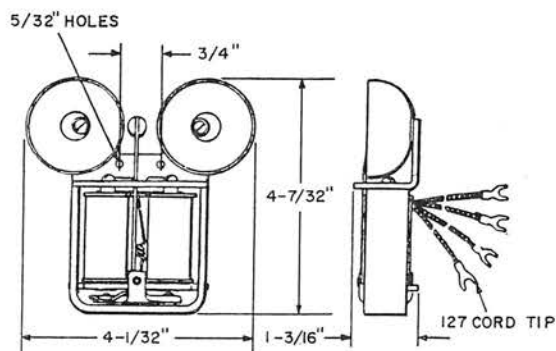
Used in telephone set mountings and in telephone sets.

**Comcode:** 100 666 189 E/W one 41A and one 41B Gong.

100 666 206 E/W one 40D and one 40E Gong.

100 666 197 E/W two 40C Gongs.

B2A1 Type



Unit type biased ringer having a cantilever type biasing spring arranged for three settings and a stroke adjusting stop for adjusting the sound output. The dc resistance between slate and black leads is 960 ohms  $\pm 10$  percent, between red and slate-red leads is 3640 ohms  $\pm 10$  percent, and between red and black leads with slate and slate-red



## RINGERS

## B2AL Type (Continued)

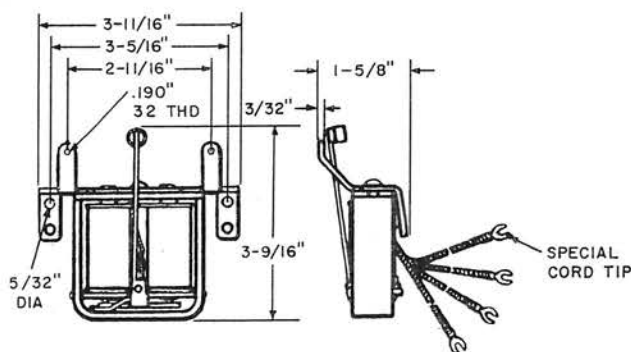
connected together is 4600 ohms  $\pm 10$  percent. The 900 cps inductance of ringer having red lines on coil covers is minimum 1.25 henries between slate and black leads and minimum 9 henries between red and black leads with slate and slate-red connected together. The inductance of ringers not having red lines on the coil covers is minimum 2.5 henries between slate and black leads and minimum 20 henries between red and black leads with slate-red connected together.

Equipped with 6-3/8 inch black lead, 6-3/8 inch slate-red lead, 5-1/2 inch slate lead, and 6 inch red lead.

Used in H- and J-type telephone set mountings.

Comcode: 100 666 213 E/W one 41A and one 41B Gongs.  
100 666 239 E/W one 40D and one 40E Gong.  
100 666 221 E/W two 40C Gongs.

## B4A Type



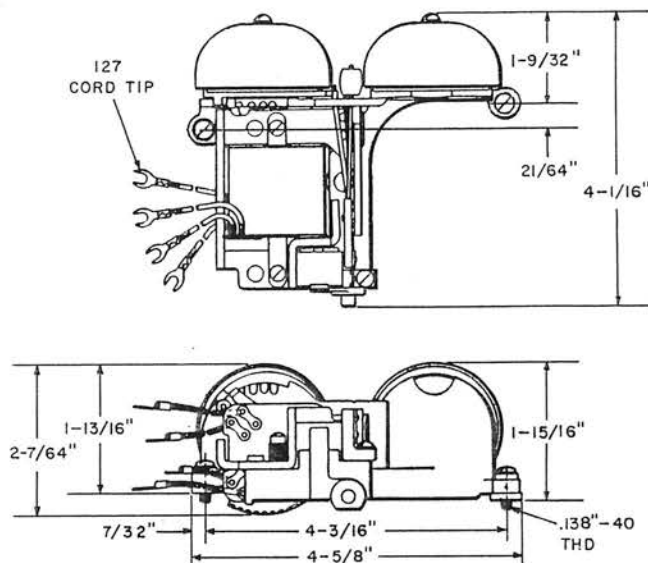
Unit type biased ringer having a cantilever type biasing spring arranged for three settings and a stroke adjusting stop for adjusting the sound output. The dc resistances between the red and yellow leads and the yellow and black leads are each 510 ohms  $\pm 10$  percent. All leads are 7-1/2 inches long.

Arranged for mounting two 2-5/16 inch diameter gongs such as the number 36 or 37 type. Gongs and gong mounting screws are not furnished and must be ordered separately.

Part of 584DG Subscriber Set.

Comcode: 100 666 270

## C4A Type



Biased ringer having a single coil with two windings. Inner winding is connected between the slate and the black leads, and the outer winding is connected between the red and the slate-red leads. The dc resistance between the slate and black leads is 1000 ohms  $\pm 10$  percent. The dc resistance between the red and black leads with the slate and slate-red leads connected together is approximately 3650 ohms, and the impedance with 2 volts, 400 cps across the red and black leads is minimum 85,000 ohms.

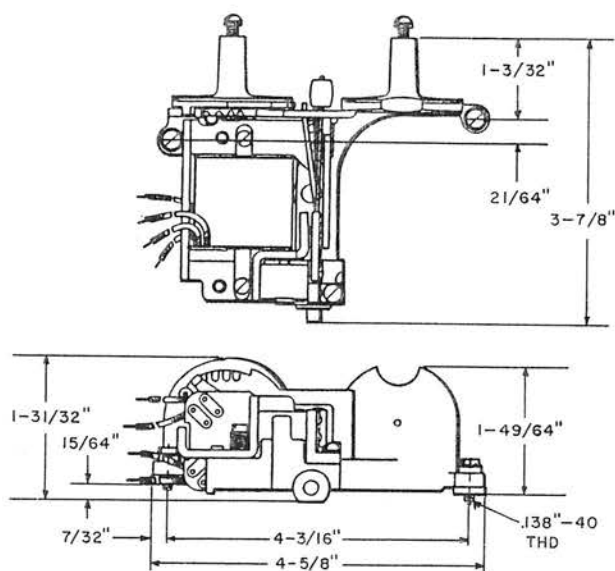
Equipped with 6 inch black lead, 7-3/4 inch slate lead, 7 inch red lead, and 7 inch slate-red lead. Also equipped with one 54A and one 55A Gong having internal resonators assembled under each gong. One gong is mounted on a movable cam which can be operated manually from outside the telephone set. This adjustment provides four levels of sound output at four different positions of the cam. A fifth position of the cam will permit an adjustment by an installer which will silence the ringer.

Used in 500, 501, 502, and similar type telephone sets and in four and six button telephone sets.

Comcode: 100 666 288

## RINGERS

C5A Type



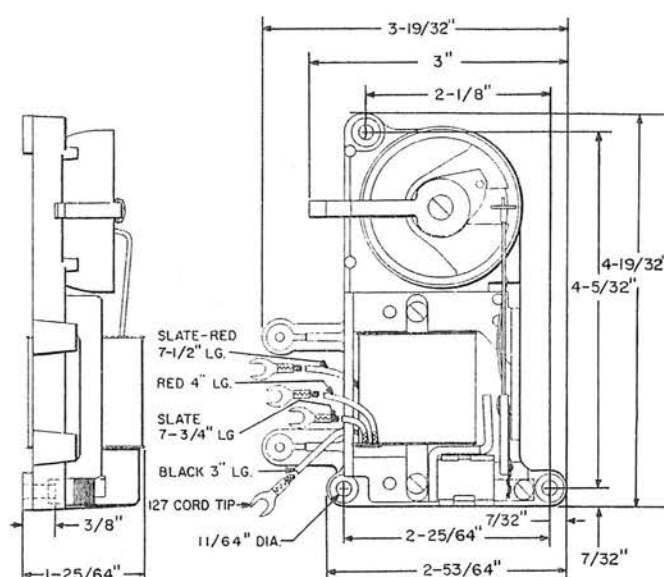
Biased ringer having a single coil with two windings. Inner winding is connected between the slate and the black leads, and the outer winding is connected between the red and red-white leads. The dc resistance between the slate and black leads is 1000 ohms  $\pm 10$  percent. The dc resistance between the red and black leads with the slate and red-white leads connected together is approximately 3650 ohms, and the impedance with 2 volts, 400 cps across the red and black leads is minimum 85,000 ohms.

Equipped with 7 inch black lead, 8-1/2 inch slate lead, 8 inch red lead, and a 7 inch red-white lead. Arranged for 52A through 59A Gongs which are not furnished and must be ordered separately. A movable cam is provided which can be operated manually to provide four levels of sound output at four different positions. A fifth position of the cam will permit adjustment by an installer which will silence the ringer.

Used in PBX and central office installations for alarm and signaling purposes.

Comcode: 100 666 296

D1C Type



Biased ringer having a single coil with two windings. Inner winding is connected between the slate and the black leads, and the outer winding is connected between the red and the slate-red leads. The dc resistance between slate and black leads is 1000 ohms  $\pm 10$  percent. The dc resistance between the red and the black leads, with the slate and slate-red leads connected together, is approximately 3650 ohms. The impedance across the red and black leads is minimum 97,000 ohms at 2 volts, 400 to 3000 cps, and 7500 ohms at 90 volts, 2 cps with a 0.45 uf capacitor in series.

Equipped with 3 inch black lead, 7-3/4 inch slate lead, 4 inch red lead, and a 7-1/2 inch slate-red lead. Also equipped with a single gong with an internal resonator assembled under the gong and an external volume control which is continuously adjustable from loud to silent. Two legs provide support for an external terminal plate.

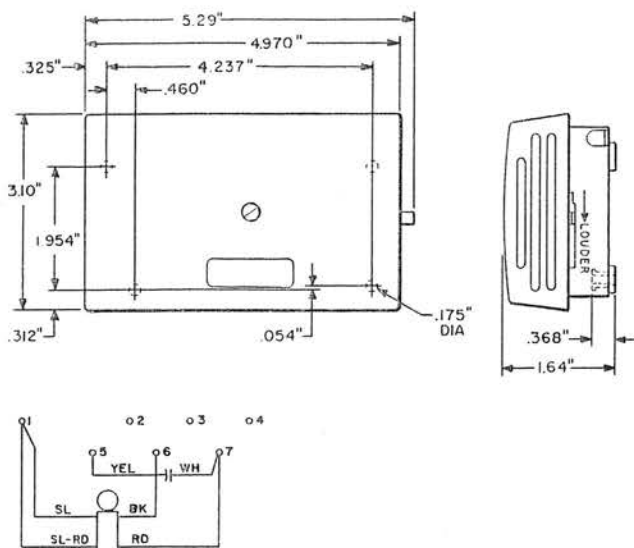
Used in 630DW and 632CW type telephone sets.

Comcode: 100 666 320



## RINGERS

E1CW-49 and -50



Biased ringers having a single coil with two windings. The inner winding is connected between terminals 1 and 6 and has a dc resistance of 1000 ohms  $\pm 10$  percent. The outer winding is connected between terminals 1 and 7. The dc resistance between terminals 6 and 7 is approximately 3650 ohms. The impedance across terminals 6 and 7 is minimum 97,000 ohms at 2 volts, 400 to 3000 cps, and 7500 ohms at 90 volts, 20 cps with a 0.45 uf capacitor in series.

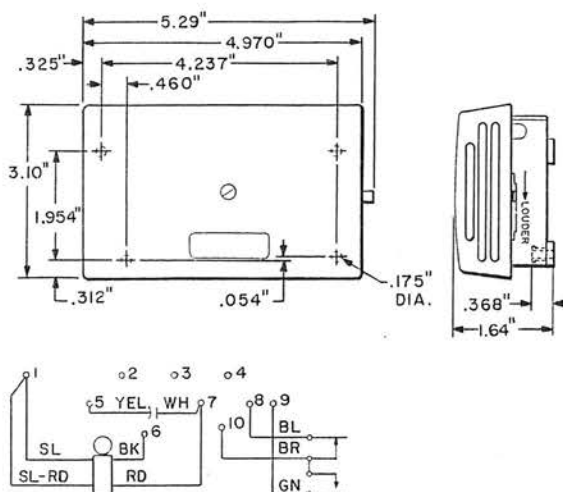
Equipped with a single gong having an internal resonator assembled under the gong and an external volume control which is continuously adjustable from loud to soft and can be arranged to be turned off. Volume control can be locked in the silent position by means of a small latch plate.

Contains a 548A Capacitor and a seven terminal connecting block which is intended to provide interconnection of the ringer, a dial-light transformer, a telephone set mounting cord, and the line. Metal base is gray-finished. The telephone set mounting cord can enter from either end, and the line cord can enter from either the bottom or rear.

Used as an auxiliary ringing signal and connecting block.

Code No.	Comcode	Cover Color
E1CW-49	100 666 395	Light olive gray
E1CW-50	100 666 403	Ivory

E1DW-49 and -50



Biased ringers having a single coil with two windings, a 548A Capacitor, an interrupter switch assembly, and a ten-terminal connecting block. The inner winding is connected between terminals 1 and 6 and has a dc resistance of 1000 ohms  $\pm 10$  percent. The outer winding is connected between terminals 1 and 7. The dc resistance between terminals 6 and 7 is approximately 3650 ohms. The impedance across terminals 6 and 7 is minimum 97,000 ohms at 2 volts, 400 to 3000 cps, and 7500 ohms at 90 volts, 20 cps, with 0.45 uf capacitor in series.

Equipped with a single gong having an internal resonator assembled under the gong and an external volume control which is continuously adjusted from loud to soft. One adjustment by an installer will permit the silencing of the ringer and another adjustment will lock the volume control in the silent position.

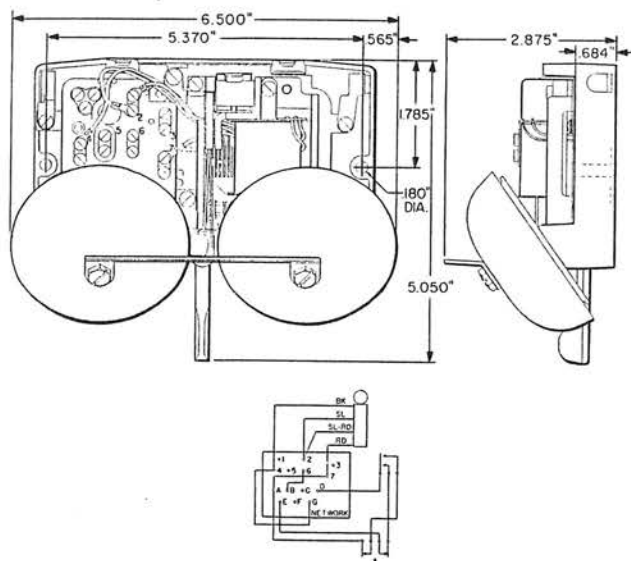
Equipped to provide for interconnection of the ringer, a dial-light transformer, a telephone set mounting cord, the line, and the interrupter switch assembly. The telephone set mounting cord can enter from either end, and the line cord can enter from either the bottom or rear. Metal base is gray-finished.

Used as an auxiliary ringing signal and connecting block.

Code No.	Comcode	Cover Color
E1DW-49	100 666 411	Light olive gray
E1DW-50	100 666 429	Ivory

## RINGERS

### Flaw Type



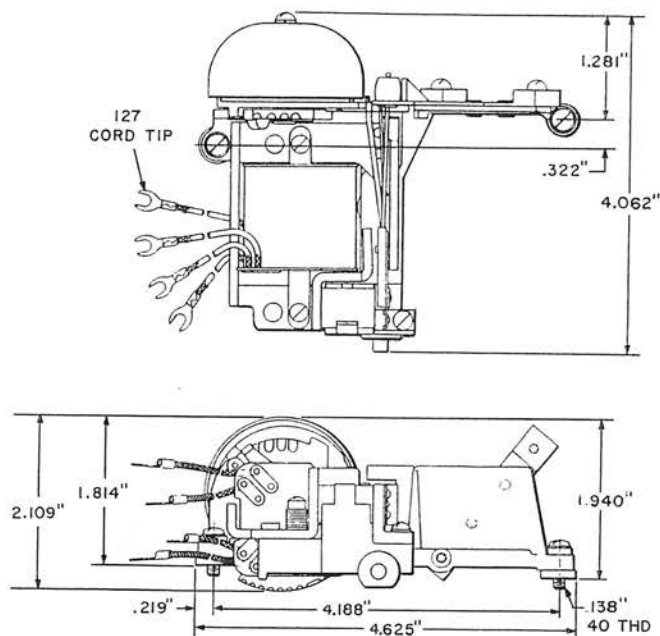
Biased ringer having a single coil with two windings. Inner winding is connected between the slate and the black leads, and the outer winding is connected between the red and the slate-red leads. The dc resistance between slate and black leads is 1000 ohms  $\pm 10$  percent. The dc resistance between the red and black leads with the slate and slate-red leads connected together is approximately 3650 ohms, and the impedance with 2 volts, 400 cps across the red and black leads is minimum 85,000 ohms. The terminal plate of the network is also used as a connecting block to provide for interconnection of the ringer, a dial-light transformer, a telephone set mounting cord, and the line.

Equipped with one 26C and one 26D Gong, a 498A Network, and lever-type switch assembled on a gray metal base. The switch provides a loud ring, a low ring, or a bell-chime. The telephone set mounting cord can enter from the bottom or at either corner at the top of the base. The line cord may be brought in at the same location or at the rear. May be used with a 125AW Cover which is not furnished and must be ordered separately.

Used as a central ringer where several ringers may otherwise be required.

Comcode: 101 362 135

H1A Type



Biased ringer having a single coil with two windings. Inner winding is connected between the slate and the black leads, and the outer winding is connected between the red and the slate-red leads. The dc resistance between slate and black leads is 1000 ohms  $\pm 10$  percent. The dc resistance between the red and black leads with the slate and slate-red leads connected together is approximately 3650 ohms, and the impedance with 2 volts, 400 cps across the red and black leads is minimum 85,000 ohms.

Equipped with a 54B Gong. A bumper is used in place of a second gong for dynamic stability. Provided with a bracket and screws for mounting a KS-8109L2 Buzzer which is not furnished and must be ordered separately.

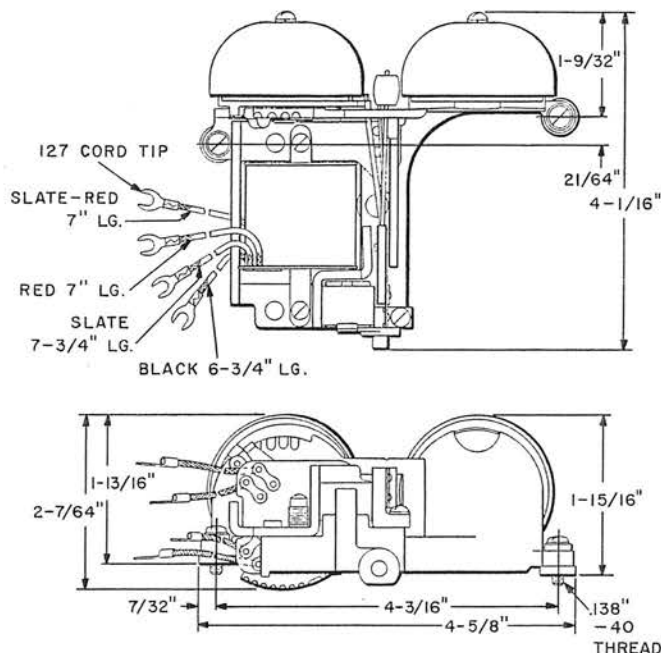
Used on 565HRW and LDRW Telephone Sets.

Comcode: 100 666 460



## RINGERS

J1A Type



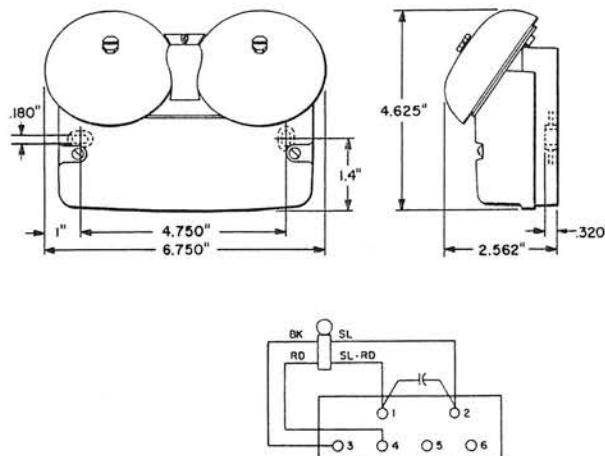
Biased ringer having a single coil with two windings. Inner winding is connected between the slate and the black leads, and the outer winding is connected between the red and the slate-red leads. The dc resistance between the slate and black leads is 1000 ohms  $\pm 10$  percent. The dc resistance between the red and black leads with the slate and slate-red leads connected together is approximately 3650 ohms, and the impedance with 2 volts, 400 cps across the red and black leads is minimum 85,000 ohms.

Equipped with one 54A and one 55A Gong which are protected to minimize the effects of moisture and corrosion. Internal resonators are assembled under each gong. One gong is mounted on a movable cam which can be operated manually from outside the telephone set. This adjustment provides four levels of sound output at four different positions of the cam. A fifth position of the cam will permit an adjustment by an installer which will silence the ringer.

Used on 525AW and BW Telephone Sets.

Comcode: 100 666 478

L1AW-49 Type



Biased ringer having a single coil with two windings. Inner winding is connected between terminals 2 and 3 and has a dc resistance of 1000 ohms  $\pm 10$  percent. The outer winding is connected between terminals 1 and 4. The dc resistance between terminals 3 and 4, with terminals 1 and 2 connected together, is approximately 3650 ohms. The impedance across terminals 3 and 4 is minimum 97,000 ohms at 2 volts, 400 to 3000 cps, and is 7,500 ohms at 90 volts, 20 cps with a 0.45 uf capacitor in series.

Equipped with a pair of gongs, each having an internal resonator assembled under the gong, a 548A Capacitor, and a terminal board. The metal base is light olive gray. The line cord may enter at the top, bottom, or rear of the base.

Arranged for mounting a 425A or 426A Electron Tube which is not furnished and must be ordered separately.

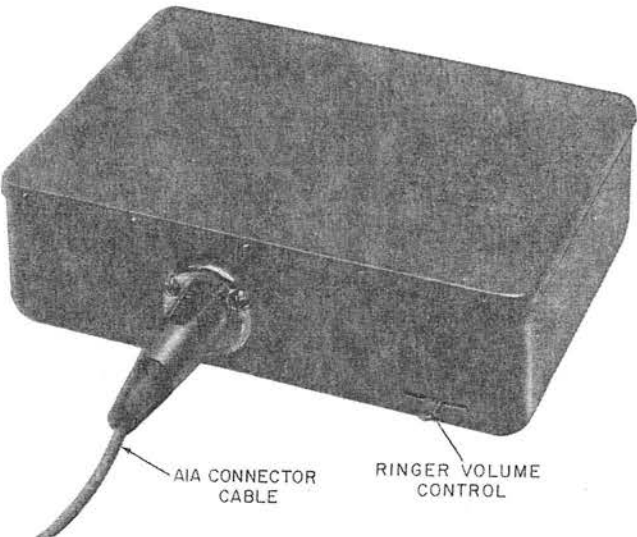
For outdoor use the ringer should be mounted in the 181AW-49 Backboard.

Used as auxiliary loud ringing signal and connecting block.

Comcode: 100 666 494

RINGERS

R1AW



Consists of a ringer assembly in a factory-sealed metal box. The ringer volume can be adjusted by an external control. Approximate overall dimensions are 8.155 inches long, 6.656 inches wide, and 2.312 inches deep.

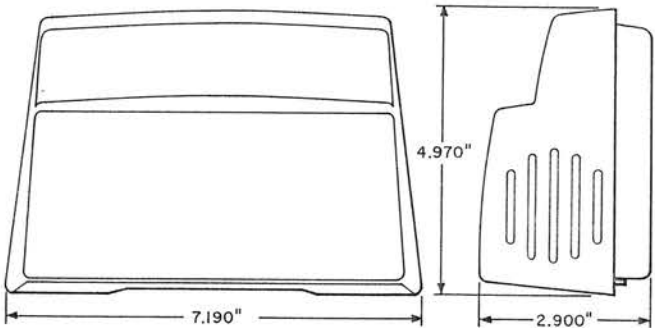
The ringer is supplied with a mounting plate having slots for the tabs on the rear of the ringer. This permits mounting the ringer on a vertical surface, such as a wall or side of a desk. When mounting on a metal surface, a suitable wooden backboard should be used under the mounting plate.

An A1A Connector Cable is furnished with the ringer. Since the connector cable is furnished in 50, 100, and 200 foot lengths, it is necessary to specify the length of the cable when ordering the ringer.

Intended solely for specially engineered lines — not for general telephone use.

- Comcode: 101 613 776 E/W 50 Ft Cable  
101 613 784 E/W 100 Ft Cable  
101 613 792 E/W 200 Ft Cable

S1A



Consists of component apparatus mounted on a gray plastic base, enclosed in a louvered plastic cover.

The signal consists of two equal amplitude frequency components at approximately 775 and 1550 Hz with higher frequency components attenuated by a side-branch resonator to reduce annoyance to persons with normal hearing. Equipped with a volume control switch which provides three settings — full volume, low volume, and off.

Arranged for bridged, two party flat or message rate, and automatic ticketing classes of services.

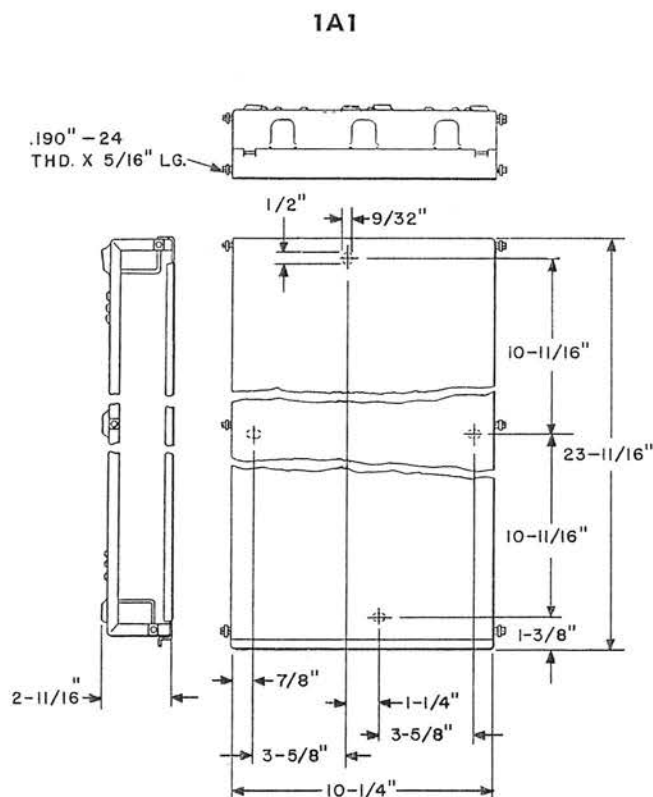
Used as auxiliary loud tone ringers.

Code	Comcode	Color of Cover
S1A-50	101 278 240	Ivory
S1A-63	101 390 847	Gold



## SECTIONS

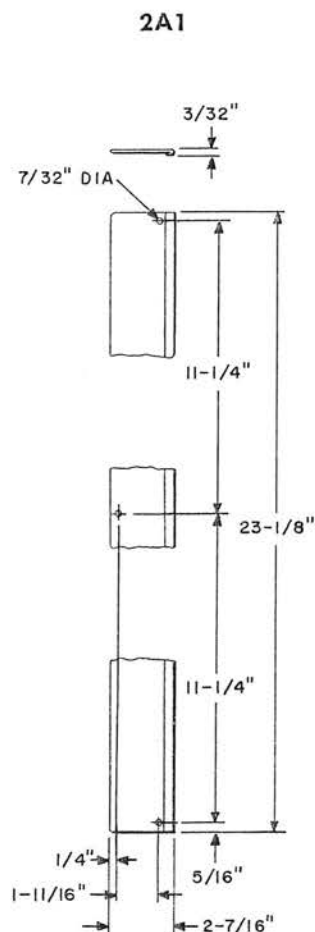
### Cable Terminal



Consists of a light olive gray enamel finished sheet metal intermediate section having open ends provided with a removable cover. Knockouts are provided in the top and bottom of the box for bringing in cables or wires. Eight screws for mounting terminal blocks and six screws and nuts for fastening sections together are furnished.

For use in indoor installations housing two 1A4A-10, two 1A4A-16, or one 1A4A-26 Terminal Block. Two 2A1 Cable Terminal Sections are required to close the ends of one or a group of 1A1 Cable Terminal Sections.

Comcode: 100 667 575



A light olive gray enamel finished sheet metal flat section arranged for closing the ends of one or a group of 1A1 Cable Terminal Sections.

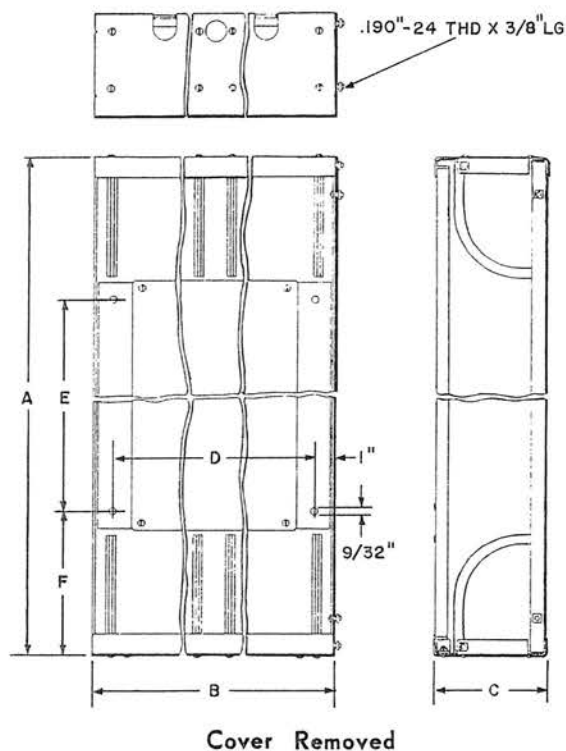
Comcode: 100 667 583



## SECTIONS

## Cable Terminal

H-Type



Cover Removed

Each consists of a sheet metal intermediate section provided with a door. Finish is light olive gray enamel. The top and bottom details are interchangeable so that the detail which is slotted for the cable may be assembled at the top or bottom. Knockouts for wires are provided in these details. Screws for mounting terminal blocks and bolts and nuts for fastening sections together are furnished. Tie rods can be obtained when specified.

**H102:** Houses two 2A1-50 or 2A2-50 Terminal Blocks or two 82D Backboards or one 2A1-50 or 2A2-50 Terminal Block and one 82D Backboard. Two J102 Cable Terminal Sections are required to close ends of one or a group of H102 Cable Terminal Sections.

Comcode: 100 667 591

**H202:** Houses one or two 2A1-50 or 2A2-50, 2B1-75 or 2B2-75, and 2B1-100 or 2B2-100 Terminal Blocks or 82A Backboards. Two J202 Cable Terminal Sections are required to close ends of one or a group of H202 Cable Terminal Sections.

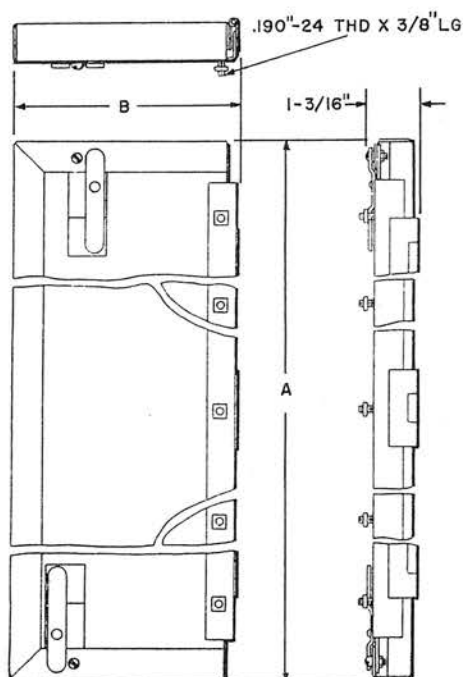
Comcode: 100 667 609

**H303:** Houses one 2B1-300 or 2B2-300 Terminal Block or one 82B Backboard. Two J303 Cable Terminal Sections are required to close ends of one or a group of H303 Cable Terminal Sections.

Comcode: 100 667 617

Code No.	Dimensions (Inches)					
	A	B	C	D	E	F
H102	29-1/8	14-1/2	5-13/16	12-1/2	18	5-9/16
H202	49-7/8	14-1/2	5-13/16	12-1/2	35	7-7/16
H303	68	10-1/2	6-11/16	8-1/2	53	7-1/2

J-Type



Each consists of a light gray enamel finished sheet metal end section arranged for closing the ends of one or a group of intermediate sections. Bolts and nuts for fastening to intermediate sections are furnished.

**J102:** For use at ends of one or a group of H102 Cable Terminal Sections.

**J202:** For use at ends of one or a group of H202 Cable Terminal Sections.

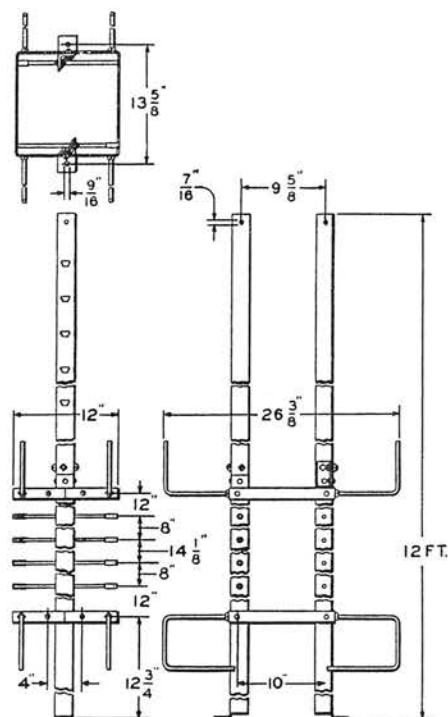
**J303:** For use at ends of one or a group of H303 Cable Terminal Sections.

Code No.	Comcode	Dimensions (Inches)	
		A	B
J102	100 667 625	29-1/4	5-7/8
J202	100 667 633	50	5-7/8
J303	100 667 641	68-1/8	6-3/4

## SECTIONS

### Cable Terminal

K606

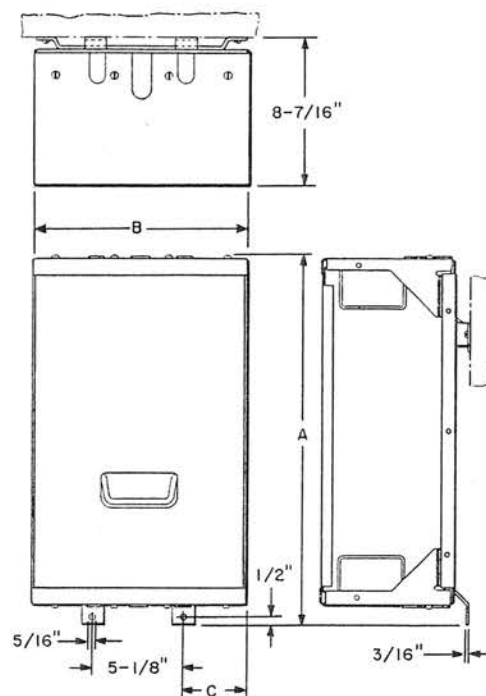


Consists of a metal framework for supporting binding post chambers and backboards. Provided with distributing rings and rods for supporting wires and facilities for attaching standard cable hooks. Sleeves, bolts, and nuts for fastening sections together and screws for mounting binding post chambers are furnished.

Used for supporting 2B1-300 or 2B2-300 Terminal Blocks or 82B Backboards. Two 82C Backboards are required to cover the ends of one or a group of K606 Cable Terminal Sections.

Comcode: 100 667 658

L and LA Type



Each consists of a sheet metal intermediate section and door which have a light olive gray finish. Knockouts are provided in top and bottom of details for bringing in cables or wires. Screws and washers for mounting terminal blocks or backboards, and screws and nuts for fastening sections together are furnished.

**L16:** For housing either one 1A4A-16 Terminal Block or one 83A Backboard. Two M16 Cable Terminal Sections are required to close the ends of one or a group of L16 Cable Terminal Sections.

**L26:** For housing either one 1A4A-16 and 1A4A-25 Terminal Block or one 83B Backboard. Two M26 Cable Terminal Sections are required to close the ends of one or a group of L26 Cable Terminal Sections.

**L51:** For housing either one 1A4A-25 or 1A4A-50 Terminal Block or one 83C Backboard. Two M51 Cable Terminal Sections are required to close the ends of one or a group of L51 Cable Terminal Sections.

**LA26:** For housing an 84A Backboard. Two M26 Cable Terminal Sections are required to close the ends of one or a group of LA26 Cable Terminal Sections.

## SECTIONS

## Cable Terminal

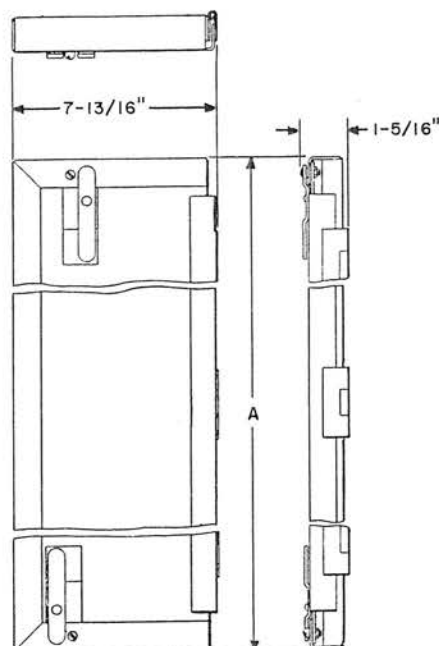
## L and LA Type (Continued)

LA51: For housing an 84B Backboard. Two M51 Cable Terminal Sections are required to close the ends of one or a group of LA51 Cable Terminal Sections.

Code No.	Comcode	Dimensions (Inches)		
		A	B	C
L16	100 667 674	21-1/2	12-1/8	3-1/2
L26	100 667 682	29	12-1/8	3-1/2
	(*) 100 667 690	29	12-1/8	3-1/2
L51	100 667 708	48-1/2	12-1/8	3-1/2
	(*) 100 667 716	48-1/2	12-1/8	3-1/2
LA26	100 667 765	29	15-1/8	5
LA51	100 667 773	48-1/2	15-1/8	5

(\*) E/W Tie rod.

## M-Type



Each consists of a light olive gray enamel finished sheet metal end section arranged for closing the ends of one or a group of intermediate sections. Screws and nuts for fastening to intermediate sections are furnished.

M16: For use at ends of one or a group of L16 Cable Terminal Sections.

M26: For use at ends of one or a group of L26 or LA26 Cable Terminal Sections.

M51: For use at ends of one or a group of L51 or LA51 Cable Terminal Sections.

Code No.	Comcode	Dimension (Inches)
		A
M16	100 667 732	20-1/4
M26	100 667 740	27-3/4
M51	100 667 757	47-1/4



## SETS

## Data

## 100 Series

Data sets within this series accept low-speed (maximum 300 bits per second) serialized dc signals from a business machine and convert these signals into frequency modulated tones for transmission over private line facilities. At the receiving station, the frequency modulated tones are converted back into dc signals which can be accepted by a business machine.

## 103AW1 and 103AW2



Data Set 103AW type is designed to simultaneously transmit and receive binary serial data on either half or full duplex at rates up to 300 bauds in DATA-PHONE service over the voice message switched network, or at rates up to 150 bauds in TWX service over teletypewriter exchange type facilities.

103AW1: For use with customer-provided terminal equipment on TWX.

Comcode: 101 165 561

103AW2: For use in DATA-PHONE service.

Comcode. 100 669 696

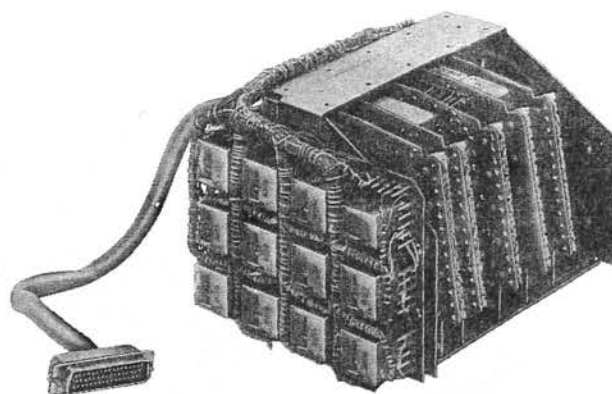
Overall dimensions are 11 inches wide by 11 inches deep by 5.500 inches high.

Data transmission is accomplished over two frequency shift channels. The frequency channel used by each station during a connection is determined by the station that originates the call.

## FREQUENCIES

Station Mode	Signal Transmitted	Frequency (Hz)	
		Data Set 103AW1	Data Set 103AW2
Originating	$f_1$ mark ( $f_{1m}$ )	1070	1270
	$f_1$ space ( $f_{1s}$ )	1270	1070
Answering	$f_2$ mark ( $f_{2m}$ )	2025	2225
	$f_2$ space ( $f_{2s}$ )	2225	2025

## 103EW5



The Data Set 103EW5 is a full-duplex, phase modulated, serial data set which operates asynchronously at speeds up to 300 bauds. Meets EIA Standard RS-232A interface specification.

The set is dependent upon additional components for power and control functions. It requires two 18.0 volts and 0.25 ampere dc inputs to provide positive and negative potentials.

Optional selection of normal or inverted line frequency operation is provided.

The Data Set is 8.25 inches long by 6.375 inches wide by 4.75 inches high.

The transmitted frequency band is selected by the method of establishing the telephone connection. The following table summarizes the frequencies by mode of operation:

Mode	Freq. Band	Normal Freq. Hz		Inverted Freq. Hz	
		Mark	Space	Mark	Space
Originate	Trmt.	1270	1070	1070	1270
	Rcv.	2225	2025	2025	2225
Answer	Trmt.	2225	2025	2025	2225
	Rcv.	1270	1070	1070	1270

Used in conjunction with Model 37 teletypewriter for data service using switched facilities.

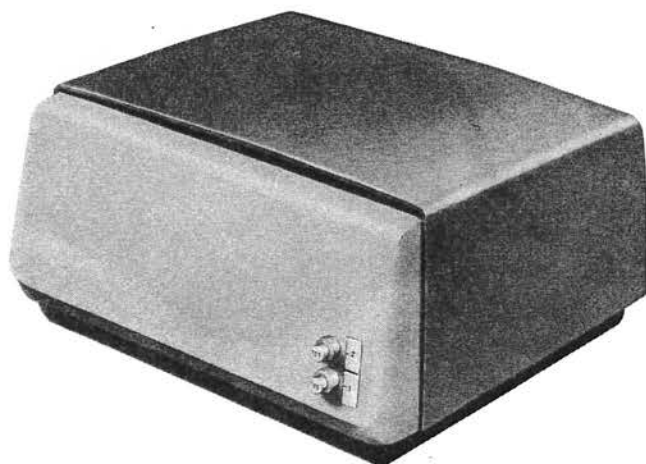
Comcode: 101 830 099



## SETS

## Data

103FW2



Operates on a private line facility. Full duplex on two-wire voice circuits operation can be achieved at any rate up to a maximum of 300 bits per second.

This set requires a 120 volt, 60 Hz, 15 watt ac power source for operation.

Has a two-tone gray cabinet with overall dimensions of 11 inches wide by 10.5 inches deep by 5.5 inches high. It weighs 16 pounds.

**Comcode:** 100 669 746

## Features:

1. Meets EIA Standard RS-232A interface specification.
2. Local mode permits a check of the continuity of the interface cable, the interface connection, and the signal handling stages of the equipment adjacent to the interface without physically disconnecting the data set from this equipment.
3. Test mode electrically divorces the data set and the data processing terminal equipment and conditions the data set for remote testing from a Data Test Center.

## Options:

Operation in the answer or originate mode. (Can be permanently placed in either of these modes but cannot be tested as both answer and originate station when strapped for external control.)

103GW1, GW2, GW3, and GW4



Each is a full-duplex, serial data set capable of operating at speeds up to 300 bauds and provides data service using the switched voice message network. Interface signals conform to EIA Specification RS-232B. It also includes an integrated telephone set.

Data Set 103GW type is designed to be compatible with Data Auxiliary Set 801AW type (Rotary Dialing) and Data Auxiliary Set 801CW type (TOUCH-TONE Dialing).

Used initially with remote computer input machines.

Consists of a light gray plastic housing which combines in a single desk-mounted housing, a 103EW5 Data Set, a 4010B Network, a 25A Power Supply, a G3AR-61 Hand Set, an M1A Ringer, a 635D2 Key Assembly, a speaker assembly, a terminal plug assembly, a card and arm assembly, a monitor amplifier, apparatus units, a D10P-61 Mounting Cord, and a three-wire power cord.

Data Set 103GW type is available with four different types of dialing features as indicated in the following table.

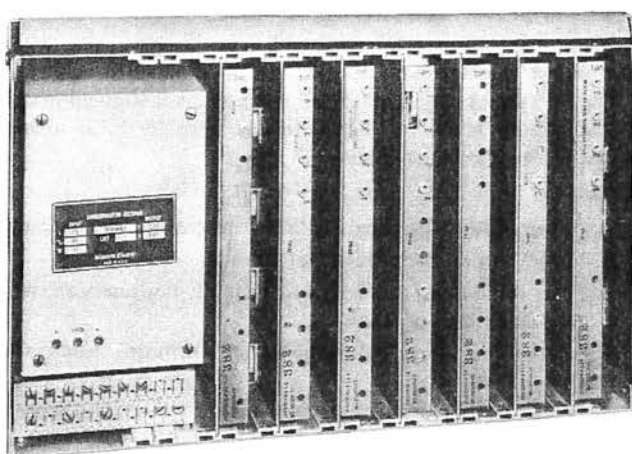
Data Set	Comcode	Type of Dial
103GW1	101 165 140	8C Rotary
103GW2	101 165 157	35B3 TOUCH-TONE
103GW3	101 165 165	8C Rotary and 41AWB Card Dialer*
103GW4	101 165 173	36D TOUCH-TONE and Card Dialer

\*A 2075A Transformer is required to supply the necessary voltage for operating the 41A or B Dial.

## SETS

## Data

105CW1



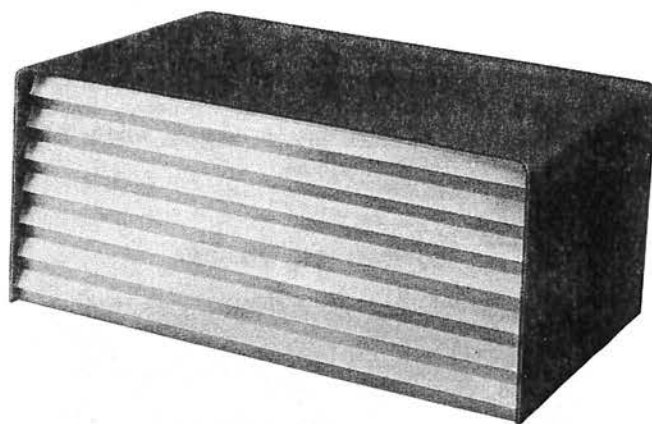
The Data Set 105CW1 is a frequency shift receiver and transmitter designed to convey teletypewriter information. Two frequency shift channels are used. The set operates at 100 words per minute. Intended for 8 level M35 Teletypewriter automatic send and receive operation. The set provides for alternate voice communication.

The set consists of resistors, capacitors, relays, diodes, and transistors mounted on 8 plug-in printed wiring boards. It is also provided with a J87240B-1 Rectifier Unit, an M3AY Cord, eight 908C Connectors, a KS-16671L1 Plug and a KS-16672L1 Connector. All parts are assembled in a rectangular metal case with overall dimensions of 23.796 inches wide by 9.063 inches high by 6.263 inches deep.

Used in number 307 Switching System.

Comcode: 100 669 761

109A1, 109A2, 109B1, and 109B2



Arranged for two-wire, half-duplex dc transmission of serial data up to 150 bits per second with less than 5 percent distortion over a maximum telephone loop of 2000 ohms.

Each consists of resistors, capacitors, diodes, transistors, and varistors mounted on a printed wiring board and terminated in printed wiring terminals.

Overall dimensions are 7.300 inches long by 1.370 inches wide by 5.550 inches high. Provided with a keying slot 0.287 inch wide by 0.620 inch deep to prevent being inserted into the wrong connector. The slot is located 1.587 inches from one end and 3.963 inches from the other end of the 5.550 inch dimension.

**109A1:** Converts voltage to current and current to voltage at local data stations. Used in conjunction with Data Set 109B1 at the data serving test center. Arranged to be used with Data Auxiliary Sets 820A1, 820B1, 820C1, and 820D1. Provided with lightning protection option. Used initially in number 1 ESS (ADF) and private line data service.

Comcode: 101 165 231

**109A2:** Same as 109A1 except does not have the lightning protection option.

Comcode: 101 165 249

**109B1:** Converts voltage to current and current to voltage at data serving test center. Used in conjunction with Data Set 109A1 at local data station. Arranged to be used with Data Auxiliary Set 811CW1. Provided with lightning protection option. Used initially in number 1 ESS and private line data service.

Comcode: 101 169 753

**109B2:** Same as 109B1 except does not have lightning protection option.

Comcode: 101 169 761



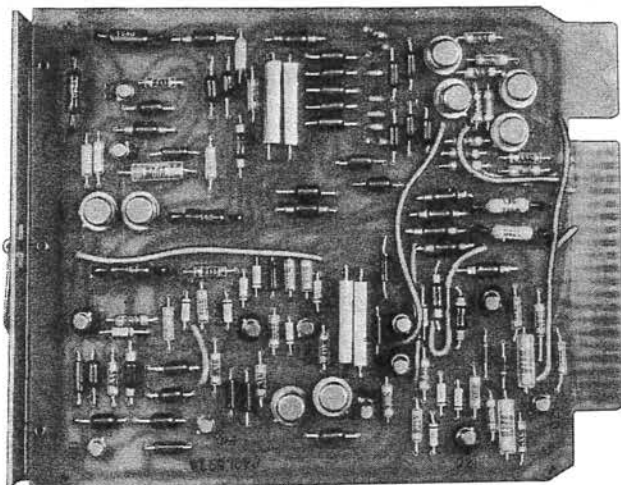
## SETS

## Data

## 200 Series

Data sets within this series accept medium-speed (maximum 2400 bits per second) serialized dc signals from a business machine and convert these signals into either frequency or phase modulated tones for transmission over DATA-PHONE service or private line voice facilities. At the receiving station, these frequency or phase modulated tones are converted back into dc signals which can be accepted by a business machine.

## 201AW3 and 201AW4



Provides full-duplex operation on a four-wire system. Each set transmits and receives, but not simultaneously, at an operating speed of 2,000 bits per second of both switched network and private lines. When the set transmits, the receiver portion monitors the transmitted data and provides local copy for the transmitting station. The receiver accepts the phase modulated carrier from the telephone line through its line circuit. Control signals from the receiver alert the business machine that data is forthcoming. The receiver converts the data signal modulation on the carrier to serial binary form and sends the data to the business machine. Data Auxiliary Set 804AW3 provides establishment of calls, voice communication, external control of data sets, and controls the type of voice for data transmission and 801AW6 provides automatic call origination under the control of a business machine. Data Auxiliary Sets 804AW3 and 801AW6 are not furnished and must be ordered separately.

**Data Set 201AW3:** An internally timed set and the clock signals necessary for operation of the transmitter are provided by internal circuits.

Comcode: 100 669 852

**Data Set 201AW4:** An externally timed set and the clock signals necessary for operation of the transmitter must be provided.

Comcode: 100 669 860

Each requires a 117 volt, 60 Hz, 17 watt ac power source for operation.

Has a two-tone gray cabinet with overall dimensions of 17.500 inches wide by 11.625 inches deep by 7.750 inches high. It weighs 35 pounds.

## Features:

1. Meets EIA Standard RS-232A interface specification.
2. Echo suppressor disabling circuit.
3. Can be tested in a closed loop in conjunction with the business machine.
4. Alternate voice communication through associated telephone set.
5. New SYNC terminal which provides multiparty operations.

## Options:

1. Internal or external timing for synchronous operation.
2. Two-wire (network or private line), four-wire (private line), or four-wire continuous carrier (private line).
3. Full or part time automatic answering (selective or permanent) when telephone set is provided for wiring option to bypass new SYNC terminal.

## SETS

## Data

## 201BW3 and 201BW4

**Data Set 201BW3:** Provides full-duplex operation on a four-wire system and is a four phase transmitter-receiver for transmission of serial data at 2400 bits per second (fixed rate) over the voice frequency band. It is provided with internal timing.

**Comcode:** 101 830 115

**Data Set 201BW4:** Same as 201BW3, except internal timing is omitted and external timing is required. Each requires a 117 volt, 60 Hz, 17 watt ac power source for operation.

**Comcode:** 101 830 123

These sets are similar in appearance to the 201AW3 and 201AW4.

Has a two-tone gray cabinet with overall dimensions of 17.500 inches wide by 11.625 inches deep by 7.750 inches high. It weighs 35 pounds. Requires 569NBW-61 Telephone Set which must be ordered separately.

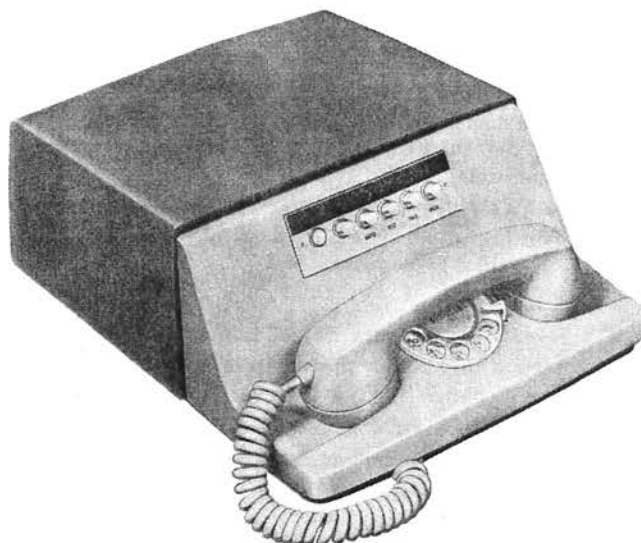
## Features:

1. Meets EIA Standard RS-232A interface specification.
2. Echo suppressor disabling circuit.
3. Can be tested in a closed loop in conjunction with the business machine.
4. New SYNC terminal which provides multiparty operation.

## Options:

1. Internal and external timing for synchronous operation.
2. Arranged for two-wire (private line), four-wire (private line), or four-wire continuous carrier (private line).
3. Full or part time automatic answer (selective or permanent) when telephone set is provided.
4. Wiring option to bypass new SYNC terminal if not desired.

## 202CW Type



**Data Set 202CW5:** An FM transmitting-receiving data terminal integrated with a telephone set in a single housing and provides normal point-to-point voice transmission and reception of serial digital information. Optional two- or four-wire operation is provided. The set operates at a speed of 1200 to 1800 bits per second. Each is equipped with a D6AA-61 Cord. When set is used on four-wire operation, a D34B-61 Cord is required and must be ordered separately.

**Comcode:** 101 623 387

**Data Set 202CW6:** Same as 202CW5 except it is equipped with a 1A1 Data Unit (on two-wire application) to furnish circuit assurance low-speed coordinating signals between business machines. The data unit is a reverse channel transceiver whose input and output appear on the interface of the data set.

**Comcode:** 101 623 262

**Data Set 202CW7:** Same as 202CW5 except it is equipped with a TOUCH-TONE dial.

**Comcode:** 101 830 131

**Data Set 202CW8:** Same as 202CW7 except it is equipped with a 1A1 Data Unit to provide simultaneous reverse channel transmission.

**Comcode:** 101 830 149



## SETS

## Data

## 202CW Type (Continued)

Each set requires a 117 volt, 60 Hz, 15 watt ac power source.

Data Auxiliary Set 801AW6 provides automatic call origination under control of the business machine. Data Auxiliary Set 801AW6 is not furnished and must be ordered separately.

Has a two-tone gray housing with overall dimensions of 11.0 inches wide by 15.0 inches long by 5.500 inches high. It weighs 16 pounds.

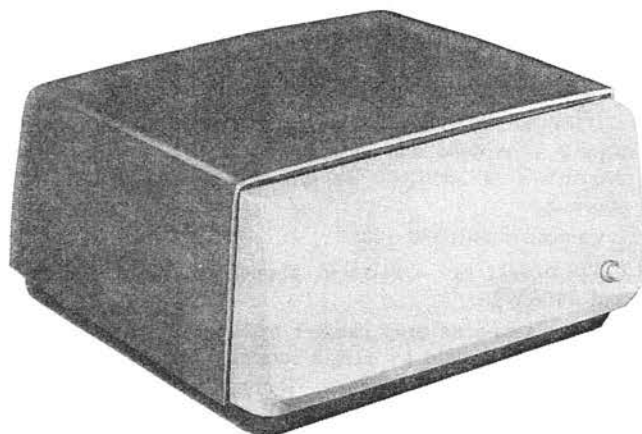
## Features:

1. Meets EIA Standard RS-232A interface specification.
2. Remote test allows the set to be tested from a Data Test Center.
3. Echo suppressor disabling circuit.
4. Alternate voice communication.
5. Reverse channel, (202CW6 and 202CW8 only)

## Options:

1. Manual and automatic answering (part time or permanent).
2. Arranged for two- or four-wire operation.
3. Wiring option provides contact closure-type signal on several of the interface leads to make the Data Set 202CW compatible with 202AW installations.
4. Full-duplex operation on four-wire system.
5. Three types of telephone switching:
  - Two-line DDD back up of four-wire private line.
  - One-line DDD back up of four-wire private line.
  - One-line DDD back up of two-wire private line.

## 202DW3 and 202DW4



**202DW3:** An FM transmitting-receiving data terminal providing normal point-to-point voice transmission and reception of serial digital information. Optional two- or four-wire operation is provided. The set operates at a speed of up to 1200 bits per second with DATA-PHONE service and up to 1800 bits per second with private line service. This set requires a 117 volt, 60 Hz, 15 watt ac power source.

Set is equipped with a D6AA-61 Cord. When set is used on four-wire operation, a D34B-61 Cord is required and must be ordered separately. Data transmission is permitted in two directions simultaneously (full duplex) on four-wire operation.

Comcode: 101 623 270

**202DW4:** Same as 202DW3 except equipped with a 1A1 Data Unit that provides a simultaneous line break or circuit assurance feature in the reverse direction of data transmission.

Comcode: 101 623 395

Has a two-tone gray cabinet with overall dimensions of 11.0 inches wide by 10.500 inches deep by 5.500 inches high. It weighs 16 pounds.

## Compatible Auxiliary Sets:

- Data Auxiliary Set 801AW6
- Data Auxiliary Set 804AW3
- Data Auxiliary Set 804AW4

These data auxiliary sets must be ordered separately.

## SETS

## Data

## Features:

1. Meets EIA Standard RS-232A interface specification.
2. Remote test allows the set to be tested from a Data Test Center.
3. Echo suppressor disabling circuit.
4. Alternate voice communication provided by 804A Data Auxiliary Set.
5. Reverse channel.

## Options:

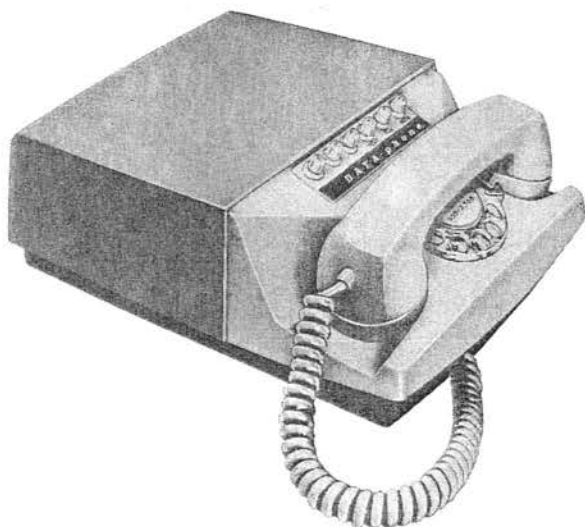
1. Manual or automatic answering (part time or permanent).
2. Available for two- or four-wire operation.
3. Wiring option provides contact closure-type signals on several of the interface leads to make the Data Set 202DW compatible with 202BW installations.
4. Full-duplex operation on four-wire system.
5. Three types of telephone line switching.

Two-line DDD back up of four-wire private line.

One-line DDD back up of four-wire private line.

One-line DDD back up of two-wire private line.

## 202EW Type



The 202EW type Data Set is an FM transmitting data terminal integrated with a rotary dial telephone set in a two-tone gray plastic housing. Provides normal point-to-point transmission of voice or of serial digital information at data transmission rates up to 1200 bauds on the switched network or up to 1800 bauds on some private line facilities. Designated for voltage signal interface.

**202EW1:** Has data capability only. Designed for either contact or voltage interface. The Key Unit built into the data set provides for talk, tone, data, and test modes of operation.

**202EW2:** Same as 202EW1 plus reverse channel.

**202EW7:** Same as 202EW1 plus automatic answer, EIA interface and remote test features.

**202EW9:** Combines the features of Data Sets 202EW2 and 202EW7.

The Data Sets 202EW10, 11, 12, and 13 are similar to the 202EW1, 2, 7, and 9, respectively, except for arrangement of TOUCH-TONE dialing instead of rotary dialing.

Power for Data Set 202EW1 is supplied through a D4BJ-61 cord over the Telephone loop from a central office battery. Data Sets 202EW2, 7 and 9 require a power rectifier and an external transformer and require an available source of 117 volts at 60 Hz.

Approximate overall dimensions are 11.5 inches long by 9.0 inches wide by 4.5 inches high.

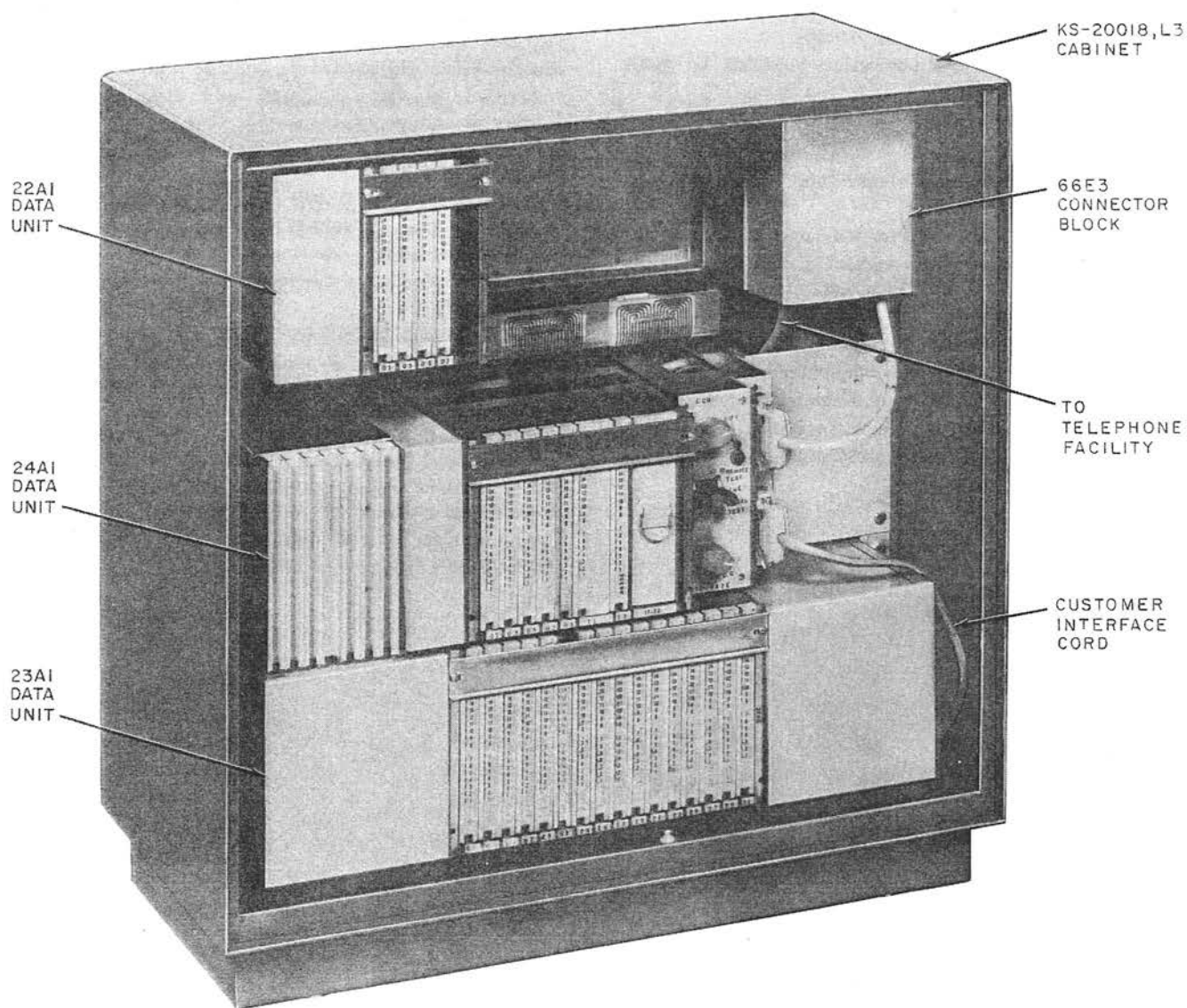
Code	Comcode
202EW1	101 623 403
202EW2	101 623 288
202EW7	101 623 411
202EW9	101 623 296
202EW10	101 830 156
202EW11	101 830 024
202EW12	101 830 032
202EW13	101 830 057



SETS

Data

203AW, BW, and CW



A Typical Data Set 203A-Type With Front Cover Removed

## SETS

## Data

Data Set 203 types are designed to transmit and/or receive digital data, with speed capability up to 7,200 b/s, over the switched network and 2- or 4-wire private line facilities. The data sets have the following basic design features:

- (a) Synchronous data transmission with transmitter bit timing supplied by the data set or by the customer, and receiver bit timing supplied only by the data set.
- (b) 2-, 4-, or 8-level amplitude modulation with suppressed carrier.
- (c) Vestigial sideband (VSB) line signal shaping.
- (d) Synchronous detection with upper and lower pilot tones transmitted near the edges of the VSB spectrum providing means for carrier recovery.
- (e) Automatic adaptive equalization.

The data sets may contain, as standard or in some cases optional equipment, a low-speed auxiliary transmitter/receiver. The auxiliary channel has the following design features:

- (a) Nonsynchronous data transmission up to 150 bits per second.
- (b) Binary frequency modulation with a MARK frequency of 450 Hz and a SPACE frequency of 375 Hz.
- (c) Frequency spectrum of 300 to 525 Hz which allows simultaneous operation with the high-speed channel over switched or 2-wire facilities.

The auxiliary channel feature is optionally provided with Data Set 203A, and always provided with Data Set 203B and 203C types. It is optional on 4-wire private line but must always be provided for operation over the switched network or 2-wire private line. When used in 4-wire circuit operation, the auxiliary channel is normally sent on-line in the same direction as the high-speed channel. In 2-wire operation, the auxiliary channel is normally used as a reverse channel.

Data Set 203A type, containing both a transmitter and receiver, will transmit and receive synchronous serial binary data at rates given in Table B. Internal components for this data set are Data Units 22A1, 23A1, and 24A1, equipped with optional circuit packs and networks.

Data Set 203B type is a transmitter only and is always provided with an auxiliary channel. Its transmitter features are identical in operation to those of the Data Set

203A type. Internal components for this data set are 22A1 and 24A1 Data Units equipped with optional circuit packs and networks.

Data Set 203C type is a receiver only and is always provided with an auxiliary channel. Its receiver features are identical in operation to those of the Data Set 203A type. Internal components for this data set are 23A1 and 24A1 Data Units equipped with optional circuit packs and networks.

The 24A1 Data Unit is equipped with a 41A Power Unit which provides the operating voltages required by Data Set 203 type components. A distributing system from the power unit to all data units provides connection to the regulated +4.5 vdc source and circuit ground. The power unit is also the source of both +18.5 vdc and -18.5 vdc which are distributed to the data units through the interface connectors at the rear of the 24A1 Data Unit. The 41A Power Unit requires operating voltages from an ac power input of 117 volts ( $\pm 10$  percent) at a frequency between 47.5 and 63 Hz.

Voice capability service can be provided only through the optional Data Auxiliary Set 804A or 804M type.

Components of Data Set 203 types are designed to operate in an environmental temperature ranging from +40 to +120°F with a relative humidity between 20 and 95 percent.

Code No.	Comcode
203AW-L1	101 830 065
203AW-L1A	101 830 073
203AW-L1B	101 830 081
203AW-L2	101 830 040
203AW-L3	101 829 869
203AW-L7	101 829 877
203BW-L1	101 829 885
203BW-L1A	101 829 893
203BW-L1B	101 829 901
203BW-L2	101 829 919
203BW-L3	101 834 943
203BW-L7	101 829 927
203CW-L1	101 829 935
203CW-L1A	101 829 943
203CW-L1B	101 829 950
203CW-L2	101 829 976
203CW-L3	101 829 968
203CW-L7	101 829 984



## SETS

## Data

## 203AW, BW, and CW (Continued)

TABLE A  
BASIC UNIT LISTS

DATA SET LIST NUMBER	DESCRIPTION	DATA SET SIZE AND WEIGHT		
		203AW-( )	203BW-( )	203CW-( )
L1	Mounted in a KS-20018, L3 cabinet with provision for error control	2 ft wide 1 ft deep 2 ft high 110 lbs	2 ft wide 1 ft deep 2 ft high 72.5 lbs	2 ft wide 1 ft deep 2 ft high 89.5 lbs
L1A	No cabinet — 23-inch frame Mounting with provision for error control	23 in. wide 9 in. deep 20 in. high 90 lbs	23 in. wide 9 in. deep 14 in. high 53 lbs	23 in. wide 9 in. deep 20 in. high 70 lbs
L1B	No cabinet — 23-inch frame Mounting without provision for error control.	(Not applicable)	(Not applicable)	23 in. wide 9 in. deep 20 in. high 65 lbs

TABLE B  
FUNCTIONAL OPTION LISTS

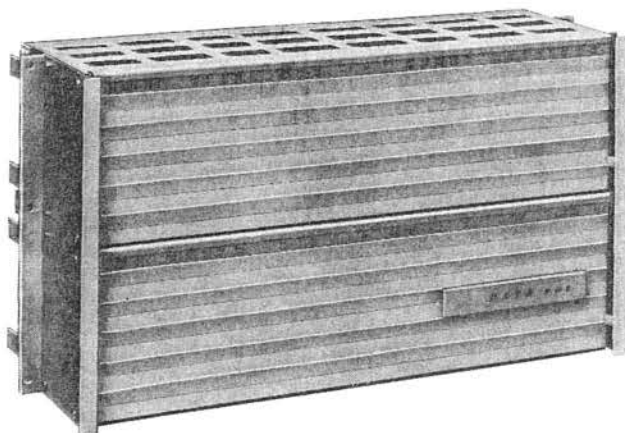
DATA SET LIST NUMBER	LINE SYMBOL RATES (BAUDS)	LINE SIGNAL BANDWIDTH (HZ)	SPEED CAPABILITY BITS/SEC			RECOMMENDED APPLICATION
			NUMBER OF LEVELS			
			2	4	8	
L2	2400	500-2900	2400	4800	7200*	4800 bps on 4-wire C2 private line
L3	1800	700-2700	1800	3600	5400*	3600 bps on switched network or on C2 private line (2- or 4-wire)
L7	0-150	300- 525	—	—	—	Auxiliary channel always required on 2-wire lines; optional on 4-wire lines

\* May have degraded performance

## SETS

## Data

205BW2



A four-wire, full-duplex modem that uses synchronous four-phase modulation for transmission of serial binary data at 600, 1200 and 2400 bauds per second. Transmission is over voice frequency circuits using a suppressed 1800 Hz carrier frequency. Available options include regeneration, choice of continuous or switched carrier, automatic answer, internal or external clock and power supply.

The Data Set 205BW2 can be used in point-to-point private line or four-wire switched network configurations. For four-wire switched network operation, the 205BW2 associated with a Data Auxiliary Set 804M or a 5A-type Data Mounting Unit provides unattended answer operation. The 804M is intended for simple data set installations. The 5A-type Data Mounting is intended for multiple data installations.

Data Set 205BW2 can be used as a terminal data set or as part of a regenerative repeater. Two data sets, back-to-back, are required to make one regenerator.

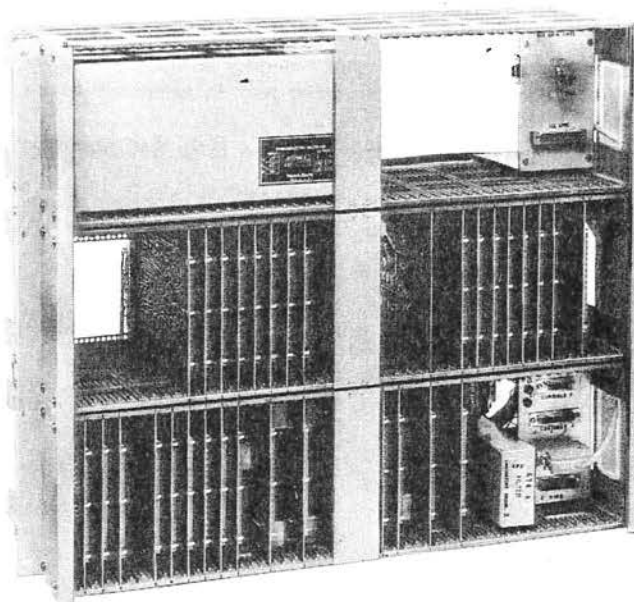
Meets EIA standard RS-232A or Military Standard 188B interface specifications.

The set can be powered either by a Data Auxiliary Set 819A-type or by a customer-provided dc supply. The 819A operates on 117 volts, 60 Hz.

Overall dimensions are 23 inches wide, 12 inches high and 9 inches deep and is designed to mount in a 23 inch relay rack.

Comcode: 101 205. 599

205CW2



The Data Set 205CW2 is a four-phase modem designed to be used primarily as a terminal station for full period service on either two-wire or four-wire private lines.

It provides synchronous serial binary data transmission and reception capability at 2400 bps over telephone facilities. An optional serial binary data transmission capability at a 1200 bps rate is also provided. Transmit and receive clock signals at the selected rate are provided. The transmission rate, including the regenerative repeater mode of operation, is selected by proper control signals applied to the interface connections. The 2400 or 1200 bps transmission rate may be selected independently in each direction of transmission. The data set transmitter may be timed internally or externally.

All interface circuits, except four, meet EIA electrical specifications. Send Data, Receive Data, and Serial Clock Transmit and Serial Clock Receive Circuits meet the intent of Military Standard 188B. These four circuits are designed to generate (or accept in the case of the Send Data Circuit) waveforms with longer rise and fall than is permitted by EIA specifications. This reduces crosstalk between signaling lead by a significant amount.

The data set contains 34 circuit packs consisting of 12 types of specialized circuits and an oscillator required to provide the electronic functions of the set. It is also equipped with a power supply which provides all operating voltages instantaneously when connected to a 60 Hz power source.

April 1, 1970

TELEPHONE APPARATUS AND EQUIPMENT

SETS

Data

**205CW2 (Continued)**

The data set can transmit and receive simultaneously over a four-wire facility. Calls between stations are made on a full-duplex basis.

Overall dimensions are approximately 23 inches wide by 18 inches high by 8 inches deep and is arranged to be rack mounted.

The Data Set 205CW2 replaces the Data Set 205AW1.

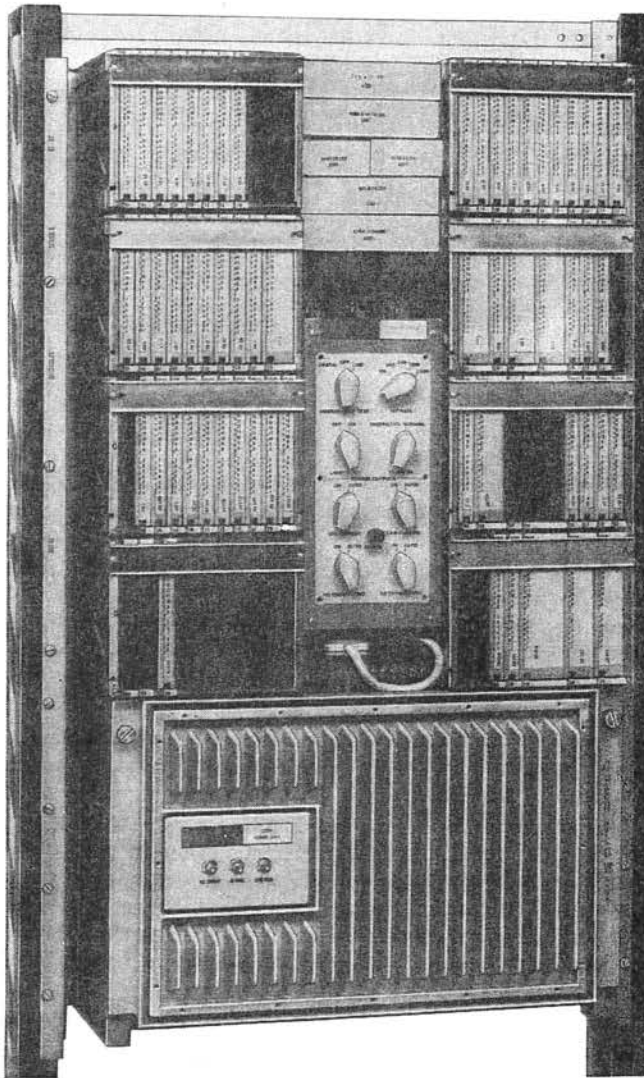
Comcode: 101 169 860



## SETS

## Data

## 207BW and CW



The Data Set 207 type consists of 16 interconnected and interrelated functional groups. The functions are accomplished using 61 circuit packs consisting of 23 different types of specialized circuits and, depending upon optional requirements, a 69A Oscillator to provide the electronic function of the data set.

## Features:

1. Conforms to operating requirements of Mil-M-55408 (EL) "Modem, High Speed Wire Line".
2. Transmits and receives full-duplex digital data at 2400, 1200, 600, 300, and 150 bits per second.
3. Uses synchronous four-phase modulation techniques — line signaling rate is 1200 bauds.
4. Receiver uses differentially coherent detection.
5. Timing recovery achieved by phase correcting a stable clock to coincide with demodulated data crossings.
6. Compatible with CONUS AUTOVON data grade facilities.
7. Available as a data terminal or as an automatically switched regenerative repeater.
8. Available with or without a 30-minute clock.
9. Available with or without a radio frequency interference shield.
10. Contains a compatible signal sensor that performs data signal identification and timing synchronization within 0.2 second.
11. Contains transmit and receive signal and transition alarms.
12. Capable of accepting external timing.
13. Data and clock interface meets Military Standard 188B.
14. Remote test allows data set to be tested from a Data Test Center.

The Data Set 207BW type consists of the data set circuitry equipped with a 32B1 Power Unit to supply voltages, and a mounting frame. Arranged to mount on a standard 23-inch relay rack. Overall dimensions are 38.0 inches high by 23.0 inches wide by 10.5 inches deep.

207BW2: Intended to be used as a terminator. Self-timed and provides a 30-minute holdover.

## Comcode:

207BW4: Intended to be used as a half-regenerator. Self-timed and provides a 30-minute holdover.

## Comcode: 101 829 992

207BW5: Intended to be used as a terminator. Self-timed and provides a six-second holdover.

## Comcode: 101 830 008

207BW6: Intended to be used as a regenerator. Self-timed and provides a six-second holdover.

## Comcode: 101 830 016

The Data Set 207CW type is identical to the 207BW type except a radio frequency interference shield is provided and a 32A1 Power Unit is used. The 32A1 Power Unit is the same as the 32B1 except that the ac input power cord is not provided and wire mesh gaskets are incorporated to mate with the shield. Power supply input connections are made to pressure type solderless terminals.

Overall dimensions are 40.0 inches high by 23.0 inches wide by 13.0 inches deep.



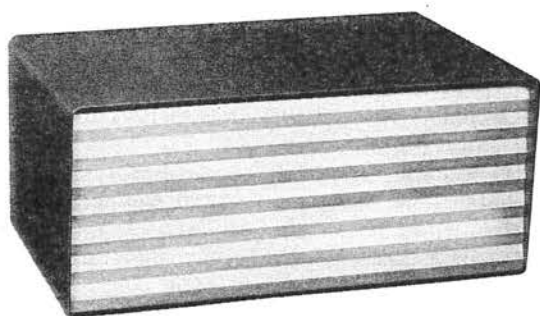
## SETS

## Data

## 300 Series

Data sets within this series accept high-speed (maximum of 250,000 bits per second) serialized dc signals from a business machine and convert these signals into phase modulated tones for transmission over private line facilities. At the receiving station, these phase modulated tones are converted back into dc signals which can be accepted by a business machine.

## 301BW2



This four-phase full-duplex transmitter-receiver for serial data transmits at 40,800 bits per second (fixed rate) over four-wire group band transmission facilities.

Similar to phase modulated 201BW type except for higher operating speed. Permits data transmission in two directions simultaneously (full duplex) on four-wire system by interconnecting two separate data sets.

Data Auxiliary Set 803AW2 should be used for testing Data Set 301BW2 and for loop around test of the baseband facilities from the wideband service bay. Data Auxiliary Set 803AW2 is not furnished and must be ordered separately.

This set requires a 117 volt, 60 Hz, 20 watt ac power source. Has a two-tone gray cabinet with overall dimensions of 17.0625 inches wide by 11.6875 inches deep by 7.750 inches high. It weighs 35.500 pounds.

Used on wideband private line facilities and with high speed tape to tape systems.

Comcode: 101 169 902

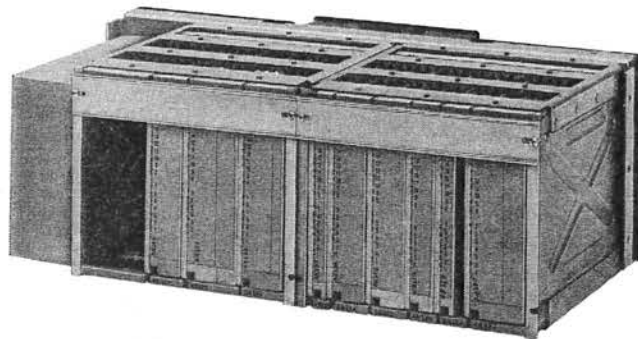
## Features:

1. Meets EIA Standard RS-232A interface specification.
2. Can be tested in a closed loop in conjunction with the business machine.
3. Remote test allows data set to be tested from a Data Test Center.
4. Voice coordination channel.

## Options:

1. Internal or external timing for synchronous operation.
2. Full or part time automatic answer.

## 303 Type



Provides for high speed, wideband serial binary data transmission at rates suitable for half-group, group, and supergroup facilities.

The basic data set is very flexible and by using combinations of five to nine circuit packs of the several available, features such as data bit rate, roll-off filter (50% or 100%), synchronous or nonsynchronous operation, internal or external timing with or without scrambler, and commercial or balanced interface are available.

Overall dimensions are 17.06 inches wide by 10.09 inches deep by 5.96 inches. Arranged for rack mounting using number 87 type brackets.

**303BW Type:** A baseband transceiver for use in half-group (19.2 Kbps) band data transmission on both point-to-point and multipoint private line service. May be used in a synchronous or nonsynchronous mode of operation and provides for transmission of binary signals from a variety of digital machines and of two-level signals from facsimile machines.

**303CW Type:** Same as 303BW type except is for use in group (50 Kbps) band data transmission.

**303DW Type:** Same as 303BW type except is for use in supergroup (230.4 Kbps) band data transmission.

**303EW Type:** Same as 303BW type except is for use in supergroup (200 Kbps) band data transmission.

**303GW Type:** Same as 303BW type except is for use in group (40.8 Kbps) band data transmission.

**303HW Type:** Same as 303BW type except provides 18.75 Kbps synchronous operation with regeneration in both directions.

Each of the above 303 types is separated into groups denoting the speed capability of each. These groups may be obtained with a variety of features and options as indicated below.

## SETS

## Data

## FEATURES

Group, 50% roll-off  
 Group, 100% roll-off  
 Supergroup, 50% roll-off  
 Supergroup, 100% roll-off

Half-group, 50% roll-off

Unbalanced interface  
 Balanced interface  
 Clock generator  
 Sync recovery  
 Scrambler — Descrambler  
 Signal control

## OPTIONS

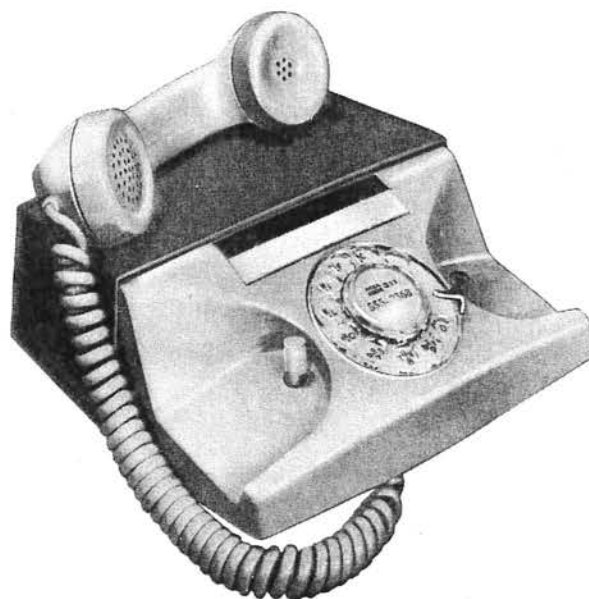
Internal transmitter clock  
 Descrambler, No scrambler  
 Scrambler, No descrambler  
 No Data Auxiliary Set 806B type  
 No VSB (Data Auxiliary Set 806B)  
 Permanent send request  
 Talk and nonsync data  
 SR control of VSB carrier  
 Free running scrambler  
 Talk and sync data  
 SR control on scrambler  
 Permanent LS  
 Sync logic normal  
 External transmitter clock  
 Permanent nonsync

Due to the complex functions and extensive features and options of this data set, the above description is expressed in general terms. For additional information, it is suggested that the engineering personnel listed on page ii be contacted.

## 400 Series

Data sets within this series accept low to medium-speed (maximum 100 characters per second) parallel dc signals from a business machine and convert these signals into frequency modulated tones for transmission over private line voice facilities. At the receiving station, these frequency modulated tones are converted back into dc signals which can be accepted by the business machine. Data sets in this series generally find application in data gathering systems where many low cost transmitting stations send data to a centralized computer. In such applications the business machine (at the transmitting station) usually generates data in a parallel mode. Since equipment cost and not transmission efficiency is important in this application, it is usually cheaper to transmit in parallel and thus eliminate the cost of series/parallel conversion equipment at the transmitting and receiving locations.

## 401AW1 L2



This set is an integrated unit which combines a data transmitter, an answer-back amplifier, and a telephone set in one housing. It is a low speed (up to 20 characters per second) transmitter of data over a voice channel, normally the switch network. Transmits 10 numeric characters and 6 control signals. Synchronization of timing is not required.

This set is powered by the central office battery on the local telephone loop.

Has a two-tone gray housing with overall dimensions of 8.750 inches wide by 9 inches deep by 4.500 inches high. It weighs 6 pounds.

Comcode: 101 199 958

## Features:

1. Meets EIA standard RS-232A interface specification.
2. Parallel transmission eliminates the cost of series/parallel conversion equipment.
3. Alternate voice communication.



## SETS

## Data

401EW Type



401HW3



Each is an integrated set which combines a data transmitter, audible answer-back circuits, remote test circuits, and a telephone set in one housing. It is a low speed parallel transmitter in one direction delivering 3 to 14 frequency tones having a possibility of 99 different alphanumeric characters at a rate of 20 characters per second. Synchronization of timing is not required.

Data Set 401EW2 incorporates provision for voice answer-back feature.

Comcode: 100 670 066

Data Set 401EW3 provides a special voice answer-back channel to permit use in digital inquiry voice answer-back service.

Comcode: 100 670 074

Data Set 401EW4 is the same as 401EW2 except it is equipped with an apparatus unit which provides a 12-button TOUCH-TONE dial, and the two test key buttons are square.

Comcode: 101 169 936

Data Set 401EW5 is the same as 401EW4 except for addition of a unit which provides a voice answer-back channel to permit use in digital inquiry-voice answer-back service.

Comcode: 101 169 944

Each set is powered by the central office.

Has a two-tone gray housing with overall dimensions of 8.750 inches wide by 9 inches deep by 4.500 inches high. It weighs 6 pounds.

## Features:

1. Contact closure interface.
2. Parallel transmission eliminates the cost of series/parallel conversion equipment at the transmission end.
3. Alternate voice communication.
4. Remote test allows set to be tested from a Data Test Center.

A low-speed, parallel, multifrequency transmitter. The set is designed to transmit telemetry type data in one direction using 99 different alphanumeric characters. Operates at 20 characters per second but can be keyed in serial mode up to 200 bits per second. It is capable of transmitting three out of fifteen frequencies simultaneously and of automatically answering in response to 20 cycle ringing signals on either a loop or party line basis. Uses contact closure interface and is also available with EIA voltage interface.

It is enclosed in a cabinet which is 6 inches wide by 8 inches high by 3.188 inches deep having a gray enameled finish and is arranged to be wall mounted.

Replaces Data Set 401HW2.

Comcode: 101 207 436

## SETS

## Data

## 401JW Type



## Features:

1. Contact closure interface.
2. Parallel transmission eliminates the cost of series/parallel conversion equipment at the receiving end.
3. Alternate voice communication.
4. Remote test allows set to be tested from a Data Test Center.
5. Pickup and hold feature for as many as three additional voice telephone lines in a 1A1 Key Telephone System.
6. When used with an automatic calling unit the receiving location can act as an originating station when polling outlying stations for data gathering purposes.

## Options:

Manual or automatic answering.

**Data Set 401JW2:** An integrated unit which combines a three-out-of-fourteen multifrequency data receiver with a telephone set for accepting 99 different alphanumeric characters over the switch telephone network. Has an operating speed up to 20 characters per second. Provides half-duplex answer-back tone.

Comcode: 100 670 132

**Data Set 401JW3:** Provides a voice channel that allows audio transmission while in the data mode for use in digital inquiry voice-answer service.

Comcode: 100 670 140

**Data Set 401JW4:** Same as 401JW2 except is a TOUCH-TONE version

Comcode: 101 169 985

**Data Set 401JW5:** Same as 401JW3 except is a TOUCH-TONE version

Comcode: 101 169 993

Each requires a 117 volt, 60 Hz, 10 watt ac power source.

Has a two-tone gray housing with overall dimensions of 10.750 inches wide by 14.750 inches deep by 5.500 inches high. It weighs 16 pounds.

## Compatible Auxiliary Sets:

Data Auxiliary Set 801AW6

The 801AW6 must be ordered separately.



## SETS

## Data

## 402CW Type



**402CW1:** This is an integrated unit which combines a telephone set and a transmitter component of a medium speed, binary, parallel data transmission system. Provides unattended answering, alternate voice transmission, and data transmission of any number of binary data levels up to 8 at any speed up to 75 characters per second. Also provides timing signals and a nonsimultaneous answer-back feature at a maximum operating speed of 20 two-bit characters per second.

Used in private line service over the switch telephone network or in leased line service.

Has two-tone gray housing with overall dimensions of 10.750 inches wide by 14.500 inches deep by 5.500 inches high. It weighs 20 pounds.

Comcode: 101 165 595

**402CW2:** Same as 402CW1 except contains a 1B1 Data Unit which provides a simultaneous line break or circuit assurance feature in the reverse direction simultaneously with forward data transmission.

Comcode: 101 623 569

**402CW3:** Same as 402CW1 except has TOUCH-TONE dial, and data control buttons are of the square type.

Comcode: 101 170 025

**402CW4:** Same as 402CW2 except has TOUCH-TONE dial, and data control buttons are of the square type.

Comcode: 101 170 033

Compatible Data Auxiliary Sets:

Data Auxiliary Set 801AW6.

The 801AW6 must be ordered separately.

Features:

1. Contact closure interface.
2. Nine channel transmitter, eight for data transmission and one for timing.
3. Echo suppressor disabling circuit.
4. Parallel transmission eliminates the cost of series/parallel conversion equipment at the transmission end.
5. Alternate voice communication.
6. Capable of receiving an answer-back signal from the receiving station.
7. Reverse channel.
8. Remote test allows data set to be tested from a Data Test Center.

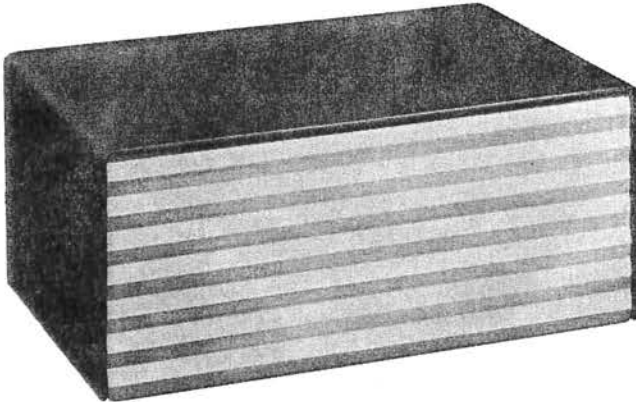
Options:

1. Manual or automatic answering.
2. Arranged for two- or four-wire operation.

## SETS

## Data

## 402DW3 and 402DW4



**Data Set 402DW3:** The receiver of a medium-speed, binary parallel data transmitter. Receives signals from the transmitting component of the system and delivers any number of binary data levels up to 8 at any speed up to 75 characters per second. Timing information is also received and delivered. A nonsimultaneous answer-back feature is provided at a maximum operating speed of 20 two-bit characters per second.

**Comcode:** 101 727 915

**Data Set 402DW4:** Contains a 2A1 Data Unit which provides a line break or circuit assurance feature in the reverse direction simultaneously with forward data transmission.

**Comcode:** 101 727 923

This set requires a 117 volt, 60 Hz, 26 watt ac power source.

Has a two-tone gray cabinet with overall dimensions of 17.500 inches wide by 11.625 inches deep by 7.750 inches high. It weighs 45 pounds.

**Compatible Auxiliary Sets:**

Data Auxiliary Set 802AW6

Data Auxiliary Set 801AW3

**These data auxiliary sets must be ordered separately.**

**Features:**

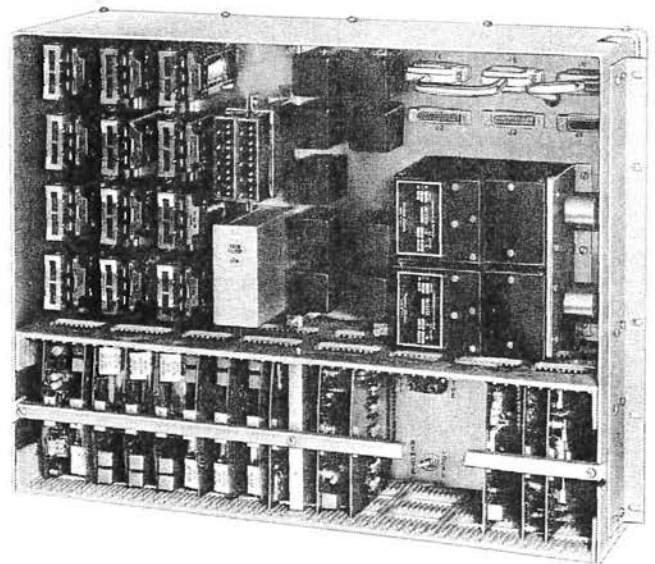
1. Contact closure interface.
2. Nine channel receiver, eight for data reception and one for timing.
3. Parallel transmission eliminates the cost of series/parallel conversion equipment at the receiving end.
4. Remote test allows data set to be tested from a Data Test Center.
5. Echo suppressor disabling circuit.
6. Alternate voice communication through Data Auxiliary Set 804AW3.

7. Capable of transmitting an answer-back signal to the transmitting station.

**Options:**

1. Manual or automatic answering.
2. Arranged for two- or four-wire operation.

## 404AW1



The Data Set 404AW1 is a low-speed parallel transmission transmitter and receiver unit.

It is used on four-wire private service systems to automatically transmit and receive TOUCH-TONE signals for dialing and control purposes. Transmits and receives a maximum of 16 characters at a rate of 10 characters per second. Remote test features are provided.

Consists of resistors, transistors, and diodes, etc., mounted on 14 plug-in printed wiring boards. The unit is terminated in five KS-19087L2 Connectors. Overall dimensions are 23 inches wide by 16.125 inches high by 6.875 inches deep. The set weighs 53 pounds.

Used in the 307 Switching System.

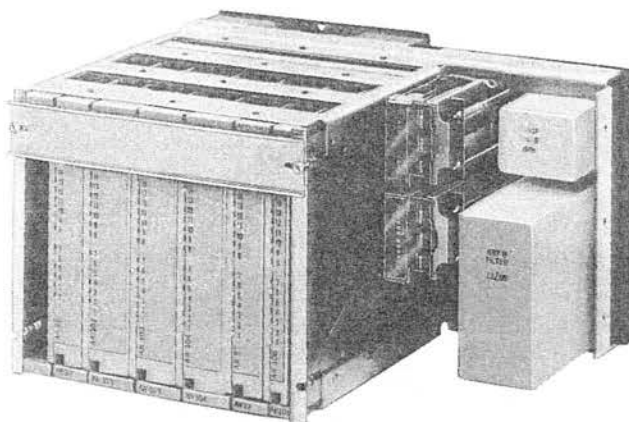
**Comcode:** 100 670 272



## SETS

## Data

404BW1



A low-speed, non-integrated data set capable of full-duplex operation over a four-wire voice frequency circuit. It is designed for the transmission and reception of signals of a multifrequency 2-out-of-10 code format.

The data set provides a low-speed data coordination channel over voiceband private lines when used in a wide-band data station using Data Set 303 type.

Converts voltage interface signals having electrical characteristics which conform to EIA Standard RS-232B into tones for transmission and at the receiving end converts the tones back to voltage signals.

Power is derived from auxiliary equipment. The set may be used independently if a 26A Power Unit is provided. Operation of Data Set 404BW1 is controlled by auxiliary equipment (Data Auxiliary Set 806B type and Data Auxiliary Set 801A type).

The data set, which weighs approximately 17-1/2 pounds, has external dimensions of 10 inches long, 11 inches wide and 6 inches high.

Comcode: 101 170 140

## 600 Series

Data sets within this series are designed for connection between voice facilities and a narrow band analog unit such as a telewriting unit. These data sets transmit and receive data in handwritten or facsimile format.

601AW and 601BW Type



Each is an integrated unit which consists of a telephone set and a 589AA Key and other components housed in a two-tone gray housing with overall dimensions of 9 inches wide by 11.500 inches deep by 3.750 inches high. The set weighs 9.500 pounds.

601AW1: This set is a half-duplex nonsimultaneous basis transmitter-receiver for analog transmission over the voice frequency switched message network with frequencies of 2200 Hz for channel A and 1400 Hz for channel B.

Comcode: 101 727 931

601BW1: This set is a half-duplex nonsimultaneous basis transmitter-receiver for analog transmission over the voice frequency switched network with frequencies of 1300 Hz for channel A, 1050 Hz for channel B, and 800 Hz for Channel C.

Comcode: 101 165 603

601AW2: Same as 601AW1 except that TOUCH-TONE signalling is provided.

Comcode: 101 623 601

601BW2: Same as 601BW1 except that TOUCH-TONE signalling is provided.

Comcode: 101 829 836

## SETS

## Data

These sets require a 117 volt, 60 Hz, 2-1/2 watt ac power source and are used in conjunction with telewriter equipment.

## Features:

1. Contact closure interface.
2. Remote test allows set to be tested from a Data Test Center.
3. Alternate voice communication.
4. Capable of transmitting an answer-back signal.

## Options:

Manual or automatic answering.

## 602CW Type



The set is a medium-speed half-duplex transmitter-receiver with electrical coupling to a telephone circuit for analog transmission over the voice frequency switched message network. Remits transmission of facsimile data at 100 lines per minute with a resolution of up to 100 lines per inch. Provides for transmission of a frequency band spectrum ranging from 1500 to 2500 Hz which corresponds to voltage signals of 0 to 7 volts from the business machine. A secondary signal channel in parallel with main analog channel is provided for simultaneously transmitting control or synchronization between the transmitting and receiving data sets.

The Data Set 602CW1 is an integrated unit which consists of a telephone set and a 589A key and other components housed in a two-tone gray housing with overall dimensions of 11 inches wide by 15 inches deep by 5.500 inches high. The set weighs approximately 16 pounds.

Comcode: 101 170 215

The set requires a 117 volt, 60 Hz, 25 watt ac power source.

It is intended for transmission and reception of facsimile and medical signals.

The Data Set 602CW2 is the same as Data Set 602CW1 except it is equipped with a 1A1 Data Unit that provides a simultaneous line break circuit assurance feature in the reverse direction.

Comcode: 101 170 223

The Data Set 602CW3 is the same as 602CW1 except that TOUCH-TONE signalling is provided.

Comcode: 101 171 437

The Data Set 602CW4 is the same as 602CW2 except that TOUCH-TONE signalling is provided.

Comcode: 101 171 445

Compatible Auxiliary Set: Data Auxiliary Set 801AW6 which must be ordered separately.

## Features:

1. Meets EIA Standard RS-232A interface specification.
2. Remote test allows set to be tested from a Data Test Center.
3. Alternate voice communications.
4. Pickup of spare lines.
5. Black, white, and shades of gray can be transmitted.

## Options:

Manual or automatic answering.



## SETS

## Data

603AW1 and 603AW2



The Data Set 603AW1 is an integrated unit, combining a data transmitter, a reverse-channel receiver, a line control circuit, and a six button telephone set.

It provides a means for voiceband transmission of low frequency (0-100 Hz) analog signals that are originated by a business machine, primarily electrocardiograph equipment. It allows signaling from the data receiver during data transmission. The telephone subscriber set is used to establish data calls and may be used as a normal telephone.

The unit is equipped with a 900 ohm termination, a lamp-tone receiver indication and a 6 dbm output level. It may be equipped with a 600 ohm termination, a contact receiver indication, a 9 dbm, 3 dbm, or 0 dbm output level, if specified on the order.

Power is supplied by a 2012B Transformer which connects directly to a 117 volt, 60 Hz source. The power cord with the transformer attached is coded M2EP. A D6AA-61 Cord, 5.500 feet long, is supplied as the telephone cord.

The set is housed in a two-tone gray plastic case 8.750 inches wide by 11.500 inches long by 3.500 inches high. It weighs approximately 10 pounds.

Comcode: 100 670 330

The 603AW2 is the same as the 603AW1 except it is equipped with a TOUCH-TONE dial.

Comcode: 101 171 460

603BW3 and 603BW4



The Data Set 603BW3 is a narrow-band, low-speed, analog receiver used for reception of signals (0-100 Hz) from a 603AW1 or 603DW1 transmitter.

A telephone hand set is provided for voice communications used to coordinate the receiver operation with the associated transmitter. Used primarily by the medical profession for the reception of electrocardiograph signals.

The set is designed for attended operation while receiving data, although unattended operation can be provided through optional wiring. The set generates both a circuit assurance signal (reverse channel) and an answer-back signal. The set requires 117 volt, 60 Hz ac power source.

The set is available with the following options.

- 600 ohm line termination
- 900 ohm line termination
- 0 db reverse channel power
- 3db reverse channel power
- 6 db reverse channel power
- 9 db reverse channel power
- Automatic answering
- Automatic answering (Key operation)
- Dial tone key

The Data Set 603BW3 is housed in a two-tone gray cabinet with overall dimensions of 11 inches wide by 14.625 inches deep by 5.500 inches high. It weighs approximately 18 pounds.

A KS-14532L16 Power Cord and a D6AA-61 Cord for the telephone set are furnished.

Comcode: 101 829 844

The Data Set 603BW4 is the same as 603BW3 except TOUCH-TONE version.

Comcode: 101 829 851

## SETS

## Data

## 603DW1



The Data Set 603DW1 is a battery-powered portable acoustically coupled medical analog transmitter primarily used for electrocardiograph transmission.

This set provides the electronic circuits necessary to convert the business machine analog voltage signal to a frequency modulated signal suitable for being transmitted over telephone lines. The audible FM signal is acoustically coupled into a telephone hand set for transmission.

The set is designed to accept an analog voltage signal (varying between +2.0 and -2.0 volts) from the business machine in the frequency range between 0 and 100 Hz. The input impedance is 100,000 ohms. Input signals are frequency modulated with a carrier at 1988 Hz. The transmitted signal has a peak frequency deviation of 262 Hz from the carrier frequency. Eight standard flashlight batteries, size D, are required to provide operating voltage. **The batteries are not furnished.**

The data set is housed in a two-tone gray plastic case and weighs 6 pounds when equipped with batteries. Overall dimensions are 12.750 inches long by 8.500 inches wide by 4 inches high.

Comcode: 100 670 355



## SETS

## Auxiliary Data

## 801AW5 and 801AW6



These are any-number, dial pulse automatic calling units having two-tone gray, nonintegrated housings with overall dimensions of 10.750 inches wide by 10.500 inches deep by 5.500 inches high. Each weighs 16 pounds.

There are 12 translucent test buttons across the front which, when activated, duplicate signals that would normally be provided by the associated business machine. This action makes possible the testing of the data auxiliary set but cannot be used as an alternate mode to transmit data since it times out in 40 seconds and disconnects the data (telephone line).

The rear of the data auxiliary set contains a power cord connector, interface connector, and mounting cord.

A 10-foot, 3-conductor power cord (KS14532L16) and a 5-1/2 foot mounting cord (D10P-61) are furnished with the set. A plug-ended (M14C-61) cord is available and may be substituted for the D10P-61 when the associated data set requires it. However, it must be ordered separately.

These data auxiliary sets will operate over an ambient temperature range of 40° to 120° F and a relative humidity of 20 to 95 percent. They require approximately 15 watts of 117 volt, 60 Hz ac power from a local grounding type, three-wire outlet.

Contact closure or voltage interface is available as an installer's option.

Each set performs the following functions.

1. Obtains a central office line.
2. Signals an off-hook condition.
3. Recognizes the dial go-ahead signal.
4. Dials the number of the desired station.
5. Places associated data set in the data mode.
6. Transfers the telephone line to the data set upon receipt of an answer indication from the called station.

7. Terminates the call upon completion of business.

The set permits a business machine to automatically originate and control dc dial pulse calls to desired stations whose telephone numbers are stored in the memory of the business machine.

The telephone number is passed from the business machine to the set one digit at a time in the form of parallel four-bit binary signals.

## Compatible Data Sets and Data Auxiliary Sets:

103AW	
103GW	
202CW	
401JW	
402CW	
602CW	
603BW	
804AW	(When used in conjunction with 201AW, 202DW, or 402DW Data Sets)
811BW1	(When used in conjunction with 101AW, 101BW, or 101CW Data Sets)

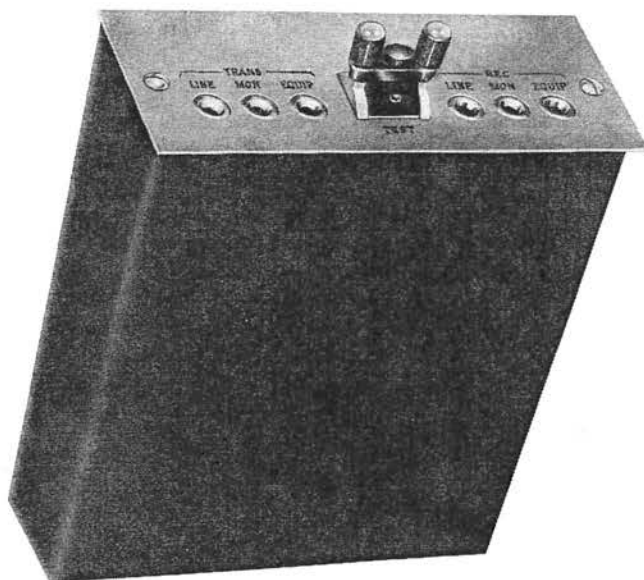
The 801AW5 and 801AW6 are the same except the 801AW6 contains two additional printed circuit boards which provide answer detection capabilities.

Code No.	Comcode
801AW5	101 623 056
801AW6	101 623 155

## SETS

## Auxiliary Data

803AW2



Consists of a metal case with a dark gray textured vinyl finish, 7.250 inches wide by 8 inches high by 2.625 inches deep. It weighs 2.500 pounds. The cover has a hole for cable entrance.

Arranged for wall mounting by means of four number 10 screws which are not furnished.

Arranged for connecting test apparatus to a line only, or to a data set only, on either the transmit or receive side at locations where Data Sets 301BW1 are installed.

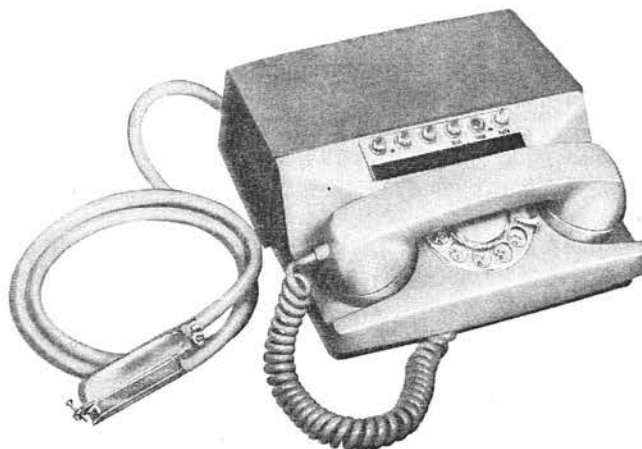
Permits the business machine to send to itself locally through the data set for test.

Provision is also made for monitoring data on either the transmit or receive side. The key when operated isolates a data set from the line, loops the transmit and receive sides, and connects the transmitter of the data set to the receiver through an appropriate pad.

Used in conjunction with Data Set 301BW1 in data systems to facilitate testing of data set and transmission line.

Comcode: 101 829 786

804AW Type



804AW1: Consists of a two-tone gray plastic housing, 8.750 inches wide by 8.750 inches deep by 3.500 inches high. It weighs 9 pounds.

When used with 402DW1 or similar data set receivers, it provides switching between the test talk and data modes and provides facilities for voice communication over the telephone lines and for automatic answering of data calls.

When used with automatic calling sets on ground start lines, it provides means for obtaining dial tone in the event of a local ac power failure in the automatic calling set.

Comcode: 100 670 538

804AW2: Same as 804AW1 except also contains a 4-wire relay to permit switching between 2 and 4-wire circuits under control of keys in a data auxiliary set.

Comcode: 100 670 546

804AW3 and 804AW4 Data Sets: Similar to the 804AW1 and 804AW2, respectively, except that TOUCH-TONE signalling is provided.

Comcodes: 101 171 536 and 101 171 544, respectively.

Each set is powered by the central office.

## Features:

1. Alternate voice communication.
2. Remote test allows the set to be tested from a Data Test Center.

## Options:

1. Manual or automatic answering.
2. Arranged for two- or four-wire operation.

## Compatible Data Sets:

201AW Type, 202DW Type, 402DW Type.



## SETS

## Auxiliary Data

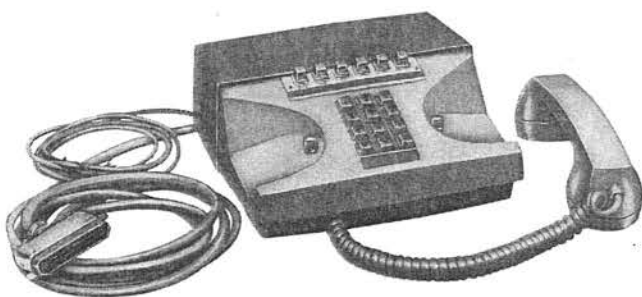
## 804BW1

Same as Data Set 804AW1 except can be strapped for data only for TWX service. Arranged to provide voice communication and transmission of data over the direct distance dialing network.

Used in conjunction with the Data Set 103AW1 in data systems.

Comcode: 100 670 553

## 804GW1 and 804GW2



804GW1: Consists of a two-tone gray plastic housing containing an 11C Apparatus Unit, a 589T Key, three 52A Lamps, a D4BJ-61 Cord, an M14F Cord, and printed wiring boards containing component apparatus.

Arranged for use with Data Set 403EW1 to provide single line use. The unused keys are blocked and not equipped with lamps.

Overall dimensions are 8.60 inches deep by 8.30 inches wide by 4.30 inches high.

Comcode: 101 171 635

804GW2: Same as 804GW1 except it is equipped with an 11G Apparatus Unit which provides TOUCH-TONE signaling.

Comcode: 101 171 643

Replaces Data Sets 804CW1 and 804CW2, respectively.

## 806AW1, 806AW2, 806AW3



The Data Auxiliary Set 806AW type housed in a gray wall mounted cabinet is 11 inches long by 7 inches wide by 4 inches high.

The set is designed to tie together the transmit and receive leads facilitating loop-back testing of the line facilities and the data station equipment. The set may be either locally or remotely controlled.

A 117 volt, 60 Hz ac power source is required. The following table shows the options and features that are or can be furnished for the data auxiliary sets.

	Option or Feature	806AW1	806AW2	806AW3
(V)	Line Loop-Back Conditioned for Wet Line	a	b	b
(W)	Line Loop-Back Conditioned for Dry Line	a	b	b
(Z)	Metallic Transmission Paths	a	b	b
(Y)	Repeat Coil on Receive Leg	b	b	b
(X)	Repeat Coil on Transmit Leg	b	b	b
(M)	With Auxiliary Local Key	b	b	b
(N)	Without Auxiliary Local Key	b	b	b
(R)	Station Side Looped	b	b	b
(S)	Station Side Terminated	b	b	b
(J)	Used with X or Y Options When the Line is Wet	a	b	b
(F)	DC Signaling Facility Indicator	b	a	a
(H)	DC Loop Signaling	b	a	a

## SETS

## Auxiliary Data

Option or Feature	806AW1	806AW2	806AW3
(K) DC Simplex Tip Side Grounded	b	a	a
(T) DC Simplex Balanced to Ground	b	a	a
(G) DC Simplex Ring Side Grounded	a	b	b
(A) Binary Operation	a	b	b
(E) 2800-Cycle Signaling on Receive Leg	a	c	a
(B) 2400-Cycle Signaling on Receive Leg	a	a	c

(a) Not applicable.

(b) Installation option available.

(c) Supplied as standard for this set.

## Code No.

## Comcode

806AW1

100 670 595

806AW2

100 670 603

806AW3

100 670 611

806BW2: Same as 806BW1 except a 10A2 Data Unit is used in lieu of the 10A1 Data Unit and a 2800 cycle detector is added to provide remote test capability.

Comcode: 101 171 700

806BW5: Same as 806BW2 except equipped with an interface adapter unit and provides customer interface facilities and local and remote testing capabilities as required for use with data set 301B type in wideband data service.

Comcode: 101 829 828

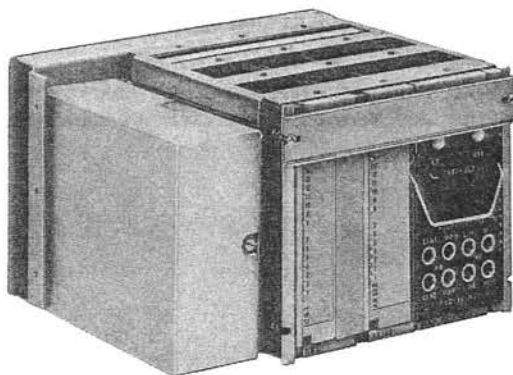
806BW6: Contains a 10A1 Data Unit and associated wiring to provide interconnection of a wideband Data Set 303 type and a four-wire wideband line. Provision for test access to lines, local test, and voiceband coordination channel.

Comcode: 101 829 810

806BW7: Same as 806BW6 except the Data Unit 10A1 is replaced by a Data Unit 10A2, and a 2800 cycle detector is added. This provides the additional feature of remote test capability.

Comcode: 101 829 802

806BW Type



Provides line interfacing, test features, and interconnection arrangements for the component units of wideband data stations using the Data Set 303 type.

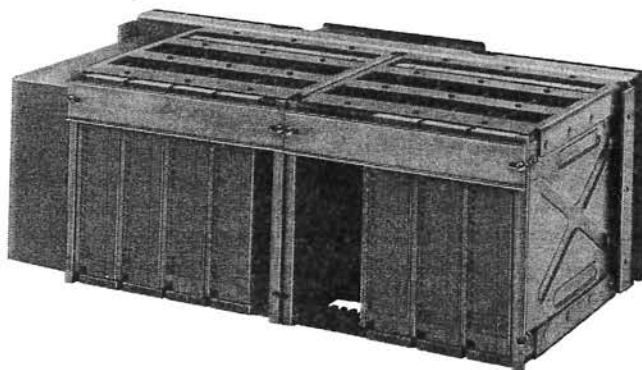
Each consists of a power unit, a data unit, and a terminal board assembly with a coordination channel adapter unit and/or a 2800 cycle detector as required for individual codes.

Overall dimensions are approximately 9.96 inches long by 5.96 inches high by 9.10 inches deep. Arranged for rack mounting.

806BW1: Contains a 10A1 Data Unit and associated wiring to provide interconnection of a Data Set number 303 type and a four-wire wideband line. Also provides a local test feature for looping both wideband and voiceband lines.

Comcode: 101 171 692

809BW1



Consists of a power unit, a relay, filters, equalizer, and circuit pack assemblies mounted on a metal mounting plate. Arranged for rack mounting.

A vestigial sideband transceiver which is used in conjunction with Data Set 303BW type to modulate the baseband output into a 28-44 kc frequency band for transmission over wideband facilities and to demodulate the received signal.

Overall dimensions are 17.06 inches long by 5.96 inches high by 10.09 inches deep.

Used in Wideband Data Stations.

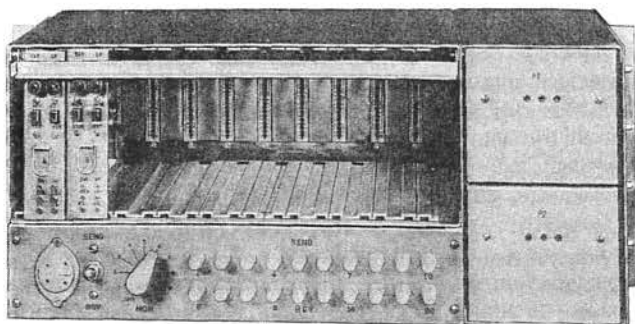
Comcode: 101 171 742



## SETS

## Auxiliary Data

816BW1



Designed for multiunit locations where more than one channel of VF telegraph carrier terminates. Each set will accommodate up to ten channels. Used in low speed data transmission up to ten 150 baud channel terminations.

Provides a visual carrier fail lamp alarm for each of the ten channels. In addition, provision has been made for an optional connection for a common alarm carrier failure lamp in the event that any one of the ten channels fails.

Designed to connect to the full-duplex send and receive legs of a number 130 type teletypewriter set on a four-wire basis.

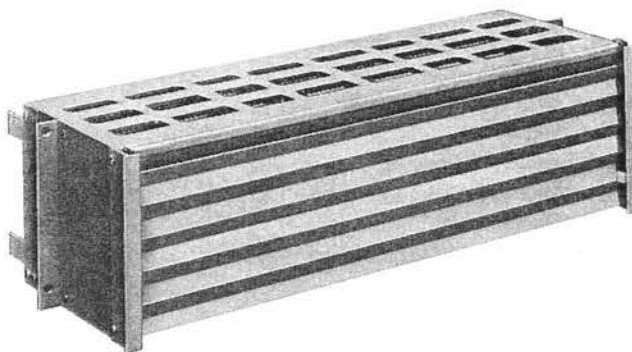
Consists of ten 908C Connectors, a monitoring selector switch, a monitoring amplifier and jack, two J87215A1, List 1 Rectifiers, and a KS-16671, List 1 Plug.

A KS-14532, List 8, 3-conductor power cord, 10 feet long, is furnished with the set. A connecting cable will be required between the teletypewriter and the data auxiliary set such as an A25B Connector Cable. This cable is not furnished and must be ordered separately.

Overall dimensions are 23 inches wide by 9 inches high by 8.5 inches deep and weighs 37 pounds. Designed to be mounted on a 23 inch relay rack.

Comcode: 101 829 794

819AW Type



Each consists of a metal housing arranged to mount on a 23 inch wide rack, containing J87270A-1 rectifiers. Overall dimensions are 22.93 inches long by 6.105 inches high by 8.82 inches deep.

819AW1: Designed to operate on commercial power of 117 volts, 60 Hz, 58 watts, and provides +18.0 volts dc at 1.8 amps and -18.0 volts dc at 4.0 amps. Using one rectifier, provides power for one data set.

Comcode: 101 171 809

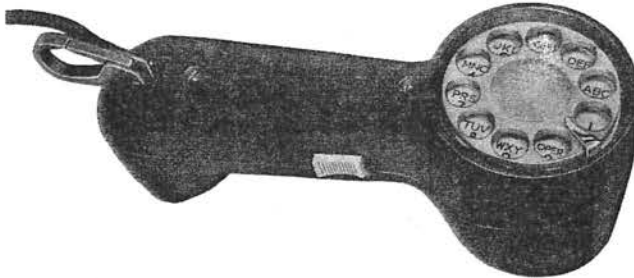
819AW2: Same as 819AW1 except has two rectifiers (116 watts) and provides power for two data sets.

Comcode: 101 171 817

## SETS

## Hand

## 1013AW and 1014AW



The principal application of these sets is for originating test calls on dial system apparatus for testing the switching, continuity, and talking features of the circuit. In the maintenance of the equipment, they may also be used for locating trouble in the various portions of the circuit.

**1013AW:** Consist of a T1 Transmitter Unit, and LA2 Receiver Unit, a locking and nonlocking switch for monitoring and talking, an 11A dial, a 2642A transformer, and a P-90D079 switch network assembly assembled in a blue plastic housing.

Furnished with an H2B Cord equipped with a 360A and 360B Tool and two KS-6278 connecting clips on the test end. A P-22F230 snap assembly is provided to facilitate carrying the handset on a belt.

Overall dimensions are approximately 10.075 inches long by 3.012 inches wide by 3.180 inches high.

Replaces the 1011B Hand Set.

Comcode: 101 365 963

**1014AW:** Same as 1013AW except parts are assembled in a yellow plastic housing and furnished with an H2C Cord equipped with a 346A Plug.

Replaces the 1011G Hand Set.

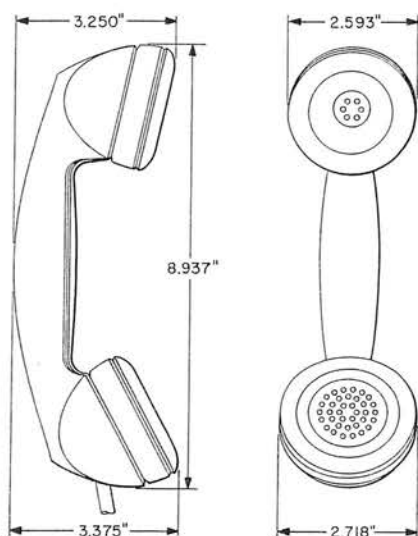
Comcode: 101 365 971



## SETS

## Hand

F1CW-3, F1EW-3, and F1GW-3

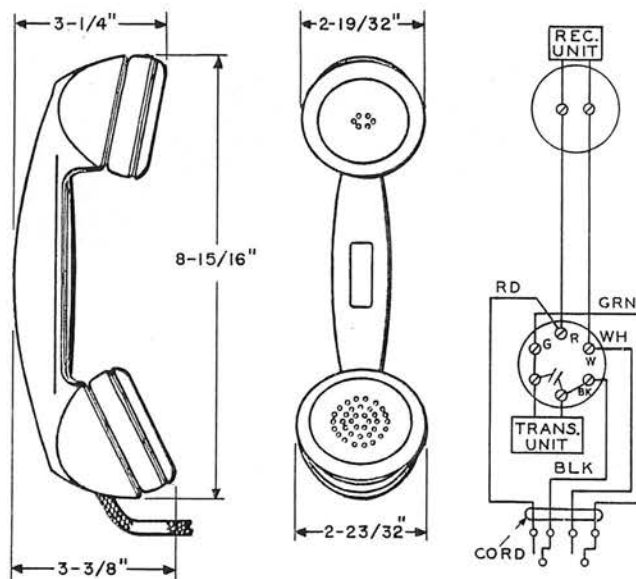


Black finished hand sets consisting of an F1 Transmitter Unit and a LA3 Receiver Unit.

F1GW-3 may also be obtained with a 129F Capacitor connected across the transmitter unit terminals.

Code No.	Comcode	Cord	Telephone Set Used on
F1CW-3	100 670 801	H3AS-3	300AW, BW, CW, and DW
F1EW-3	101 601 441	H3N-9	322 Type
F1GW-3	100 670 819	H3AS-3	300 Type

F2AW-3



Black finished hand set consisting of an F1 Transmitter Unit, LA3 Receiver Unit, F2W-3 Hand Set Handle, and an H4CA-3 Cord with a 289B Plug.

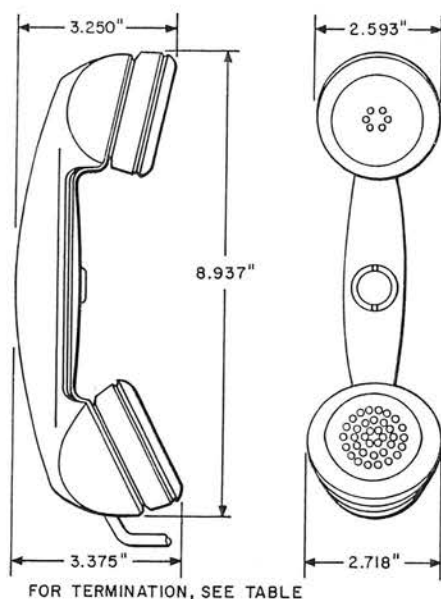
Used in central offices and in PBX systems.

Comcode: 100 670 884

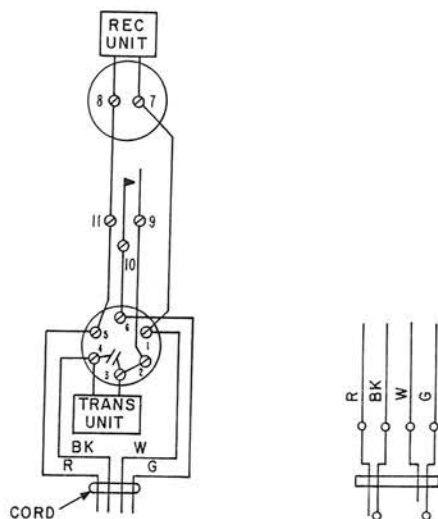
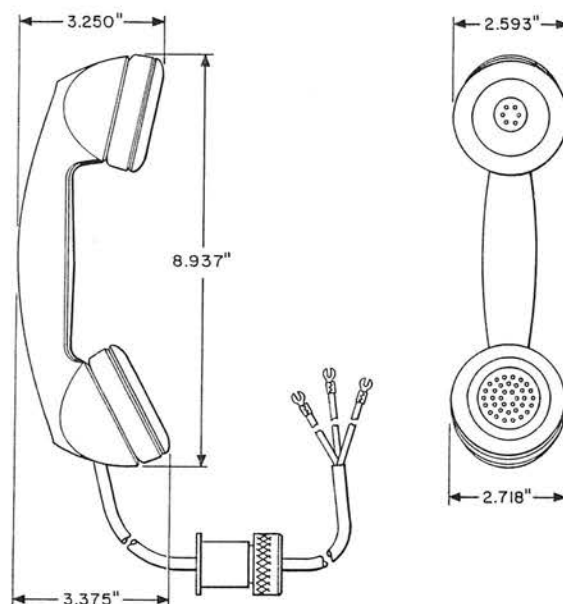
## SETS

## Hand

F3BW-3



F6ARW-3



Black plastic hand set constructed to confine any possible burning of explosive gases to the interior of the instrument and prevent the ignition of gases outside of the instrument. The set consists of K1 Transmitter Unit, HA7 Receiver Unit, F6W-3 Hand Set Handle, and H3AN-3 spring-type cord. May be obtained with a 9-foot cord when specified on order.

Used on 320ERW and FRW Telephone Sets in long loop service.

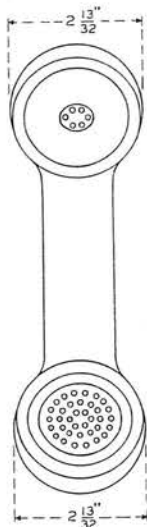
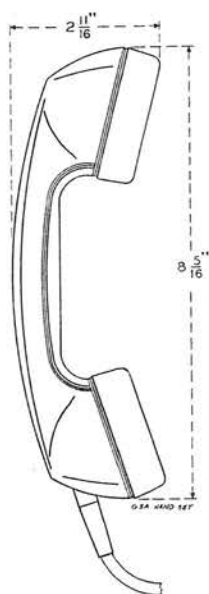
Comcode: 100 671 031 E/W 4 Ft Cord  
101 727 949 E/W 9 Ft Cord

Black finished hand set consisting of F1 Transmitter Unit, LA3 Receiver Unit, H4BY-3 Cord, and 289B Plug. It is equipped with a push button switch in the handle. When the push button switch is depressed, the transmitter is connected into the circuit. May be obtained with a 13-foot cord when specified on order.

Used at telegraph positions of toll test boards where these positions are arranged for supervision of telegraph service.

Comcode: 101 092 781 E/W 12 Ft Cord  
101 207 843 E/W 13 Ft Cord

**SETS**  
**Hand**  
**G3-Type**



The G3-type hand sets consist of a P-80J200 Handle, a P-80A200 Receiver Cap, a P-80A100 Transmitter Cap, a TI Transmitter Unit and the apparatus shown in the table.

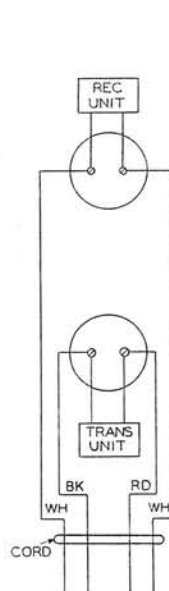


Fig. 1

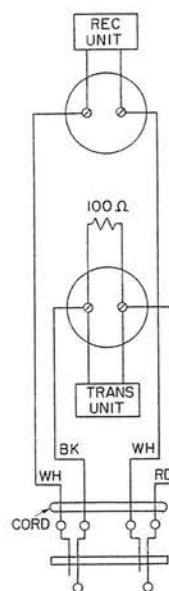


Fig. 2

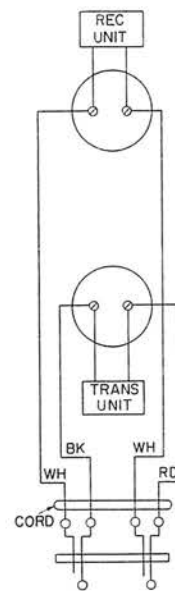


Fig. 3

Code	Comcode	Color	Schematic No.	Receiver Unit	Cord
G3A4W-3	101 776 854	Black	1	U3	H4CJ-3
G3A4W-50	101 776 920	Ivory	1	U3	H4CJ-50
G3A4W-51	101 776 912	Green	1	U3	H4CJ-51
G3A4W-53	101 776 904	Red	1	U3	H4CJ-53
G3A4W-54	101 793 578	Brown	1	U3	H4CJ-54
G3A4W-56	101 776 896	Yellow	1	U3	H4CJ-56
G3A4W-58	101 776 888	White	1	U3	H4CJ-58
G3A4W-60	101 776 870	Light beige	1	U3	H4CJ-60
G3A4W-61	101 776 862	Light gray	1	U3	H4CJ-61
G3A9W-3	101 777 035	Black	1	U3	H4CJ-3
G3A9W-50	101 777 043	Ivory	1	U3	H4CJ-50
G3A9W-51	101 777 050	Green	1	U3	H4CJ-51
G3A9W-53	101 777 068	Red	1	U3	H4CJ-53
G3A9W-56	101 777 076	Yellow	1	U3	H4CJ-56
G3A9W-58	101 777 084	White	1	U3	H4CJ-58
G3A9W-60	101 777 092	Light beige	1	U3	H4CJ-60
G3A9W-61	101 776 847	Light gray	1	U3	H4CJ-61
G3A13W-3	101 839 371	Black	1	U3	H4CJ-3
G3A13W-50	101 839 363	Ivory	1	U3	H4CJ-50
G3A13W-51	101 839 355	Green	1	U3	H4CJ-51
G3A13W-56	101 839 348	Yellow	1	U3	H4CJ-56
G3A13W-58	101 839 330	White	1	U3	H4CJ-58
G3A13W-60	101 839 389	Light beige	1	U3	H4CJ-60
G3A13W-61	101 839 397	Light gray	1	U3	H4CJ-61



## SETS

## Hand

Code	Comcode	Color	Schematic Fig. No.	Receiver Unit	Cord
G3KW-58	101 278 299	White	1(a)	U3	—
G3KW-60	101 278 307	Light beige	1(a)	U3	—
G3LW-51	101 278 315	Green	2	U3	(b)H4CU-51
G3LW-58	101 278 323	White	2	U3	(b)H4CU-58
G3LW-60	101 278 331	Light beige	2	U3	(b)H4CU-60
G3LW-61	101 278 349	Light gray	2	U3	(b)H4CU-61
G3YW-50	101 278 489	Ivory	1	U3	H4CJ-50
G3YW-51	101 278 497	Green	1	U3	H4CJ-51
G3YW-53	101 278 505	Red	1	U3	H4CJ-53
G3YW-56	101 278 513	Yellow	1	U3	H4CJ-56
G3YW-58	101 278 521	White	1	U3	H4CJ-58
G3YW-60	101 278 547	Light beige	1	U3	H4CJ-60
G3YW-61	101 278 554	Light gray	1	U3	H4CJ-61
G3AAW-3	101 278 588	Black	1	U3	H4CS-3
G3ABW-3	101 278 596	Black	1	U3	(c)H4BL-3
G3ACW-3	101 278 604	Black	1	U3	H4BL-3
G3BRW-53	101 278 737	Red	1	U4	H4CJ-53
G3BRW-56	101 278 745	Yellow	1	U4	H4CJ-56
G3BRW-61	101 278 752	Light gray	1	U4	H4CJ-61
G3CRW-50	101 278 760	Ivory	2	U4	(c)H4BL-50
G3CRW-51	101 278 778	Green	2	U4	H4BL-51
G3CRW-52	101 278 786	Gray	2	U4	H4BL-52
G3CRW-58	101 278 794	White	2	U4	H4BL-58
G3CRW-60	101 278 802	Light beige	2	U4	H4BL-60
G3CRW-61	101 278 810	Light gray	2	U4	H4BL-61
G3DRW-61	101 278 828	Light gray	3	U4	H4BL-61

(a) Cord is omitted.

(b) Equipped with a 396A Plug.

(c) Equipped with a 289A Plug.

G3A4W, G3A9W, and G3A13W-3, -50, -51, -53, -54, -56, -58, -60, and -61: Intended for use in the Telephone Set "Kit" Plan and with number 500, 501, and similar type telephone sets. The G3A4W-54 is not to be used in the Telephone Set "Kit" Plan.

G3KW-58 and -60: Used initially with the 750A-58 and 750B-60 Telephone Sets, respectively. These sets are not provided with a cord since they will be used with a cord reel.

G3LW-51, -58, -60, and -61: Used initially in station concentrator equipment.

G3YW-Type: Equipped with a 0.01 uf capacitor. Used initially in 2568 HUW Telephone Sets.

G3AAW-3: Used initially with number 525 type telephone sets.

G3ABW-3: Used initially in PBXs and order turrents.

G3ACW-3: Used initially with number 570 type telephone sets.

G3BRW-53, -56, and -61: Used initially with 597ARW-53 Telephone Set, 596CRW-56 Telephone Set, and 112A key equipment, respectively.

G3CRW-50, -51, -58, -60, and -61: Used initially with 610BW1 and BW2 Telephone Sets.

G3CRW-52: Used initially with 756A PBX.

G3DRW-61: Used initially with 112A key equipment.

The G3BRW, CRW, and DRW Hand Sets are equipped with U4 Receiver Units for use in systems with higher (600 ohms) impedance.

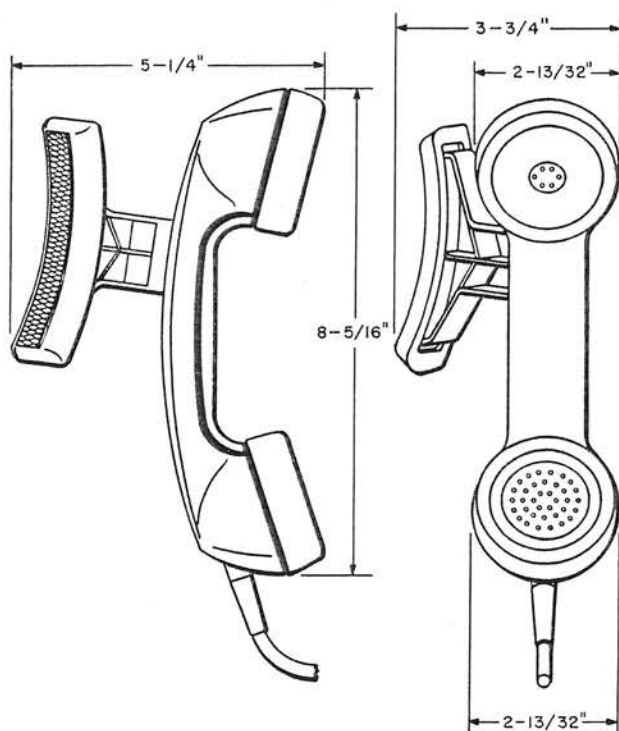




## SETS

## Hand

G4BW



Consists of a T1 Transmitter Unit, a U3 Receiver Unit, and an H4CJ Cord. Equipped with a removable support having a removable pad for holding hand set on the shoulder. The shoulder support, which is shipped loose, may be assembled to the hand set for use on either the left or the right shoulder. The illustration shows the shoulder support assembled to the hand set for use on the left shoulder. Available in colors shown in the table.

Used where a hand set with a shoulder support is required.

Code	Comcode	Color of Handle and Caps
G4BW-3	101 278 877	Black
G4BW-51	101 278 893	Green
G4BW-56	101 278 919	Yellow
G4BW-58	101 278 927	White
G4BW-60	101 278 943	Light Beige
G4BW-61	101 278 950	Light Gray

SETS

Hand

G5-Type

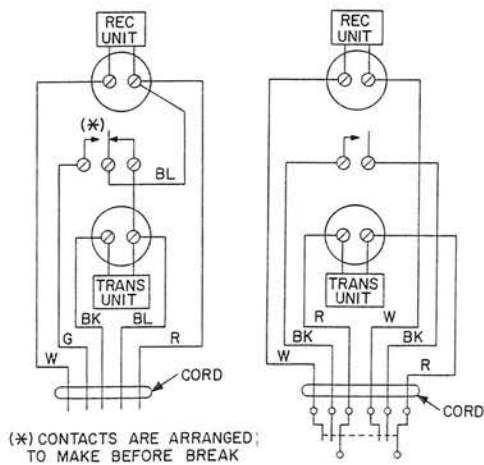
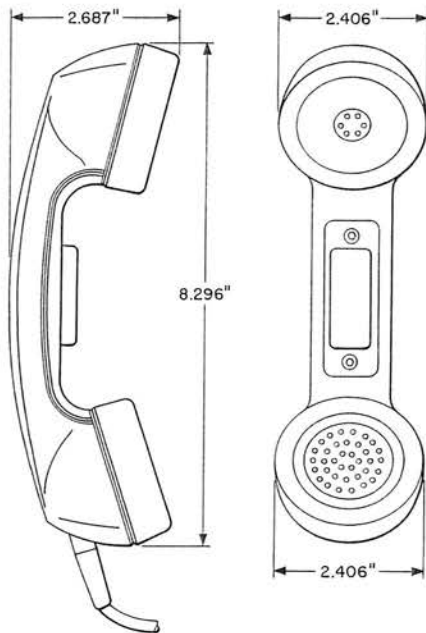


Fig. 1

Fig. 2

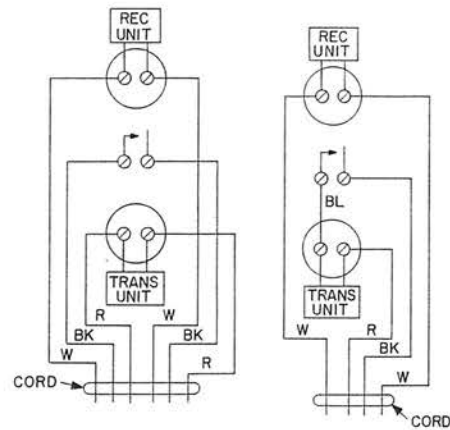


Fig. 3

Fig. 4

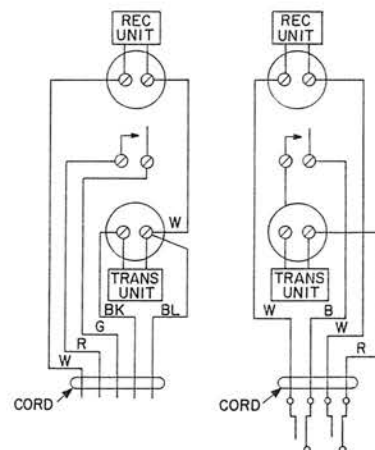


Fig. 5

Fig. 6

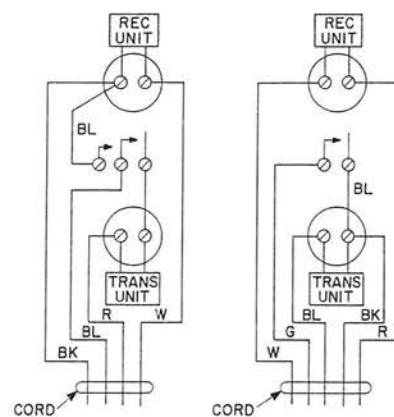


Fig. 7

Fig. 8

## SETS

## Hand

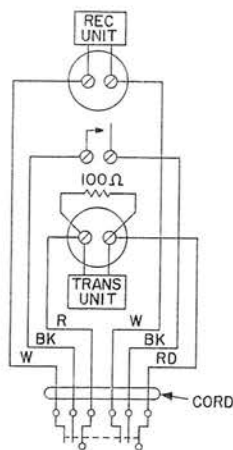


Fig. 9

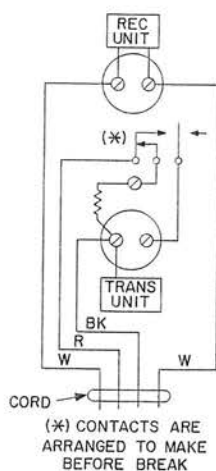


Fig. 10

Plastic hand sets with spring-type vinyl jacketed cords.

There is a switch in the middle of each hand set which, when depressed, operates a make-before-break transfer switch pile up.

The switch serves to open the transmitter circuit and to place a resistance across the red and black cord leads when the switch is unoperated.

The G5-type hand set consists of a P-80G700 Handle, a P-80A100 Transmitter Cap, a P-80A200 Receiver Cap, a push bar switch assembly, a T1 Transmitter Unit, and the apparatus shown in the table.

Code	Comcode	Color	Schematic Fig. No.	Receiver Unit	Cord
G5ARW-3	101 278 984	Black	5	U3	H5AB-3
G5CRW-3	101 279 008	Black	6	U4	H4CM-3
G5ERW-3	101 279 016	Black	1	U3	H5P-3
G5ERW-50	101 279 024	Ivory	1	U3	H5P-50
G5ERW-51	101 279 032	Green	1	U3	H5P-51
G5ERW-53	101 279 040	Red	1	U3	H5P-53
G5ERW-56	101 279 057	Yellow	1	U3	H5P-56
G5ERW-58	101 279 065	White	1	U3	H5P-58
G5ERW-60	101 279 081	Light beige	1	U3	H5P-60
G5ERW-61	101 279 099	Light gray	1	U3	H5P-61
G5FRW-3	101 279 115	Black	7	U3	H4BM-3
G5GRW-3	101 279 123	Black	4	U4	H4CJ-3
G5GRW-51	101 279 131	Green	4	U4	H4CJ-51
G5GRW-56	101 279 149	Yellow	4	U4	H4CJ-56
G5GRW-61	101 279 156	Light gray	4	U4	H4CJ-61
G5HRW-3	101 279 164	Black	8	U4	H5P-3
G5HRW-53	101 279 172	Red	8	U4	H5P-53
G5JRW-3	101 279 180	Black	2	U4	H6F-3
G5JRW-61	101 279 198	Light gray	2	U4	H6F-61
G5KRW-3	101 279 206	Black	3	U3	H6E-3
G5KRW-50	101 279 214	Ivory	3	U3	H6E-50
G5KRW-51	101 279 222	Green	3	U3	H6E-51
G5KRW-53	101 279 230	Red	3	U3	H6E-53
G5KRW-56	101 279 248	Yellow	3	U3	H6E-56
G5KRW-58	101 279 255	White	3	U3	H6E-58
G5KRW-60	101 279 271	Light beige	3	U3	H6E-60
G5KRW-61	101 279 289	Light gray	3	U3	H6E-61
G5LRW-61	101 279 313	Light gray	9	U4	H6F-61
G5MRW-51	101 279 321	Green	6	U4	H6F-51
G5NRW-3	101 279 339	Black	5	U3	H5Y-3
G5PRW-51	101 279 347	Green	3	U4	H6E-51
G5RRW-3	101 279 354	Black	10	U4	H4CJ-3
G5RRW-53	101 279 362	Red	10	U4	H4CJ-53
G5RRW-56	101 279 370	Yellow	10	U4	H4CJ-56
G5RRW-61	101 279 388	Light gray	10	U4	H4CJ-61



## SETS

## Hand

## G5-Type (Continued)

**G5ARW-3:** Used initially with the 47A-3 Control Unit in the J41627 vehicular equipments for types MB and MC Mobile Telephone Radio Systems.

**G5CRW-3:** Used initially with C.A.A. and private line systems.

**G5ERW-type:** Used initially with number 535-type telephone sets.

**G5FRW-3:** Used initially with Bendix MRT 9 Radio Pack Set.

**G5GRW-3 and -61:** Used initially with two- and four-wire private line stations.

**G5GRW-51:** Used initially in the Command Post Alerting Network.

**G5GRW-56:** Forms part of the number 606-type telephone sets.

**G5HRW-3:** Used initially with 102A Key Equipment at airports.

**G5HRW-53:** Used initially by the Strategic Air Command.

**G5JRW-3:** Used initially with the number 300 Switching System.

**G5JRW-61:** Used initially with 11A Alerting Systems.

**G5KRW-type:** Used initially with 2A Farm Interphone.

**G5LRW-61:** Used initially with 617A15-61 Telephone Set.

**G5MRW-51:** Used initially by the Command Post Alerting Network.

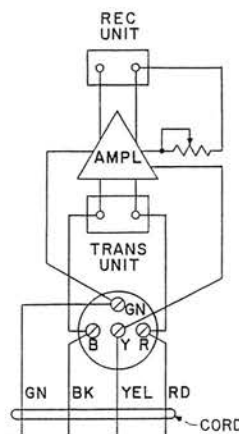
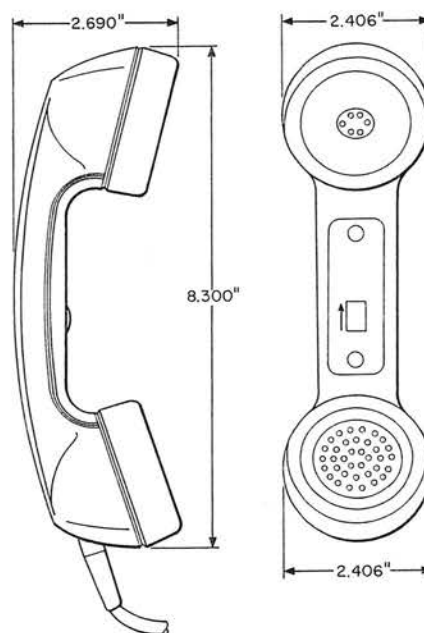
**G5NRW-3:** Used initially by Air Ground Base Stations.

**G5PRW-51:** Used initially with 625A1-51 Telephone Set.

**G5RRW-3 and -53:** Used initially with number 304 Switching Systems.

**G5RRW-56 and -61:** Used initially with 596-type telephone sets.

## G6BW



Consists of a T1 Transmitter Unit, an H4CT type cord with a vinyl jacket corresponding in color to the handle. Also contains a single-stage transistor amplifier, with a polarity guard, assembled on a printed circuit board which is fastened to a P14A464 Receiver Unit inside the handle.

Provides receiver amplification for persons with impaired hearing. Has volume control mounted in the handle.

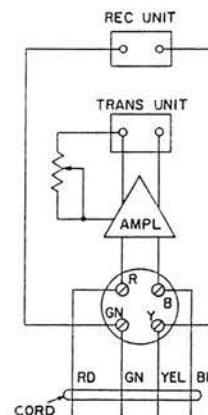
Available in colors shown in table.

## SETS

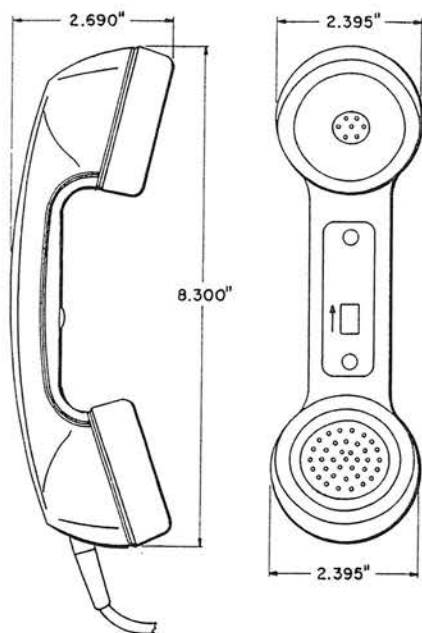
## Hand

Code	Comcode	Color
G6BW-3	101 320 083	Black
G6BW-50	101 320 091	Ivory
G6BW-51	101 320 109	Green
G6BW-53	101 320 117	Red
G6BW-56	101 320 125	Yellow
G6BW-58	101 320 133	White
G6BW-60	101 320 158	Light beige
G6BW-61	101 320 166	Light gray

Used with 300, 500, 600, and 700 type telephone sets. These hand sets are not furnished with telephone sets and must be ordered separately.



## G7ARW



Consists of a T1 Transmitter Unit, a receiver unit, a polarity guard, and a H4CT spring-type cord. Provides transmit amplification for persons with inadequate speech volume; a control knob is mounted in the handle. Available in colors shown in the table.

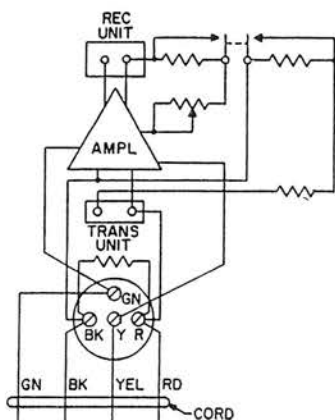
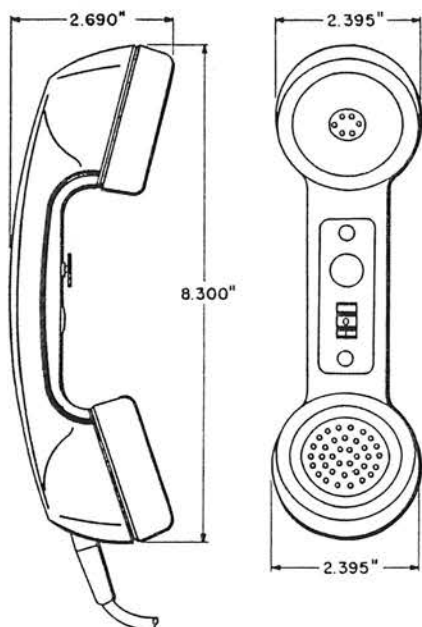
Code	Comcode	Color of Handle and Caps
G7ARW-3	101 320 190	Black
G7ARW-50	101 320 208	Ivory
G7ARW-51	101 320 216	Green
G7ARW-53	101 320 224	Red
G7ARW-56	101 320 232	Yellow
G7ARW-58	101 320 240	White
G7ARW-60	101 320 265	Light beige
G7ARW-61	101 320 273	Light gray

Used with 500, 600, and 700 series telephone sets. These hand sets are not furnished with the telephone sets and must be ordered separately for conversion at time of installation.

## SETS

## Hand

G8BW

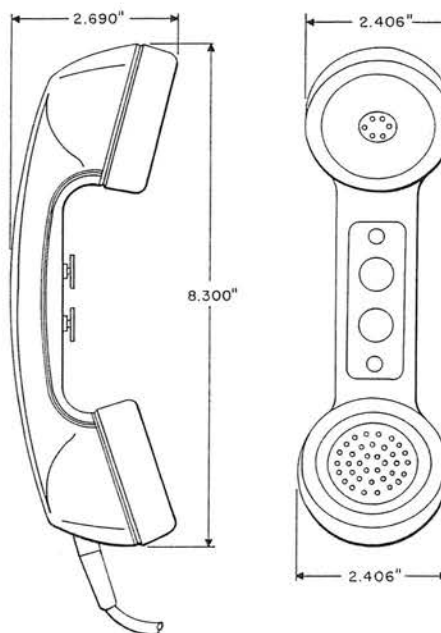


Consists of a T1 Transmitter Unit, a receiver unit, a polarity guard, and a H4CT spring-type cord. Provides receive amplification at noisy locations. Equipped with a press-to-listen switch which when depressed reduces transmitter output and increases the gain of the receiver amplifier. A potentiometer equipped with knurled knob provides for adjustment of the receiver volume. A push button switch and a volume control knob are mounted in the handle. Available in colors shown in the table.

Code	Comcode	Color of Handle and Caps
G8BW-3	101 320 307	Black
G8BW-50	101 320 315	Ivory
G8BW-51	101 320 323	Green
G8BW-53	101 320 331	Red
G8BW-56	101 320 349	Yellow
G8BW-58	101 320 356	White
G8BW-60	101 320 372	Light beige
G8BW-61	101 320 380	Light gray

Used with 500, 600, and 700 series telephone sets. These hand sets are not furnished with the telephone sets and must be ordered separately for conversion at time of installation.

G10AW and G10CW



These plastic hand sets incorporate subminiature micro-switches which serve to provide normal paths through the transmitter and receiver when operated, but short out the transmitter and receiver and shunt the cord leads through resistors when unoperated.

Available in colors shown in the table.



## SETS

## Hand

Code No.	Comcode	Color
G10AW-3	101 320 422	Black
(*)	101 320 521	
G10AW-51	101 320 430	Green
(*)	101 320 539	
G10AW-53	101 320 448	Red
(*)	101 320 547	
G10AW-56	101 320 455	Yellow
(*)	101 320 554	
G10AW-58	101 320 463	White
(*)	101 320 562	
G10AW-60	101 320 489	Light beige
(*)	101 320 588	
G10AW-61	101 320 497	Light gray
(*)	101 320 596	
G10CW-3	101 320 828	Black
(*)	101 320 927	
G10CW-51	101 320 836	Green
(*)	101 320 935	
G10CW-53	101 320 844	Red
(*)	101 320 943	
G10CW-56	101 320 851	Yellow
(*)	101 320 950	
G10CW-58	101 320 869	White
(*)	101 320 968	
G10CW-60	101 320 885	Light beige
(*)	101 320 984	
G10CW-61	101 320 893	Light gray
(*)	101 320 992	

(\*) E/W 13 Foot Cord

These hand sets are not furnished with telephone sets and must be ordered separately for conversion at time of installation.

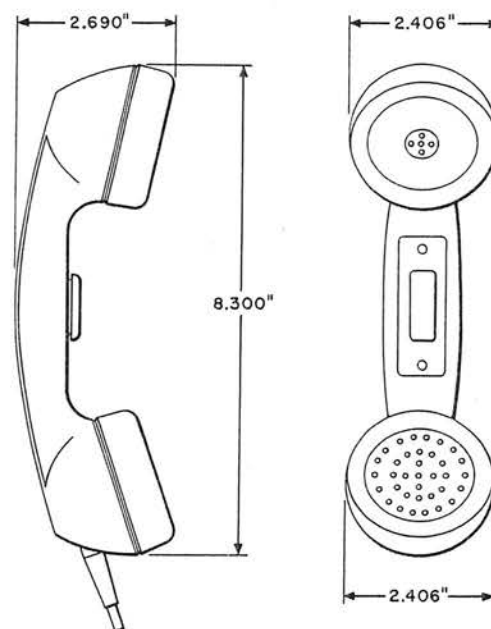
Intended solely for specially engineered lines—Not for general telephone use.

The G10AW type hand set has two push buttons, one to control the transmitter and one to control the receiver. The transmitter control has an additional switch to control an external relay. Equipped with an H6E type cord.

The G10CW is the same as the G10AW except an H6F type cord is used equipped with a number 425A Plug.

These hand sets are furnished with a four-foot cord; however they may be obtained in 13-foot lengths when specified in the order.

## G10BW and G10DW



The G10BW is the same as the G10AW except has a single push bar to control both transmitter and receiver simultaneously.

The G10DW is the same as the G10BW except an H4DD type cord is used equipped with a number 396A Plug.

Intended solely for specially engineered lines—Not for general telephone use.

Code No.	Comcode	Color
G10BW-3	101 320 620	Black
(*)	101 320 729	
G10BW-51	101 320 638	Green
(*)	101 320 737	
G10BW-53	101 320 646	Red
(*)	101 320 745	
G10BW-56	101 320 653	Yellow
(*)	101 320 752	
G10BW-58	100 320 661	White
(*)	101 320 760	
G10BW-60	101 320 687	Light beige
(*)	101 320 786	
G10BW-61	101 320 695	Light gray
(*)	101 320 794	

(\*) E/W 13 Foot Cord



## SETS

## Hand

## G10DW (Continued)

Code	Comcode	Color
G10DW-3	101 607 604	Black
	(*)101 635 324	
G10DW-51	101 607 612	Green
	(*)101 635 332	
G10DW-53	101 607 620	Red
	(*)101 635 340	
G10DW-56	101 607 638	Yellow
	(*)101 635 357	
G10DW-58	101 607 646	White
	(*)101 635 365	
G10DW-60	101 607 661	Light beige
	(*)101 635 373	
G10DW-61	101 321 198	Light gray
	(*)101 635 381	

(\*) E/W 13 Foot Cord

## SETS

## Hand Telephone

## 211 and 212 Type

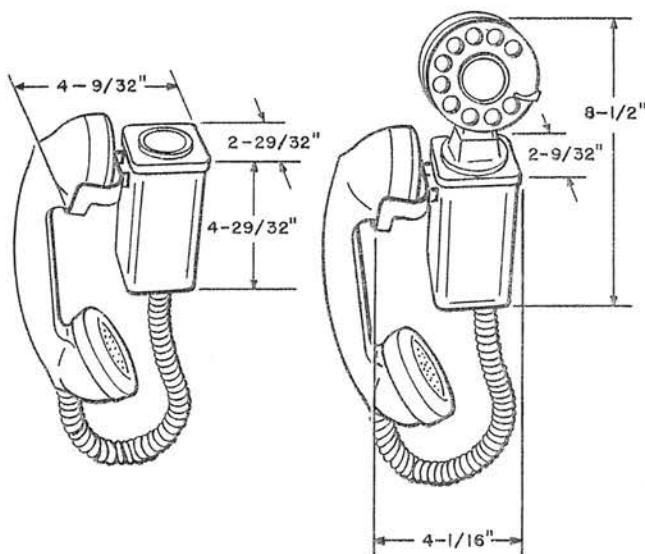


Fig. 1

Fig. 2

These hand telephone sets are for use with manual or dial stations on individual lines, PBX extensions, two-party selective, four-party semiselective, four-party selective and semiselective and multiparty sidetone or anti-sidetone common battery service.

Code No.	Comcode	Fig. No.	Operation	Hand Set Mounting	Dial No.	Dial Mounting No.	Hand Set
211JRW-3	100 672 443	1	Manual	G6W-3	—	—	G1AR-3
211LRW-3	100 672 468	2	Dial	G6W-3	6A	43A-3	G1AR-3
211NRW-3	101 321 230	1	Manual	G8W-3	—	—	G1AR-3
212LRW-3	100 672 492	2	Dial	G7W-3	6A	43A-3	G1AR-3
212LRW-61	101 248 474	2	Dial	G7W-61	6A	43A-61	G1AR-61

## SETS

## Hand Telephone

## 220AW



Code	Comcode	Color
220AW-3	101 248 508	Black
220AW-51	101 248 516	Green
220AW-53	101 248 524	Red
220AW-56	101 248 532	Yellow
220AW-58	101 248 540	White
220AW-60	101 248 557	Light beige
220AW-61	101 248 565	Light gray

A dial-in-hand set consisting of two molded shells which contain the components listed below. The shells are held together by two screws which are concealed by the number card holder and dial light-seal plate.

T1 Transmitter Unit

LA1 Receiver Unit

10A Dial

53B Lamp

854A Network (Mounted on a flexible printed wiring board)

Overall dimensions of the set are 8.360 inches by 2.725 inches by 2.700 inches.

The set is equipped with a recall switch, used to release and regain a central office line in lieu of operating a line switch plunger, and is provided with a jack connector arranged to accept an H4DB or similar type cord up to five conductors. The cord must be ordered separately.

The hand telephone set, electrically, is a complete telephone except for ringer and switch hook functions.

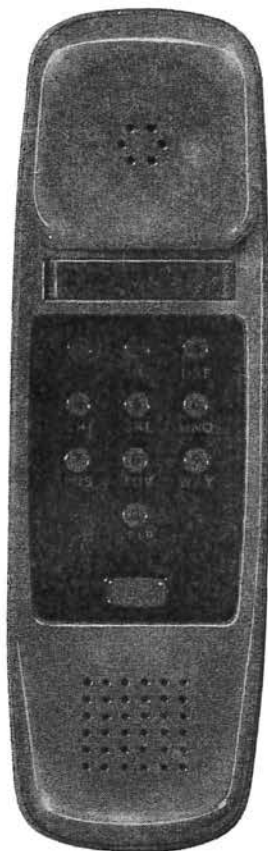
For use with AEW1, AEW2, ACW1, and ADW1 Telephone Bases, which are not furnished and must be ordered separately.

## APPARATUS

## SETS

## Hand Telephone

## 1220AW



Code	Comcode	Color
1220AW-3	101 248 573	Black
1220AW-51	101 248 581	Green
1220AW-53	101 248 599	Red
1220AW-56	101 248 607	Yellow
1220AW-58	101 248 615	White
1220AW-60	101 248 623	Light beige
1220AW-61	101 248 631	Light gray

This set is a TOUCH-TONE version of the 220AW Hand Telephone Set. It is equipped with an 80A2A Dial and an 861A Network.

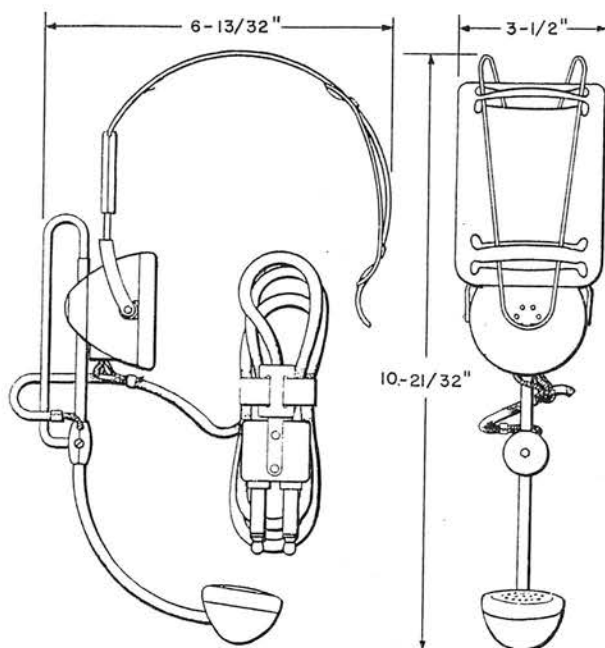




## SETS

## Head Telephone

## 52 Type



These head telephone sets consist of the following apparatus.

52EW: For use by cable splicers to test working pairs without causing interference.

52LW: For use by supervisors.

52MW: For use in special installations at airports.

52NW: For use by night operators.

52SW: For use by operators at switchboards, desks, and PBX positions.

52TW: For use on N, O, and ON type carrier systems.

52RRW: For use in the number 300 Switching System.

Code No.	Comcode	Transmitter Arm No.	Transmitter Unit	Contains (a)			
				Receiver Unit	Headband No.	Cord	Plug No.
52EW	100 672 773	55A	N1	HC3	15C	L2Y	—
(b) 52LW	100 672 856	55A	N1	HC6	15F	L4BY	396A
52MW	100 672 864	55A	N1	HC7	15F	L4CC (7 ft)	396A
52NW	100 672 872	55A	N1	HC6	15F	L4CA	396A
52SW	100 672 906	55A	N1	HC6	15F	L4CC (5 ft)	396A
52TW	100 672 914	55B	AD1	HC7	15F	L4CD	—
(c) 52RRW	100 672 955	55A	N1	HC7	15C	L6H	425A

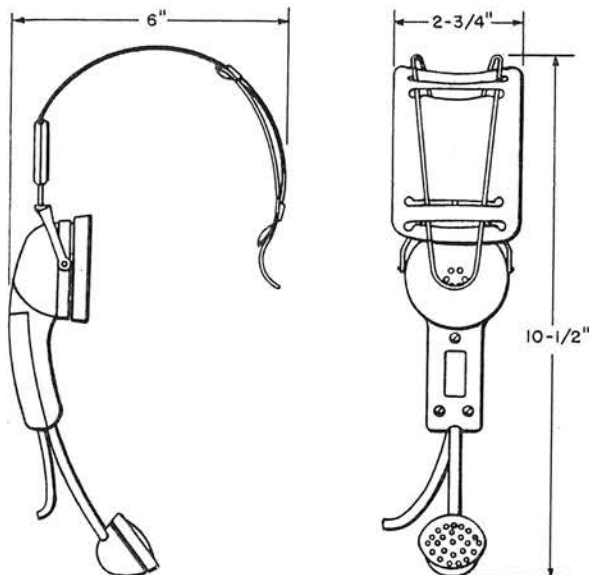
(a) In addition to the apparatus listed each set also contains a 10A receiver holder.

(b) Also includes a 29A connecting block and a KS-8010 switch.

(c) Also includes a 240A switch.

## SETS

## Head Telephone



A head telephone set with a fixed distance between the transmitter and receiver. It is provided with a handle so the set can be used as a hand set when the headband is not used. It consists of the following apparatus.

**53BW:** For use at military field switchboards or other communication locations requiring a rugged, nonadjustable head telephone set.

**53NW:** For use with number 107 type test centers.

**53JRW:** Used for order service in test centers.

**53LRW:** For use at FAA air route traffic control centers and control towers in attendants telephone and key circuit in the 102A Key Equipment.

**53MRW:** For use at air defense direction center installations.

**53PRW:** For use with 112A Key Equipment.

## Contains

Code No.	Comcode	Transmitter Unit	Receiver Unit	Headband No.	Cord	Plug No.
53BW	100 673 060	N1	HC3	15C	L4BC	—
53NW	100 673 136	N1	HC6	15C	(a) L3K	—
53JRW	100 673 193	N1	HC6	15F	L4BS	396A
(b) 53LRW	100 673 201	N1	HC7	15C	L4BU	396A
53MRW	100 673 219	N1	HC6	15C	L4BW	396A
53PRW	100 673 227	N1	HC7	15C	L4BW (15 ft)	396A

(a) Also includes a 310 plug.

(b) Also includes a 240A switch.

## SETS

## Loudspeaker

106A, 106B, 106C



**106A:** Consists of a loud speaker and amplifier assembled on a chassis within a metal housing 5.500 inches wide by 4.625 inches deep by 6.1875 inches high having a green finish. The knob on the right controls an ON-OFF switch and a gain control potentiometer. A 2Y Lamp behind a red jewel indicates the ON condition.

Arranged for desk mounting but can be arranged for panel mounting by removing the feet and housing and clamping the panel between the housing and the bezel. A hole in the rear of the housing is provided for cord or cable entrance.

A 48 volt dc power supply is required for operation. Can also operate from a 24 volt dc supply or from a J87202A2L1, D, and NP Rectifier connected to a 115 volt, 60 cps power source by removing the 2Y Lamp, replacing it with a 2T Lamp, and changing the terminal strappings. J87202A2L1, D, and NP and 2T Lamp, if required, must be ordered separately.

Intended for use in the number 300 Switching System for airline ground-to-air communication systems for the Federal Aviation Agency. Comcode: 100 673 235

**106B:** Same as 106A except contains an automatic output level control circuit and an output loudness control which is accessible only after removing the housing.

Comcode: 100 673 243

**106C:** Same as 106B except 10,000 ohm input gain control on front panel is replaced by a 25 ohm output loudness control and the 20 ohm screwdriver adjustment located on the side is omitted as the output loudness control.

Comcode: 100 673 250

107AW Type



Consists of a KS-16881L5 Loudspeaker and a two-stage transistorized amplifier mounted on a metal base enclosed in a plastic housing. The knob controls an ON-OFF switch and a volume control potentiometer. Overall dimensions are 5.750 inches wide by 4 inches high by 3.750 inches deep.

Operating power can be obtained from a number 2012B type transformer connected to a 120 volt ac, 60 cycle power supply or from the 18 volt ac terminal of a 101G Power Plant or number 19 or 20 Power Units. The cord connects the loudspeaker set to the telephone receiver circuit and the power source.

Used for projecting both sides of telephone conversations to a small group of people.

Code No.	Comcode	Color of Housing	Cord
107AW-3	100 673 359	Black	D4BM-3
107AW-51	100 673 367	Green	D4BM-51
107AW-56	100 673 375	Yellow	D4BM-56
107AW-58	100 673 383	White	D4BM-58
107AW-60	100 673 391	Light Beige	D4BM-60
107AW-61	100 673 409	Light Gray	D4BM-61

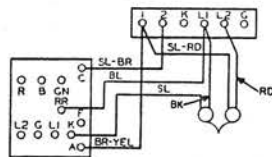
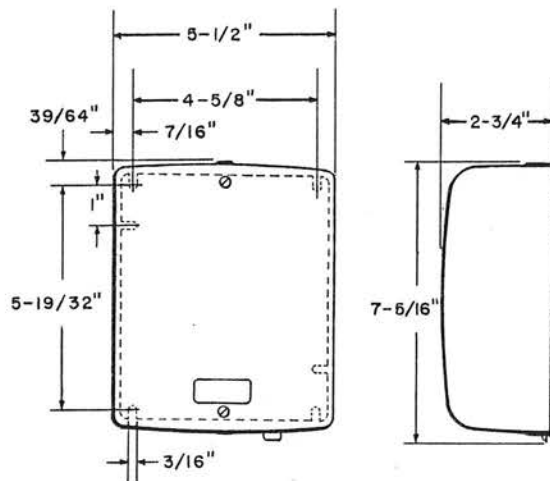




## SETS

## Subscriber

685AW Type



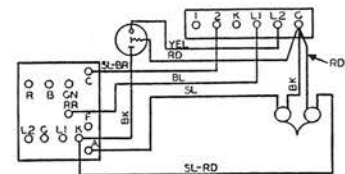
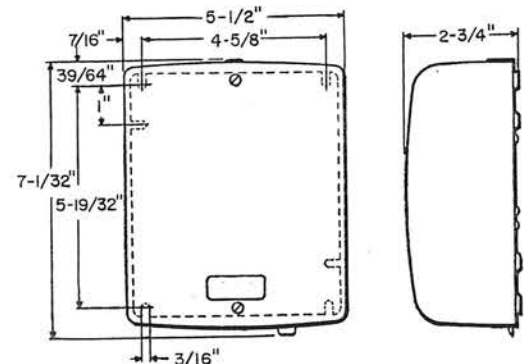
Common battery sets each having a terminal block and a metal base on which is mounted a C4A Ringer and a 425E Network. Provided with a plastic cover assembled to the base with machine screws.

Volume of ringer may be changed manually by means of an arm projecting from the underside of the cover. However, subscriber sets as furnished have the volume control arm locked in the loud position. The volume control arm can be made operative by removing the cover and changing the position of a rivet in the base plate. The ringer can be silenced by removing the cover and making a minor adjustment.

Used in manual and dial systems. Can be used for all common battery services except those party line stations where polarized selective ringing is involved. Particularly suitable in zones where transmission performance of 500 type telephone set of improved ringing characteristics of the C4A Ringer is required.

Code No.	Comcode	Color
685AW-3	100 673 615	Black
685AW-49	100 673 623	Light olive gray
685AW-51	101 308 096	Green
685AW-60	101 308 104	Light beige

686AW-49



Common battery set having a metal base on which are mounted a C4A Ringer, a 425B Network, a 426A Electron Tube, and a terminal block. Has a light olive gray plastic cover assembled to the base.

Volume of ringer may be changed manually by means of an arm projecting from the underside of the cover. However, subscriber set as furnished has the volume control arm locked in the loud position. The volume control arm can be made operative by removing the cover and changing the position of a rivet in the base plate. The ringer can be silenced by removing the cover and making a minor adjustment.

Furnished wired for use on negative ring and negative tip party lines but may be changed at time of installation for use on positive ring or positive tip party lines by removing the cover and rearranging the connections.

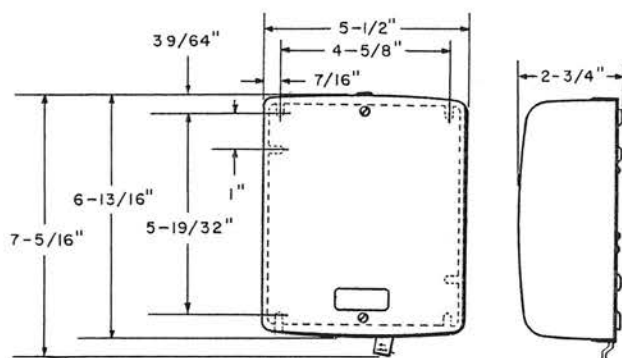
Used in manual or dial systems for four-party selective and eight-party semiselective services (polarized ringing lines). May also be used in certain cases for these services on common battery lines instead of local battery talking, common battery signaling sets, and the associated local battery.

Comcode: 100 673 649

## SETS

## Subscriber

## 687 and 688 Type



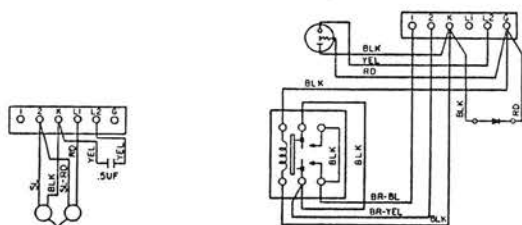
687CW-49: Similar to 687AW-49 except a 198C Capacitor is mounted on the metal base plate and the ringer is not furnished. The approximate overall dimensions are 5-1/2 inches wide by 6-13/16 inches high by 2-3/4 inches deep.

Comcode: 100 673 714

688CW-49: A common battery set having a metal base on which is mounted a C4A Ringer, a 425D Network, a KS-8109L2 Buzzer, a 266A Inductor, and a 241A Amplifier. The set is provided with a light olive gray cover assembled to the base. The circuit is arranged to minimize vulnerability of polarity guard to high line voltage surges.

Comcode: 100 673 771

Used with the 400 type key mountings in 1A1, 1A2, and 6A Key Telephone Systems.



687AW

687BW

687AW-49: A common battery set having a terminal block and a metal base on which is mounted a C4A Ringer and a 548A Capacitor. The set has a light olive gray plastic cover assembled to the base.

Volume of ringer may be changed manually by means of an arm projecting from the underside of the cover. However, the set as furnished has the volume control arm locked in the loud position. The volume control arm can be made operative by removing the cover and changing the position of a rivet in the base plate. The ringer can be silenced by removing the cover and making a minor adjustment.

Comcode: 100 673 680

Used as an extension ringer.

687BW-49: Consists of a UA112 Relay, a 20A Varistor, and a 426A Electron Tube mounted on the metal base plate.

Comcode: 100 673 698

Used to provide auxiliary signal facilities in four-party selective and eight-party semiselective services.

## 689 Type

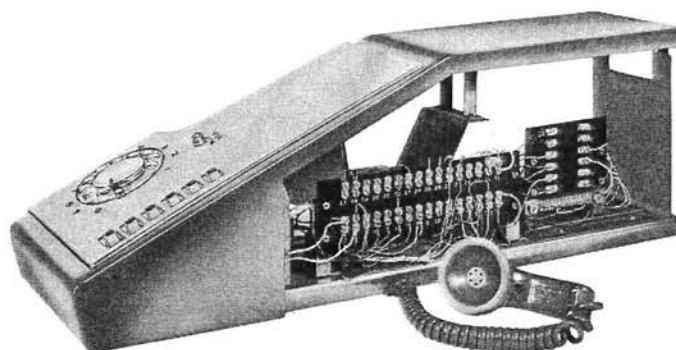


Fig. 1

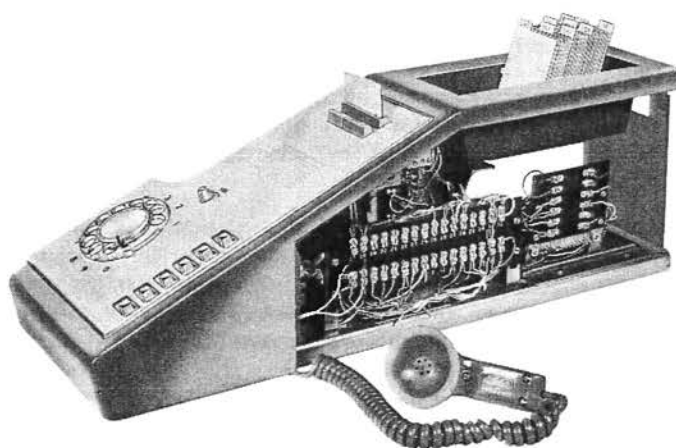


Fig. 2



## SETS

## Subscriber

The 689 type subscriber sets are not arranged for talking. The sets are enclosed in a gray plastic housing with overall dimensions of 5-5/16 inches wide by 22-1/4 inches deep by 7-1/8 inches high.

The set is arranged to mount on top of a Data Set J1D101A by means of two number .190 inch by 32 nuts assembled on brackets on the underside of the chassis.

Used initially with the J70147 Station Control Unit and Data Set J1D101A on the number 28 type teletypewriter.

689AW: Equipped with an 8C-58 Dial, a 731AW-51 Receiver, a D1D Ringer, a 61A Filter, a 548B Capacitor, and a 598D Key.

Comcode: 100 673 839

689BW: Same as 689AW except equipped with a D50G-61 Cord and an additional 598D Key equipped with five blocking rings. The P14E744 Designation Strip associated with the key adjacent to the dial is marked from top to bottom DIAL, BUZ RLS, RE ORD, SVC, PA and (\*) and the P14E743 Designation Strip for the other key is marked from top to bottom LCL, TST, TWX, ORIG, CLR, and REV.

Comcode: 100 673 847

689CW: Same as 689AW except also contains a loudspeaker, a KS-16728L1 Amplifier, and external volume control and associated circuitry.

Comcode: 100 673 854

689DW: Same as 689AW except also is equipped with a 41A Dial and the top surface of the housing contains a single card storage pocket to accommodate two sets of P24E238 Dialing Cards (20 cards per set) plus a set of nine alphabetical index cards which are furnished.

Comcode: 100 673 862

689EW: Same as 689DW except also contains a loudspeaker, a KS-16728L1 Amplifier, an external volume control and associated circuitry.

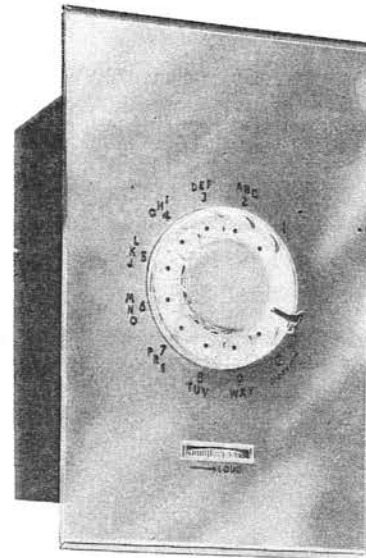
Comcode: 100 673 870

689AW, CW, DW, and EW: Provided with a P14E199 Designation Strip marked from top to bottom LOCAL, TEST, (\*), ORIG, CLEAR, and ANS to indicate the function of the key buttons.

Fig. 1 is a 689CW, Fig. 2 is a 689EW.

\*This button has no designation.

## 690CW1, CW2, and CW3



690CW1: Flush-mounted subscriber sets equipped with apparatus as indicated in table. Provided with a clear plastic face plate together with five face mats colored silver, gold, blue, green, and cream white to provide a choice of color contrasts, and a snap-on bezel for retaining the face plate and mat. The ringer volume control protrudes through the face plate. The buzzer provides a means for local signaling when required.

Overall dimensions are 7.100 inches wide by 4.080 inches deep by 9.952 inches high.

The circuit is arranged to minimize vulnerability of polarity guard to high line voltage surges.

Intended for use with a 400-type key mounting and a 52- or 53-type head telephone set.

690CW2: Same as the 690CW1 except it is not provided with a face plate or mats and is provided with a bracket which is used to secure the subscriber set to the key mounting. The key mountings and the subscriber sets use a common face plate. The face plates are a part of the key mountings.

Overall dimensions are 6.140 inches wide by 4.080 inches deep by 8.330 inches high.

Intended for use with the 420AW3 and 421AW3 Key Mountings.

690CW3: Same as the 690CW1 except that it is not provided with a face plate, mats, or dust pan and is provided with a top plate and brackets for mounting the set in the dust pan of a key mounting.



## SETS

## Subscriber

## 690CW1, CW2, and CW3 (Continued)

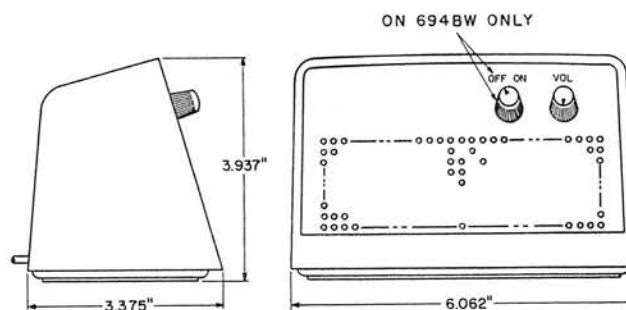
Overall dimensions are 6.140 inches wide by 4.073 inches high by 8.330 inches long.

Intended for use with the 423AW3, 424AW3, and 425AW3 Key Mountings.

Code No.	Comcode	Dial	Contains		Amplifier	Network
			Face	Plate		
690CW1	101 365 989	8C-58	36A1	241A	4010B	
690CW2	101 365 997	8C-58	—	241A	4010B	
690CW3	101 366 003	8C-58	—	241A	4010B	

- (a) In addition to the apparatus listed, 690CW type also contains a KS-8109L2 Buzzer, and a C4A Ringer.

## 694AW and 694BW



**694AW:** Consists of a transistorized amplifier and two terminal strips assembled on a printed wiring board, a KS-16881L1 Loud Speaker, an AC1 Transmitter Unit, and a volume control all of which are mounted on a metal base and enclosed in a plastic housing. Provided with a D4BM Cord having the same color as the housing.

**694BW:** Same as 694AW except it has an ON-OFF switch to shut off the transmitter and loudspeaker.

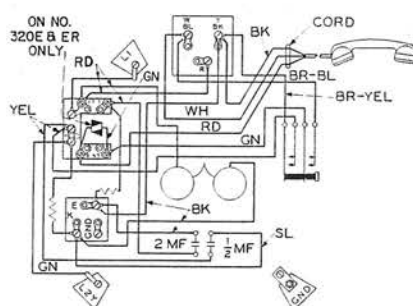
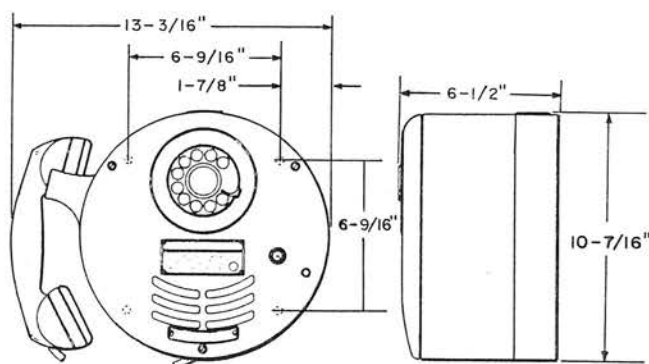
Used to provide hands-free listening and talking at each station of the 2A Communication System.

Code No.	Comcode	Color
694AW-3	100 841 402	Black
694AW-50	101 366 037	Ivory
694AW-51	100 841 410	Green
694AW-53	101 366 045	Red
694AW-58	100 841 436	White
694AW-60	100 841 451	Light beige
694AW-61	100 841 469	Light gray
694BW-3	100 841 493	Black
694BW-50	101 366 078	Ivory
694BW-51	100 841 501	Green
694BW-53	101 366 086	Red
694BW-58	100 841 527	White
694BW-60	100 841 543	Light beige
694BW-61	100 841 550	Light gray

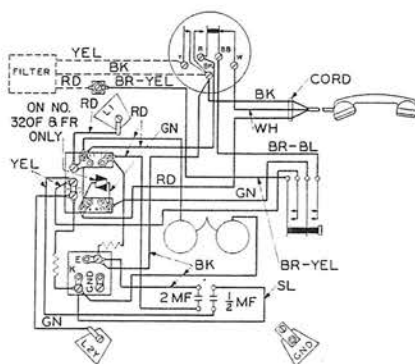
## SETS

## Telephone

## 320ERW and FRW



## 320ERW (Manual Service)



## 320FRW (Dial Service)

Each consists of a base, a housing, a cover, and a hand set attached by flexible cord. Base is designed for wall or pedestal mounting. The 5A Pedestal, when required, must be ordered separately.

Used in hazardous locations, Class I, Group B, C, and D and Class II, E, F, G, atmospheres, as defined by the National Electrical Code of the National Board of Fire Underwriters. Sets are designed for security against ignition of surrounding atmosphere under all conditions of normal operation. All elements of apparatus which might produce a spark or an arc are completely enclosed. Necessary passages to outside are so designed that any flame due to explosion caused by sparking inside the set will be cooled to extinction and will not reach outside atmosphere. Each set is equipped with a 23A Lock.

Used in common battery systems for individual line, regular PBX extensions, and bridged stations. Normally employs bridged ringing but may be made suitable for grounded ringing by changing the termination of one ringer lead.

Dial set is equipped to suppress dialing induction into radio receiving sets.

320ERW: Used in manual systems.

Comcode: 100 674 233

320FRW: Used in dial systems.

Comcode: 100 674 241

## 500, 501, and 502 Type



Common battery desk type that provides improved performance transmission, dialing, and ringing functions. These gains can be used either for extension of range of operations from central office or increased use of fine gauge cable conductors. Volume of the ringer may be varied in four steps. By removing the housing and making a minor adjustment, the ringer can be silenced.

Dial sets are arranged to suppress dialing induction into radio receiving sets.

Overall dimensions of each set are 8.313 inches wide by 9 inches deep by 4.932 inches high. Sets are available in colors shown in the table.



## SETS

## Telephone

## 500, 501, and 502 Type (Continued)

**500ABW:** Arranged for a single two-wire/four-wire line. The set comes wired to two-wire service but may be converted at installation to four-wire service. Arranged for but not equipped with a KS-8109L2 Buzzer which must be ordered separately if required. Intended for use in 1A1 and 1A2 Key Telephone Systems and 3B Speakerphone System, however it is intended for specially engineered lines. Not for general telephone use.

**500ADW:** Arranged for four-wire service and equipped with a switch hook arrangement which provides one spare transfer and two spare make contacts. The spare make contacts may be used for such purposes as controlling external relays or applying idle line circuit terminations. Arranged for but not equipped with a KS-8109L2 Buzzer which must be ordered separately if required.

Intended for individual use and for use in 1A1 and 1A2 Key Telephone Systems. May also be used in the 3B Speakerphone System.

**500CRW (manual) and 500DRW (dial):** Intended for individual lines, two-party selective rate, two-party selective message rate (tip and ring), divided code ringing, nonselective party lines, four-party semiselective, regular PBX stations, and 750A PBX keyless stations. May also be used in certain cases on common battery lines instead of local battery talking, common battery signaling telephone sets, and associated local battery.

Furnished wired for all of the above services except tip party selective dial message rate, tip party flat rate automatic ticketing, tip party flat rate automatic message accounting, and zone registration. May be arranged for these services by rearranging ringer connections. A 42A-49 Connecting Block is furnished loose.

**500ERW (manual) and 500FRW (dial):** Used on divided code ringing and nonselective party line service. Plunger switch is wired to avoid interference with another party line user's dialing or talking when hand set is lifted to place a call. Only a low-loss receiver circuit is bridged across the line with normal operation of line switch (switch-hook) contacts. When line is not busy, pulling up left-hand plunger operates plunger switch and cuts in talking and dialing circuit elements; call can then be placed or answered. Restoring hand set restores switch automatically. A 42A-49 Connecting Block is furnished loose.

**500MRW (dial):** Has a four-conductor cord which provides a talking circuit with a bridged ringer and "A" lead control circuit. For use with 1A1 Key Telephone System by rearranging internal connection. Separate talking and ringing circuit can be provided.

**500RRW (manual) and 500SRW (dial):** For use only in speakerphone systems. Otherwise same as 500CRW (manual) and 500DRW (dial) Telephone Sets. A 42A-49 Connecting Block is furnished loose.

**500WRW (manual) and 500YRW (dial):** Equipped with a neon lamp assembly to provide a message waiting fea-

ture. Arranged to receive and hold a visual signal under control of an attendant of a PBX to indicate that an incoming call for the station was not completed. May be used on individual or two-party selective flat rate lines.

**501CRW (manual) and 501DRW (dial):** Four-party selective and semiselective polarized ringing line. May also be used in marginal cases for these services on common battery lines instead of local battery talking, common battery signaling telephone sets and associated local battery. A 42A-49 Connecting Block is furnished loose.

**502BRW (dial):** Equipped with exclusion feature operated by manually raising the left plunger. When hand set is replaced, the exclusion switch is returned to normal. Used in the 1A1 Key Telephone System and the 101 type key equipment.

Code No.	Comcode	Color
500ABW-3	101 248 672	Black
500ADW-3	101 248 680	Black
500ADW-51	101 321 248	Green
500ADW-60	101 321 255	Light beige
500ADW-61	101 321 263	Light gray
500CRW-3	100 675 412	Black
500CRW-53	100 675 438	Red
500DRW-3	100 675 420	Black
500DRW-50	100 675 446	Ivory
500DRW-51	100 675 453	Green
500DRW-53	100 675 461	Red
500DRW-58	100 675 479	White
500DRW-60	100 675 487	Light beige
500DRW-61	100 675 495	Light gray
500ERW-3	100 675 503	Black
500FRW-3	100 675 511	Black
500MRW-3	100 675 529	Black
500RRW-3	100 675 537	Black
500RRW-50	100 675 545	Ivory
500RRW-51	100 675 552	Green
500RRW-53	100 675 560	Red
500RRW-56	100 675 578	Yellow
500RRW-58	100 675 586	White
500RRW-60	100 675 602	Light beige
500RRW-61	100 675 610	Light gray
500SRW-3	100 675 636	Black
500SRW-50	100 675 644	Ivory
500SRW-51	100 675 651	Green
500SRW-53	100 675 669	Red
500SRW-56	100 675 677	Yellow
500SRW-58	100 675 685	White
500SRW-60	100 675 701	Light beige
500SRW-61	100 675 719	Light gray
500WRW-3	100 675 735	Black

## SETS

## Telephone

Code No.	Comcode	Color
500WRW-50	100 675 743	Ivory
500WRW-51	100 675 750	Green
500WRW-53	100 675 768	Red
500WRW-56	100 675 776	Yellow
500WRW-58	100 675 784	White
500WRW-60	100 675 800	Light beige
500WRW-61	100 675 818	Light gray
500YRW-3	100 675 834	Black
500YRW-50	100 675 842	Ivory
500YRW-51	100 675 859	Green
500YRW-53	100 675 867	Red
500YRW-56	100 675 875	Yellow
500YRW-58	100 675 883	White
500YRW-60	100 675 909	Light beige
500YRW-61	100 675 917	Light gray
501CRW-3	100 676 261	Black
501CRW-53	100 676 560	Red
501DRW-3	100 676 279	Black
502BRW-3	100 676 501	Black
502BRW-61	100 676 519	Light gray

Transmission features and external appearance same as 500 type sets except for the key located on front of the housing.

Dial sets are arranged to suppress dialing induction into radio receiving sets.

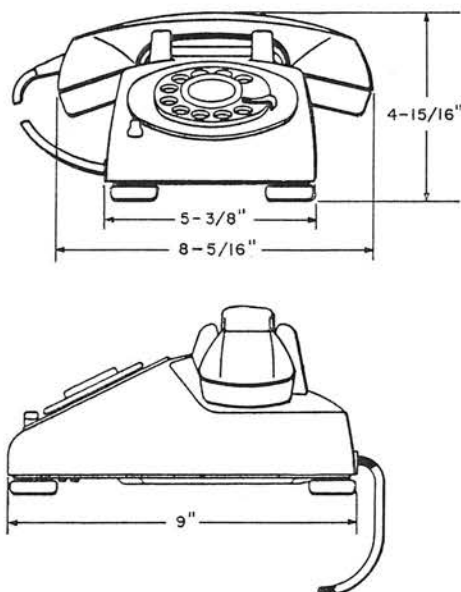
510BRW (dial): Equipped with combined turn-push button key for switching and signaling. Contains cutoff external ringer.

510ERW (manual) and 510FRW (dial): Has a six-conductor mounting cord which permits two-line pickup and signaling as basic features. 510FRW type otherwise same as 510BRW.

Arranged for but not equipped with a 44B Bracket (mount in place of ringer), a 152A Capacitor, and a number 7 type buzzer. Must be ordered separately if required.

Code No.	Comcode	Color
510BRW-3	100 676 972	Black
510BRW-60	100 676 980	Light beige
510ERW-3	100 676 998	Black
510FRW-3	100 677 004	Black
510FRW-53	100 677 012	Red
510FRW-61	100 677 020	Light gray

## 510 Type



## 511 Type

The 511 type is a common battery desk type telephone set which has the same physical appearance and dimensions as the 510 type.

The ringer provides for manual control in four steps without removing the housing and is so arranged that by removing the housing and making a minor adjustment the ringer can be silenced. The key is a combined turn and push button key for switching and signaling purposes. It has an exclusion feature, i.e., by manually raising the left plunger, an extension set will be disconnected. When the hand set is replaced, the exclusion switch is returned to normal. Dial sets are arranged to suppress dialing induction into radio receiving sets. The set is arranged for but not equipped with a 44B Bracket (mounts in place of the ringer), a 152A Capacitor, and a number 7 Buzzer.

Used in the 1A1 and 1A2 Key Telephone System and the 1A Speakerphone System.

Each 511FW and 511HW Telephone Set contains an H1A Ringer, a 425E Network, a 584A Key, a 9H Dial and a G3AR Hand Set. The 511FW is equipped with a D20J Cord and the 511HW is equipped with a D20K Cord.

511FW and 511HW: Has an additional switch and key contacts which have been added to provide control of "A" lead type key system circuits. Each is equipped with a 20-conductor cord.

511FW: The 20-conductor cord is provided with spade tips for connector block mounting.



## SETS

## Telephone

## 511 Type (Continued)

511HW: The 20-conductor cord is provided with a KS-16689L1 Plug having pin and color code assignments in accordance with established key system station connection patterns.

Arranged for but not equipped with a 44B Bracket (mount in place of Ringer), a 152A Capacitor, and a number 7 type Buzzer. Must be ordered separately if desired.

Used in the 1A1 Key Telephone System.

Code No.	Comcode	Color
511FW-3	100 842 889	Black
511FW-51	100 842 897	Green
511FW-56	100 842 905	Yellow
511FW-58	100 842 913	White
511FW-60	100 842 939	Light beige
511FW-61	100 842 947	Light gray
511HW-3	100 842 970	Black
511HW-51	100 842 988	Green
511HW-56	100 842 996	Yellow
511HW-58	100 843 002	White
511HW-60	100 843 028	Light beige
511HW-61	100 843 036	Light gray

## 513BW-61



A common desk type telephone set which provides an interlock feature between the telephone line and a data set. The set is light gray and has overall dimensions of 8.297 inches wide by 9 inches deep by 4.906 inches high. The set has an exclusion type data key (left plunger) for voice-to-data transfer.

When handset is removed, set is arranged for voice transmission, and by manually raising the left plunger, set is arranged for data transmission. By partially depressing the left plunger, voice transmission is restored.

Also equipped with a test key which is a turn and push-button key for invoking the test mode at which time the message waiting style test lamp becomes illuminated to indicate operation of the test circuit.

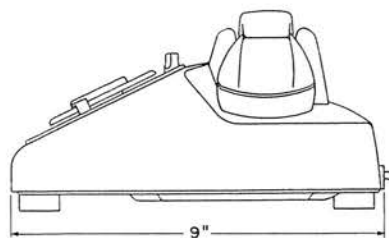
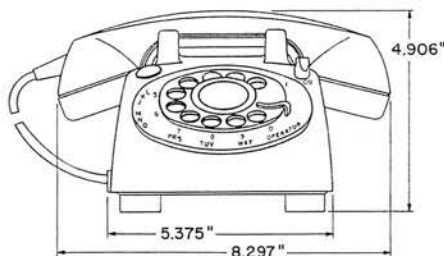
The set contains a D10N-61 Cord, a 7C-61 Dial, a 584A Key, a 52A Lamp, a 425B Network, a C4A Ringer, and a G3AR-61 Hand Set.

The ringer provides for manual volume control in four steps without removing the housing and is so arranged that by removing the housing and making a minor adjustment, the ringer can be silenced.

Used with Data Set J1D401F.

Comcode: 100 677 376

## 514BW



Common battery desk type telephone set for use with a number 52 or 53 type head telephone set. Provided with a removable plug above and to the left of the dial to accommodate a message waiting lamp. The message waiting lamp may be added at time of installation by using D-179968 Kit of parts for a screw type lamp socket or D-179969 Kit of parts for a bayonet type of lamp socket and appropriate lamp. The lamp and the kit of parts required for its installation are not furnished and must be ordered separately. The ringer provides for manual control to loud or soft by means of a ringer arm projecting through the base.

The set is provided with a key for switching between head telephone set and hand set operation and also provides a flash function for operator recall.

## SETS

## Telephone

Arranged for but not equipped with a KS-8109L2 Buzzer. Must be ordered separately if required.

Sets are available in colors shown in the table.

Code No.	Comcode	Color
514BW-3	101 092 997	Black
514BW-51	101 093 003	Green
514BW-56	101 093 011	Yellow
514BW-58	101 093 029	White
514BW-60	101 093 045	Light Beige
514BW-61	101 093 052	Light gray

Used with 1A1 and 1A2 Key Telephone Systems.

## 515BW Type

The 515BW type telephone sets are two-line desk sets similar to the 510 type telephone sets except that the turn key contact arrangement permits the holding of either line while switching to the other line. This is accomplished by manually raising the left hand plunger before operating the turn key. The plunger is automatically returned to normal when the hand set is restored. The key has a push button element intended for use as a signal key. Intended for normal residential or non-key system use.

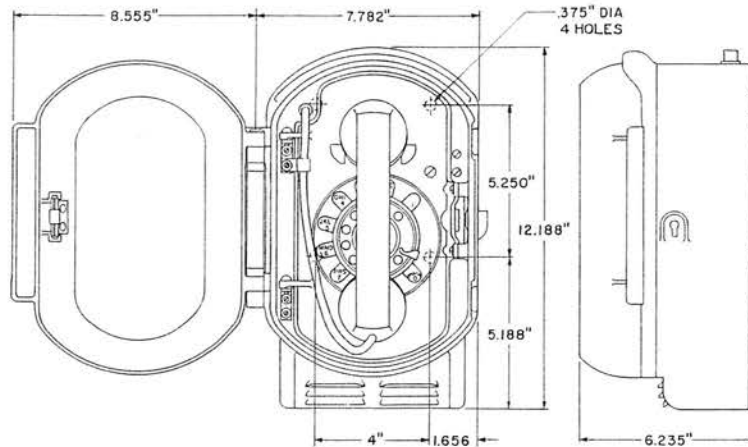
These sets are equipped with a 425E Network, a C4A Ringer, a D6AA-( ) Mounting Cord, a 9C-( ) Dial, and a G3AR-( ) Hand Set.

Code No.	Comcode	Color
515BW-3	101 248 789	Black
515BW-51	101 279 578	Green
515BW-56	101 279 586	Yellow
515BW-58	101 279 594	White
515BW-60	101 279 602	Light beige
515BW-61	101 279 610	Light gray

## SETS

## Telephone

## 525AW and BW



## 525BW

Common battery sets for outdoor use on two-party selective flat rate, two-party selective message rate (manual and ring party dial only), four-party semiselective, and divided code ringing. Can be changed in the field for individual line, tip party dial message rate, and nonselective party line stations services.

The housing is gray finished metal having inner and outer doors. The outer door is self-closing, fastened by means of a self-locking KS-8028 Lock. Where a self-locking lock is not desirable, it can be replaced by a KS-7861 Lock which must be ordered separately.

A 29D Bracket arranged to mount this set on building, fence, or pole must be ordered separately.

525AW: Used in manual systems.

Comcode: 100 677 491

525BW: Used in dial systems.

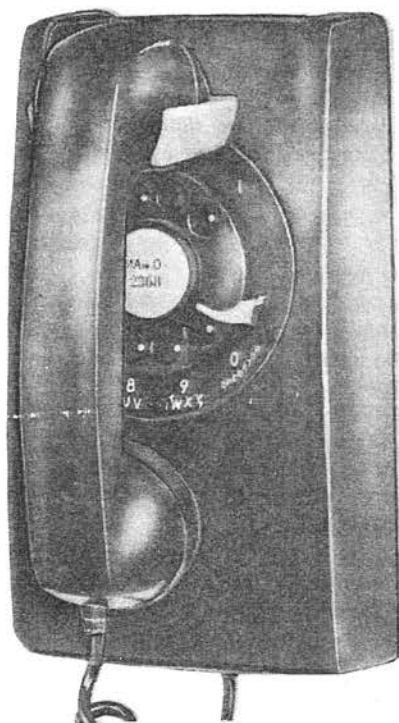
Comcode: 100 677 509



## SETS

## Telephone

## 554 and 556 Type



Common battery wall type sets each having a snap-on type cover. Volume of ringer may be changed manually by means of an arm projecting from the underside of the cover. Ringer can be silenced by removing the cover and making a minor adjustment. Overall dimensions with hand set in place are 5-1/2 inches wide by 5-19/32 inches deep by 9-13/16 inches high.

Dial sets are arranged to suppress dialing induction into radio receiving sets.

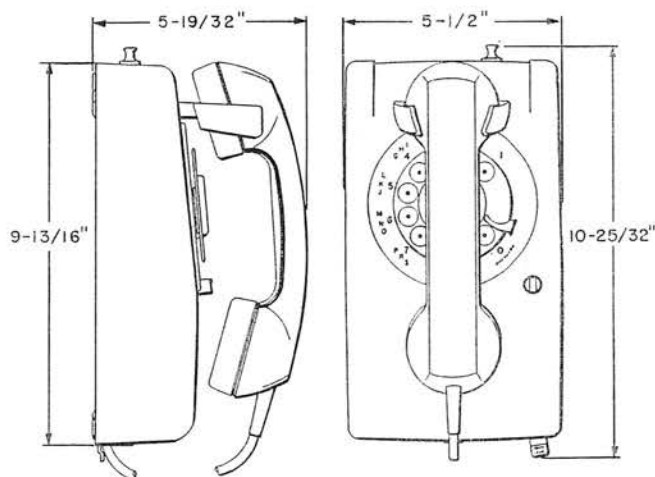
**554ARW (manual) and 554BRW (dial):** Used for individual lines, two-party selective flat rate, two-party selective message rate (tip and ring), divided code ringing, nonselective party lines, four-party semiselective, regular PBX stations, and number 750A PBX keyless stations.

**556BRW (dial):** Used for four-party selective and eight-party semiselective (polarized ringing lines) services.

All 554 and 556 type telephone sets may be used in certain cases for these services on common battery lines instead of local battery talking, common battery signaling telephone sets, and the associated local battery.

Code No.	Comcode	Color
554ARW-56	100 678 184	Yellow
554BRW-3	100 678 192	Black
554BRW-50	100 678 200	Ivory
554BRW-51	100 678 218	Green
554BRW-53	100 678 226	Red
554BRW-56	100 678 234	Yellow
554BRW-58	100 678 242	White
554BRW-60	100 678 267	Light beige
554BRW-61	100 678 275	Light gray
556BRW-3	100 678 507	Black
556BRW-50	100 678 515	Ivory
556BRW-51	100 678 523	Green
556BRW-53	100 678 531	Red
556BRW-56	100 678 549	Yellow
556BRW-58	100 678 556	White
556BRW-60	100 678 572	Light beige
556BRW-61	100 678 580	Light gray

## 558FW



Transmission features and external appearance same as 554 and 556 type sets except for key located on front and top of housing. The key on the front of set is a combined turn and push button key for switching and signaling purposes. The exclusion type key, projecting through the top of the housing, provides the means for disconnecting an extension set by manually raising the plunger. When the hand set is replaced on the switch hook, the exclusion key is returned to its normal position.



## SETS

## Telephone

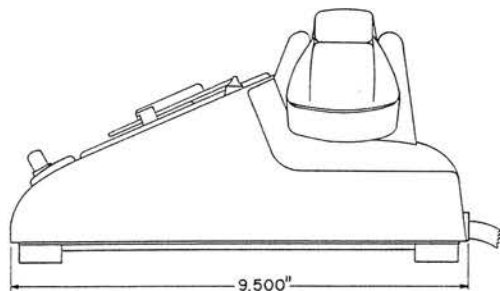
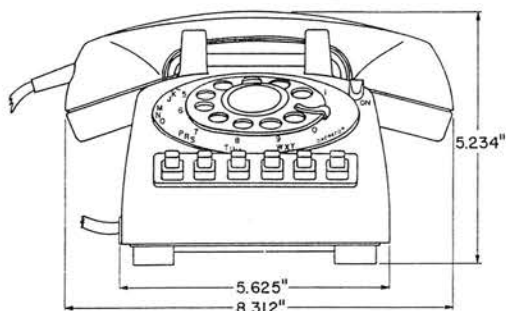
## 558FW (Continued)

Used in the 1A Key Telephone System. May be arranged for use in the 1A and 2A Interphone Systems by rearranging the ringer, exclusion key, and switch hook connections. Holes are provided in the base for mounting a 659A Transmitter when required in the home communication system. When used in the home communication system, the exclusion type key may be used to place a hold on the central office line while using the intercommunication line.

Additional switch and key contacts have been added to provide for control of A-lead type key system circuits.

Code No.	Comcode	Color
558FW-3	100 843 150	Black
558FW-51	100 843 168	Green
558FW-56	100 843 176	Yellow
588FW-58	100 843 184	White
558FW-60	100 843 200	Light beige
558FW-61	100 843 218	Light gray

## 563HBW



Common battery six button desk type key telephone sets arranged for use with a number 52 or 53 type head telephone set. Head telephone sets are not furnished and if desired must be ordered separately.

Arranged for hold (H) and pickup (P) as follows: HPP(P)(P)(P). The spring combinations associated with the pickup buttons (P) may be converted for signaling. The pickup (P) buttons are of the illuminated type, i.e., when illuminated, they serve as line busy and/or incoming call signals. Equipped with 51A Lamps for illuminating the pickup buttons (one lamp for each button). The hold (H) button is arranged for, but not equipped with a 51A Lamp. A blocking ring is furnished for use in blocking an unused button.

Provided with a 637A Key for switching between head telephone set and hand set which also provides a flash function for operator recall.

Equipped with one each of the following apparatus: 241A Amplifier, N1A Ringer, 425E Network, 100A Varistor, 9C-( ) Dial, G3AR-( ) Hand Set, D50N-( ) Cord, 636A and 637A Key.

Arranged for but not equipped with a KS-8109 Buzzer. Provided with an exclusion plunger, but not equipped with an exclusion key. The exclusion key may be installed in the field using a D179935 Kit of Parts, which must be ordered separately.

The ringer provides for manual control to loud, soft, and off by means of a ringer arm projecting through the lower left side of the housing. The ringer may be used as a line ringer or a common audible signal.

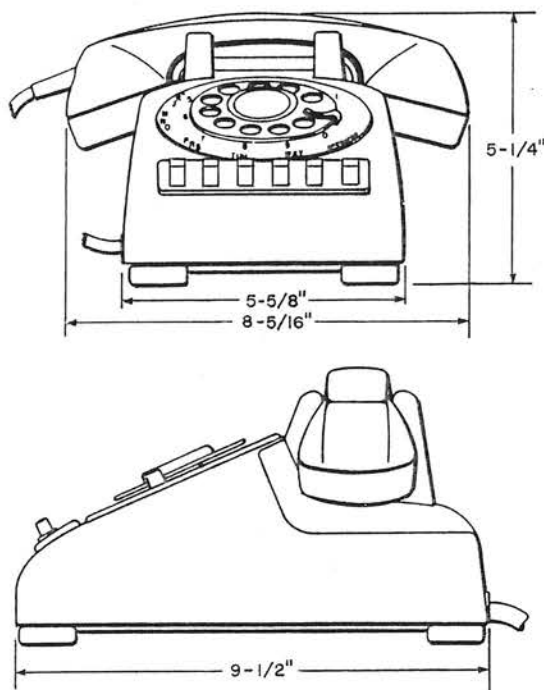
Used in the 1A1 and 1A2 Key Telephone Systems.

Code No.	Comcode	Color
563HBW-3	101 125 391	Black
563HBW-51	101 132 090	Green
563HBW-56	101 132 108	Yellow
563HBW-58	101 132 116	White
563HBW-60	101 132 132	Light beige
563HBW-61	101 132 140	Light gray

## SETS

## Telephone

564HLW, 565 Type, 566MDW, 568HRW, and 568HSW



Common battery six-button desk type arranged for hold (H) and pickup (P). Spring combination associated with pickup button (P) may be connected for signaling at time of installation. Pickup buttons are illuminated type. When illuminated, serve as line busy and/or incoming call signals. Blocking ring is furnished to block unused buttons. Volume of ringer can be varied by means of a knurled cam projecting through the base. By removing the housing and making a minor adjustment, the ringer can be silenced. Dial sets are arranged to suppress dial induction in radio receiving sets.

Sets are arranged for hold (H), pickup (P), cutoff (C), and local (L) as set forth in the following table. When shown as (P), the pickup button may be connected for signaling at the time of installation.

Code No.	Key Configuration Codes
564HLW	H P P (P) (P) (P)
565GKW	P P P (P) (P) (P)
565HKW	H P P (P) (P) (P)
565LKW	H P P P (P) C
566MDW	H P P P P L
568HRW	H P P (P) (P) (P)
568HSW	H P P (P) (P) (P)

564HLW: Equipped with five 51A Lamps. Hold position is arranged for but not equipped with a lamp. Must be ordered separately if required.

Arranged for but not equipped with a KS-8109L2 Buzzer. Must be ordered separately if required.

Screw terminal connections are provided on the key terminal board for connection of auxiliary features such as buzzers, lamps, and keys.

Wired for use in 1A1 and 1A2 Key Telephone Systems.

565 Type: Same as 564 type except is arranged for but not equipped with an exclusion key. The exclusion key may be made at the time of installation by using a D-179935 Kit of parts which is not furnished and must be ordered separately if required.

Arranged for but not equipped with a P-25E962 Terminal Strip which provides screw terminals for connection of additional auxiliary services. Must be ordered separately when required.

May also be arranged for use in the 3B Speakerphone System by rearranging connections.

566MDW: Has the same lamp arrangement as the 564HLW type. The hand set is equipped with a spring cord. The hold position cannot be illuminated.

Used in the 3B Speakerphone System.

568HRW: Arranged for two-wire and four-wire service. Contains a relay for the necessary switching between the two configurations. All key buttons are arranged for and the five pick-up buttons are equipped with 51A Lamps for illumination. The set is also arranged for a KS-8109L2 Buzzer which is not furnished and must be ordered separately, and an exclusion switch assembly, operated by lifting the left plunger.

568HSW: Similar to 568HRW. Hold button is arranged for but not equipped with a 51A Lamp. It is also arranged for but not equipped with a KS-8109L2 Buzzer. Must be ordered separately if required.

Intended solely for specially engineered lines—Not for general telephone use.

Code No.	Comcode	Color
564HLW-3	100 679 224	Black
564HLW-51	100 679 232	Green
564HLW-56	100 679 240	Yellow
564HLW-58	100 679 257	White
564HLW-60	100 679 273	Light beige
564HLW-61	100 679 281	Light gray
565GKW-51	100 679 992	Green
565GKW-58	100 680 008	White
565GKW-60	100 680 016	Light beige
565GKW-61	100 680 024	Light gray
565HKW-3	100 680 263	Black
565HKW-51	100 680 271	Green
565HKW-58	100 680 297	White



## SETS

## Telephone

**564HLW, 565 Type, 566MDW, 568HRW, and 568HSW  
(Continued)**

Code No.	Comcode	Color
565HKW-60	100 680 313	Light beige
565HKW-61	100 680 321	Light gray
565LKW-51	100 680 446	Green
565LKW-58	100 680 453	White
565LKW-60	100 680 461	Light beige
565LKW-61	100 680 479	Light gray
566MDW-3	100 680 677	Black
566MDW-51	100 680 685	Green
566MDW-58	100 680 693	White
566MDW-60	100 680 701	Light beige
566MDW-61	100 680 719	Light gray
568HRW-3	101 211 316	Black
568HSW-3	101 245 819	Black

**570 Type**

The telephone is enclosed in a red weatherproof aluminum housing, 16-7/8 inches high by 12 inches wide by 7 inches deep. Front is made up of double doors hinged at the center. One door provides access to the telephone. The other door is screwed shut and provides access for maintenance.

May be attached to a wall or poles by means of a 29C Bracket which is **not** furnished and must be ordered separately.

Each consists of an apparatus box containing an apparatus unit as specified in the table.

Code No.	Comcode	Apparatus Box	Apparatus Unit
570JW1	100 681 014	111B	8JW
570JW2	100 681 071	111C	8JW
570KW1(a)	100 681 022	111B	8KW
570KW2(a)	100 681 089	111C	8KW
570LW1	100 681 030	111B	8LW
570LW2	100 681 097	111C	8LW
570MW1(a)	100 681 048	111B	8MW
570MW2(a)	100 681 105	111C	8MW
570NW1	100 681 055	111B	8NW
570NW2	100 681 113	111C	8NW
570PW1(a)	100 681 063	111B	8PW
570PW2(a)	100 681 121	111C	8PW

(a) Can be obtained equipped with a lock type switch instead of a selective routing switch when specified on the order.

For use in emergency reporting systems.

**570JW1 and NW1:** Used on direct line without selective routing.

**570KW1 and 570PW1:** Used on direct line with selective routing.

**570LW1:** Used with line concentrated without selective routing.

**570MW1:** Used with line concentrator with selective routing.

**570JW2 through PW2:** Same as 570JW1 through PW1 except handle is equipped with a cam to assist in opening door if it is held closed due to freezing.

## SETS

## Telephone

**591ARW and 591BRW**

Same as 500CRW type telephone set except ringer is omitted and a 42A-50 Connecting Block is furnished loose.

Code No.	Comcode	Color
591ARW-3	100 681 139	Black
591ARW-58	100 681 147	White
591BRW-3	100 681 154	Black
591BRW-50	100 681 162	Ivory
591BRW-51	100 681 170	Green
591BRW-53	100 681 188	Red
591BRW-56	100 681 196	Yellow
591BRW-58	100 681 204	White
591BRW-60	100 681 220	Light beige
591BRW-61	100 681 238	Light gray

**593BRW**

Same as 554BRW telephone set except that the ringer is not furnished.

Code No.	Comcode	Color
593BRW-3	100 681 253	Black
593BRW-50	100 681 261	Ivory
593BRW-51	100 681 279	Green
593BRW-53	100 681 287	Red
593BRW-56	100 681 295	Yellow
593BRW-58	100 681 303	White
593BRW-60	100 681 329	Light beige
593BRW-61	100 681 331	Light gray



## SETS

## Telephone

## CALL DIRECTORS

These are illuminated button key telephone sets designed to permit answering, originating, signaling, or holding calls on central office, PBX, tie lines, etc., when associated with 1A1, 1A2, 6A, or equivalent key telephone systems. The sets are equipped with a colored plastic housing with a sloping front surface on which is mounted a dial and either three (18 button model) or five (30 button model) keys. This sloping front surface is covered by a colored mat held down by clear plastic face plates. The matching colored hand set is supported by a switchhook extending from the left side. Five mats are furnished with each set and are colored cream white, green, blue, silver, and gold. Many color variations for blending with office decor are possible. One sheet of three P-44E130 Perforated Blank Designation Strips and one sheet of six P-44E129 Blank Designation Strips are furnished.

Sets are arranged to suppress dialing induction into receiving sets. Two blocking rings are furnished for blocking each unused button.

When ordering, specify the telephone set basic code i.e. 630DW, suffixed by the key code i.e. 3 and the color code i.e., -58. Example: 630DW3-58.

**608CW  
CALL DIRECTOR**



A general purpose five-position key telephone set with overall dimensions of 15.125 inches wide by 8.125 inches deep by 4.226 inches high.

Equipped with a flash and release key. Provides either two- or four-wire service with central or private lines. A relay provides for switching between two-wire or four-wire service. The set is arranged for 52 or 53 type head telephone set which if required must be ordered separately.

The set is available in key configuration codes 3, 12, 17, and 20. See table following CALL DIRECTOR telephone sets.

Code No.	Comcode	Color
608CW3-51	101 309 458	Green
608CW3-58	101 309 466	White
608CW3-60	101 307 999	Light beige
608CW3-61	101 309 482	Light gray
608CW12-51	101 313 542	Green
608CW12-58	101 307 981	White
608CW12-60	101 313 559	Light beige
608CW12-61	101 285 070	Light gray
608CW17-51	101 636 637	Green
608CW17-58	101 576 338	White
608CW17-60	101 636 645	Light beige
608CW17-61	101 313 575	Light gray
608CW20-51	101 636 652	Green
608CW20-58	101 636 660	White
608CW20-60	101 636 678	Light beige
608CW20-61	101 636 686	Light gray

**617BW15 and 617BW21  
CALL DIRECTOR**



A large capacity five-position key telephone set with overall dimensions of 15.125 inches wide by 8.250 inches deep by 4.226 inches high. Available only in light gray (-61).











## SETS

## Telephone

Code No.	Comcode	Color	635DW Type CALL DIRECTOR
634DW4-58	100 691 096	White	Concentrator type, otherwise same as 631DW Telephone Set. It weighs 16 pounds.
634DW4-60	100 691 112	Light beige	
634DW4-61	100 691 120	Light gray	
634DW6-3	100 691 153	Black	Used in the 1A1, 1A2, and 6A Key Telephone Systems equipped with 236A Key Telephone Units for line concentrator service.
634DW6-51	100 691 161	Green	
634DW6-56	100 691 179	Yellow	
634DW6-58	100 691 187	White	The set is available in key configuration codes 1 through 4, 10 through 12, and 16 through 18. See table following CALL DIRECTOR telephone sets.
634DW6-60	100 691 203	Light beige	
634DW6-61	100 691 211	Light gray	
634DW7-3	100 691 245	Black	
634DW7-51	100 691 252	Green	
634DW7-56	100 691 260	Yellow	
634DW7-58	100 691 278	White	
634DW7-60	100 691 294	Light beige	
634DW7-61	100 691 302	Light gray	
634DW9-3	100 691 336	Black	
634DW9-51	100 691 344	Green	
634DW9-56	100 691 351	Yellow	
634DW9-58	100 691 369	White	
634DW9-60	100 691 385	Light beige	
634DW9-61	100 691 393	Light gray	
634DW10-3	100 691 427	Black	
634DW10-51	100 691 435	Green	
634DW10-56	100 691 443	Yellow	
634DW10-58	100 691 450	White	
634DW10-60	100 691 476	Light beige	
634DW10-61	100 691 484	Light gray	
634DW11-3	100 691 518	Black	
634DW11-51	100 691 526	Green	
634DW11-56	100 691 534	Yellow	
634DW11-58	100 691 542	White	
634DW11-60	100 691 567	Light beige	
634DW11-61	100 691 575	Light gray	
634DW12-3	100 691 609	Black	
634DW12-51	100 691 617	Green	
634DW12-56	100 691 625	Yellow	
634DW12-58	100 691 633	White	
634DW12-60	100 691 658	Light beige	
634DW12-61	100 691 666	Light gray	
634DW13-3	100 691 690	Black	
634DW13-51	100 691 708	Green	
634DW13-56	100 691 716	Yellow	
634DW13-58	100 691 724	White	
634DW13-60	100 691 740	Light beige	
634DW13-61	100 691 757	Light gray	

Code No.	Comcode	Color
635DW1-3	100 694 488	Black
635DW1-51	100 694 496	Green
634DW1-56	100 694 504	Yellow
635DW1-58	100 694 512	White
635DW1-60	100 694 538	Light beige
635DW1-61	100 694 546	Light gray
635DW2-3	100 694 579	Black
635DW2-51	100 694 587	Green
635DW2-56	100 694 595	Yellow
635DW2-58	100 694 603	White
635DW2-60	100 694 629	Light beige
635DW2-61	100 694 637	Light gray
635DW3-3	100 694 660	Black
635DW3-51	100 694 678	Green
635DW3-56	100 694 686	Yellow
635DW3-58	100 694 694	White
635DW3-60	100 694 710	Light beige
635DW3-61	100 694 728	Light gray
635DW4-3	100 694 751	Black
635DW4-51	100 694 769	Green
635DW4-56	100 694 777	Yellow
635DW4-58	100 694 785	White
635DW4-60	100 694 801	Light beige
635DW4-61	100 694 819	Light gray
635DW10-3	100 694 843	Black
635DW10-51	100 694 850	Green
635DW10-56	100 694 868	Yellow
635DW10-58	100 694 876	White
635DW10-60	100 694 892	Light beige
635DW10-61	100 694 900	Light gray
635DW11-3	100 694 934	Black
635DW11-51	100 694 942	Green
635DW11-56	100 694 959	Yellow
635DW11-58	100 694 967	White
635DW11-60	100 694 983	Light beige

## SETS

## Telephone

## 635DW Type (Continued)

Code No.	Comcode	Color
635DW11-61	100 694 991	Light gray
635DW12-3	100 695 022	Black
635DW12-51	100 695 030	Green
635DW12-56	100 695 048	Yellow
635DW12-58	100 695 055	White
635DW12-60	100 695 071	Light beige
635DW12-61	100 695 089	Light gray
635DW16-3	100 695 113	Black
635DW13-51	100 695 121	Green
635DW16-56	100 695 139	Yellow
635DW16-58	100 695 147	White
635DW16-60	100 695 162	Light beige
635DW16-61	100 695 170	Light gray
635DW17-3	100 695 204	Black
635DW17-51	100 695 212	Green
635DW17-56	100 695 220	Yellow
635DW17-58	100 695 238	White
635DW17-60	100 695 253	Light beige
635DW17-61	100 695 261	Light gray
635DW18-3	100 695 295	Black
635DW18-51	100 695 303	Green
635DW18-56	100 695 311	Yellow
635DW18-58	100 695 329	White
635DW18-60	100 695 345	Light beige
635DW18-61	100 695 352	Light gray

All purpose, jack equipped, large capacity three-position key telephone set with overall dimensions of 12.5 inches wide by 8.125 inches deep by 4.226 inches high.

Also arranged for hands-free operation by using a number 52 or 53 type head telephone set which if required must be ordered separately. Also equipped with flash and release keys.

Used as station apparatus in 1A1, 1A2, and 6A Key Telephone Systems.

The set is available in key configuration codes 1, 2, 4, 6, 7, 9, 10, 14, and 15. See table following CALL DIRECTOR telephone sets.

636CW Type  
CALL DIRECTOR

Code No.	Comcode	Color
636CW1-3	100 696 194	Black
636CW1-51	100 696 202	Green
636CW1-56	100 696 210	Yellow
636CW1-58	100 696 228	White
636CW1-60	100 696 244	Light beige
636CW1-61	100 696 251	Light gray
636CW2-3	100 696 285	Black
636CW2-51	100 696 293	Green
636CW2-56	100 696 301	Yellow
636CW2-58	100 696 319	White
636CW2-60	100 696 335	Light beige
636CW2-61	100 696 343	Light gray
636CW4-3	100 696 376	Black
636CW4-51	100 696 384	Green
636CW4-56	100 696 392	Yellow
636CW4-58	100 696 400	White
636CW4-60	100 696 426	Light beige
636CW4-61	100 696 434	Light gray
636CW6-3	100 696 467	Black
636CW6-51	100 696 475	Green
636CW6-56	100 696 483	Yellow
636CW6-58	100 696 491	White
636CW6-60	100 696 517	Light beige
636CW6-61	100 696 525	Light gray
636CW7-3	100 696 558	Black
636CW7-51	100 696 566	Green
636CW7-56	100 696 574	Yellow
636CW7-58	100 696 582	White
636CW7-60	100 696 608	Light beige
636CW7-61	100 696 616	Light gray
636CW9-3	100 696 640	Black
636CW9-51	100 696 657	Green
636CW9-56	100 696 665	Yellow
636CW9-58	100 696 673	White
636CW9-60	100 696 699	Light beige
636CW9-61	100 696 707	Light gray



## SETS

## Telephone

Code No.	Comcode	Color
636CW10-3	100 696 731	Black
636CW10-51	100 696 749	Green
636CW10-56	100 696 756	Yellow
636CW10-58	100 696 764	White
636CW10-60	100 696 780	Light beige
636CW10-61	100 696 798	Light gray
636CW14-3	100 696 822	Black
636CW14-51	100 696 830	Green
636CW14-56	100 696 848	Yellow
636CW14-58	100 696 855	White
636CW14-60	100 696 871	Light beige
636CW14-61	100 696 889	Light gray
636CW15-3	100 696 913	Black
636CW15-51	100 696 921	Green
636CW15-56	100 696 939	Yellow
636CW15-58	100 696 947	White
636CW15-60	100 696 962	Light beige
636CW15-61	100 696 970	Light gray

The set is available in key configuration codes 1 through 5, 9 through 15, and 19. See table following CALL DIRECTOR telephone sets.

Code No.	Comcode	Color
637DW1-3	100 698 174	Black
637DW1-51	100 698 182	Green
637DW1-56	100 698 190	Yellow
637DW1-58	100 698 208	White
637DW1-60	100 698 224	Light beige
637DW1-61	100 698 232	Light gray
637DW2-3	100 698 265	Black
637DW2-51	100 698 273	Green
637DW2-56	100 698 281	Yellow
637DW2-58	100 698 299	White
637DW2-60	100 698 315	Light beige
637DW2-61	100 698 323	Light gray
637DW3-3	100 698 356	Black
637DW3-51	100 698 364	Green
637DW3-56	100 698 372	Yellow
637DW3-58	100 698 380	White
637DW3-60	100 698 406	Light beige
637DW3-61	100 698 414	Light gray
637DW4-3	100 698 448	Black
637DW4-51	100 698 455	Green
637DW4-56	100 698 463	Yellow
637DW4-58	100 698 471	White
637DW4-60	100 698 497	Light beige
637DW4-61	100 698 505	Light gray
637DW5-3	100 698 539	Black
637DW5-51	100 698 547	Green
637DW5-56	100 698 554	Yellow
637DW5-58	100 698 562	White
637DW5-60	100 698 588	Light beige
637DW5-61	100 698 596	Light gray
637DW9-3	100 696 620	Black
637DW9-51	100 698 638	Green
637DW9-56	100 698 646	Yellow
637DW9-58	100 698 653	White
637DW9-60	100 698 679	Light beige
637DW9-61	100 698 687	Light gray
637DW10-3	100 698 711	Black
637DW10-51	100 698 729	Green
637DW10-56	100 698 737	Yellow
637DW10-58	100 698 745	White
637DW10-60	100 698 760	Light beige
637DW10-61	100 698 778	Light gray
637DW11-3	100 698 802	Black
637DW11-51	100 698 810	Green

**637DW Type  
CALL DIRECTOR**



All purpose, jack equipped, large capacity five-position key telephone set with overall dimensions of 15.125 inches wide by 8.125 inches deep by 4.226 inches high. It weighs 16 pounds.

Also arranged for hands-free operation by using a number 52 or 53 type head telephone set which if required must be ordered separately. Also equipped with flash and release keys.

Used in the 1A1, 1A2, and 6A Key Telephone Systems.



## SETS

## Telephone

## 637DW Type (Continued)

For use in the 1A1, 1A2, or 6A Key Telephone Systems equipped with 235A Key Telephone Units for line concentrator service.

The set is available in key configuration codes 1, 2, 4, 6, 7, 9, and 10. See table following CALL DIRECTOR telephone sets.

Code No.	Comcode	Color
637DW11-56	100 698 828	Yellow
637DW11-58	100 698 836	White
637DW11-60	100 698 851	Light beige
637DW11-61	100 698 869	Light gray
637DW12-3	100 698 893	Black
637DW12-51	100 698 901	Green
637DW12-56	100 698 919	Yellow
637DW12-58	100 698 927	White
637DW12-60	100 698 943	Light beige
637DW12-61	100 698 950	Light gray
637DW13-3	100 698 984	Black
637DW13-51	100 698 992	Green
637DW13-56	100 699 008	Yellow
637DW13-58	100 699 016	White
637DW13-60	100 699 032	Light beige
637DW13-61	100 699 040	Light gray
637DW14-3	100 699 073	Black
637DW14-51	100 699 081	Green
637DW14-56	100 699 099	Yellow
637DW14-58	100 699 107	White
637DW14-60	100 699 123	Light beige
637DW14-61	100 699 131	Light gray
637DW15-3	100 699 164	Black
637DW15-51	100 699 172	Green
637DW15-56	100 699 180	Yellow
637DW15-58	100 699 198	White
637DW15-60	100 699 214	Light beige
637DW15-61	100 699 222	Light gray
637DW19-3	100 699 255	Black
637DW19-51	100 699 263	Green
637DW19-56	100 699 271	Yellow
637DW19-58	100 699 289	White
637DW19-60	100 699 305	Light beige
637DW19-61	100 699 313	Light gray

**638CW  
CALL DIRECTOR**

Concentrator type, jack equipped, otherwise same as 636CW Telephone Set except overall dimensions are 12.5 inches wide by 8.250 inches deep by 4.226 inches high. It weighs 13 pounds.

Also arranged for hands-free operation by using a number 52 or 53 type head telephone set, which if required must be ordered separately. Also equipped with flash and release keys.

Code No.	Comcode	Color
638CW1-3	100 699 974	Black
638CW1-51	100 699 982	Green
638CW1-56	100 699 990	Yellow
638CW1-58	100 700 004	White
638CW1-60	100 700 020	Light beige
638CW1-61	100 700 038	Light gray
638CW2-3	100 700 061	Black
638CW2-51	100 700 079	Green
638CW2-56	100 700 087	Yellow
638CW2-58	100 700 095	White
638CW2-60	100 700 111	Light beige
638CW2-61	100 700 129	Light gray
638CW4-3	100 700 152	Black
638CW4-51	100 700 160	Green
638CW4-56	100 700 178	Yellow
638CW4-58	100 700 186	White
638CW4-60	100 700 202	Light beige
638CW4-61	100 700 210	Light gray
638CW6-3	100 700 244	Black
638CW6-51	100 700 251	Green
638CW6-56	100 700 269	Yellow
638CW6-58	100 700 277	White
638CW6-60	100 700 293	Light beige
638CW6-61	100 700 301	Light gray
638CW7-3	100 700 335	Black
638CW7-51	100 700 343	Green
638CW7-56	100 700 350	Yellow
638CW7-58	100 700 368	White
638CW7-60	100 700 384	Light beige
638CW7-61	100 700 392	Light gray
638CW9-3	100 700 426	Black
638CW9-51	100 700 434	Green
638CW9-56	100 700 442	Yellow
638CW9-58	100 700 459	White
638CW9-60	100 700 475	Light beige
638CW9-61	100 700 483	Light gray
638CW10-3	100 700 517	Black
638CW10-51	100 700 525	Green
638CW10-56	100 700 533	Yellow
638CW10-58	100 700 541	White
638CW10-60	100 700 566	Light beige
638CW10-61	100 700 574	Light gray

## SETS

## Telephone

**639DW  
CALL DIRECTOR**

Concentrator type, jack equipped, otherwise same as 637DW Telephone Set except overall dimensions are 15.125 inches wide by 8.250 inches deep by 4.226 inches high. Twelve insulators are furnished for converting pickup buttons to signaling. It weighs 16 pounds.

Also arranged for hands-free operation by using a number 52 or 53 type head telephone set, which if required must be ordered separately. Also equipped with flash and release keys.

Used in the 1A1, 1A2, or 6A Key Telephone Systems equipped with 236A Key Telephone Units for line concentrator service.

The set is available in key configuration codes 1 through 4 and 10 through 12. See table following CALL DIRECTOR telephone sets.

Code No.	Comcode	Color
639DW11-3	100 701 689	Black
639DW11-51	100 701 697	Green
639DW11-56	100 701 705	Yellow
639DW11-58	100 701 713	White
639DW11-60	100 701 739	Light beige
639DW11-61	100 701 747	Light gray
639DW12-3	100 701 770	Black
639DW12-51	100 701 788	Green
639DW12-56	100 701 796	Yellow
639DW12-58	100 701 804	White
639DW12-60	100 701 820	Light beige
639DW12-61	100 701 838	Light gray

Code No.	Comcode	Color
639DW1-3	100 701 234	Black
639DW1-51	100 701 242	Green
639DW1-56	100 701 259	Yellow
639DW1-58	100 701 267	White
639DW1-60	100 701 283	Light beige
639DW1-61	100 701 291	Light gray
639DW2-3	100 701 325	Black
639DW2-51	100 701 333	Green
639DW2-56	100 701 341	Yellow
639DW2-58	100 701 358	White
639DW2-60	100 701 374	Light beige
639DW2-61	100 701 382	Light gray
639DW3-3	100 701 416	Black
639DW3-51	100 701 424	Green
639DW3-56	100 701 432	Yellow
639DW3-58	100 701 440	White
639DW3-60	100 701 465	Light beige
639DW3-61	100 701 473	Light gray
639DW4-3	100 701 507	Black
639DW4-51	100 701 515	Green
639DW4-56	100 701 523	Yellow
639DW4-58	100 701 531	White
639DW4-60	100 701 556	Light beige
639DW4-61	100 701 564	Light gray
639DW10-3	100 701 598	Black
639DW10-51	100 701 606	Green
639DW10-56	100 701 614	Yellow
639DW10-58	100 701 622	White
639DW10-60	100 701 648	Light beige
639DW10-61	100 701 655	Light gray









Key Configuration Codes	Basic Telephone Sets						
	608CW	617BW	618BW	630DW	631DW	632CW	634DW
Code 6	—	—	—	CPB PPB PPB PPB PPB HPB	—	CPB PPB PPB PPB PPB HPB	CPB PPB PPB PPB PPB HPB
Code 7	—	—	CPP PPP PPP PPP PPP HPP	CPP PPP PPP PPP PPP HPP	—	CPP PPP PPP PPP PPP HPP	CPP PPP PPP PPP PPP HPP
Code 8	—	—	—	—	—	—	—
Code 9	—	—	—	PPB PPB PPB PPB PPB PPB	PPPBL PPPBL PPPBL PPPBL PPPBL HPPBL	—	PPB PPB PPB PPB PPB PPB
Code 10	—	—	—	PPP PPP PPP PPP PPP PPP	CPPBB PPPBB PPPBB PPPBB PPPBB HPPBB	—	PPP PPP PPP PPP PPP PPP
Key Configuration Codes	Basic Telephone Sets						
	635DW	636CW	637DW	638CW	639DW	3640AW	3641AW
Code 6	—	CPB PPB PPB PPB PPB HPB	—	CPB PPB PPB PPB PPB HPB	—	—	—
Code 7	—	CPP PPP PPP PPP PPP HPP	—	CPP PPP PPP PPP PPP HPP	—	—	—
Code 8	—	—	—	—	—	—	—
Code 9	—	PPB PPB PPB PPB PPB PPB	PPPBL PPPBL PPPBL PPPBL PPPBL PPPBL	PPB PPB PPB PPB PPB PPB	—	—	—
Code 10	CPPBB PPPBB PPPBB PPPBB PPPBB HPPBB	PPP PPP PPP PPP PPP PPP	CPPBB PPPBB PPPBB PPPBB PPPBB HPPBB	PPP PPP PPP PPP PPP PPP	CPPBB PPPBB PPPBB PPPBB PPPBB HPPBB	—	—

Key Configuration Codes	Basic Telephone Sets										
	608CW	617BW	618BW		630DW		631DW	632CW		634DW	
Code 11	—	—	PP PP PP PP PP HP	OFF ON T V	PP PP PP PP PP HP	OFF ON T V	CPPPB PPPPB PPPPB PPPPB PPPPB HPPPB	PP PP PP PP PP HP	OFF ON T V	PP PP PP PP PP HP	OFF ON T V
Code 12	PPPPP PPPPP PPPPP PPPPP PPPPP HPPPP	—		—	PSS PSS PSS PSS PSS HSS	OFF ON T V	CPPPP PPPPP PPPPP PPPPP PPPPP HPPPP	PSS PSS PSS PSS PSS HSS	OFF ON T V	PSS PSS PSS PSS PSS HSS	OFF ON T V
Code 13	—	—	CP PP PP PP PP HP	ON ON T V	CP PP PP PP PP HP	OFF ON T V	PPPB PPPB PPPB PPPB PPPB PPPB	CP PP PP PP PP HP	OFF ON T V	CP PP PP PP PP HP	OFF ON T V
Code 14	—	—		—	PPLL PPLL PPLL PPLL PPLL HPLL		PPPB PPPB PPPB PPPB PPPB PPPB	PPLL PPLL PPLL PPLL PPLL HPLL			—
Code 15	—	PPPPP PPPPP PPPPP PPPPP PPPPP		—	CPLL PPLL PPLL PPLL PPLL HPLL		PPPPP PPPPP PPPPP PPPPP PPPPP PPPPP	CPLL PPLL PPLL PPLL PPLL HPLL			—

Key Configuration Codes	Basic Telephone Sets							
	635DW	636CW	637DW	638CW	639DW	3640AW	3641AW	
Code 11	CPPPB PPPPB PPPPB PPPPB PPPPB HPPPB	—	CPPPB PPPPB PPPPB PPPPB PPPPB HPPPB	—	CPPPB PPPPB PPPPB PPPPB PPPPB HPPPB	PP PP PP PP HP	OFF ON V T	—
Code 12	CPPPP PPPPP PPPPP PPPPP PPPPP HPPPP	—	CPPPP PPPPP PPPPP PPPPP PPPPP HPPPP	—	CPPPP PPPPP PPPPP PPPPP PPPPP HPPPP	—	—	—
Code 13	—	—	PPPB PPPB PPPB PPPB PPPB PPPB	—	—	—	—	—
Code 14	—	PPLL PPLL PPLL PPLL PPLL HPLL	PPPB PPPB PPPB PPPB PPPB PPPB	—	—	—	—	—
Code 15	—	CPLL PPLL PPLL PPLL PPLL HPLL	PPPPP PPPPP PPPPP PPPPP PPPPP PPPPP	—	—	—	—	—

Key Configuration Codes	Basic Telephone Sets						
	608CW	617BW	618BW	630DW	631DW	632CW	634DW
Code 16	—	—	—	—	PPPB OFF PPPB ON PPPB T PPPB V PPPB HPPB	—	—
Code 17	PPPP OFF PPPP ON PPPP T PPPP V PPPP HPPP	—	—	—	PPPP ON PPPP OFF PPPP T PPPP V PPPP HPPP	—	—
Code 18	—	—	—	—	PPSS ON PPSS OFF PPSS T PPSS V PPSS HPPSS	—	—
Code 19	—	—	—	—	PPPLL PPPLL PPPLL PPPLL PPPLL HPPLL	—	—
Code 20	CPPP OFF PPPP ON PPPP T PPPP V PPPP HPPP	—	—	—	—	—	—
Key Configuration Codes	Basic Telephone Sets						
	635DW	636CW	637DW	638CW	639DW	3640AW	3641AW
Code 16	PPPB OFF PPPB ON PPPB T PPPB V PPPB HPPB	—	—	—	—	—	PPPB OFF PPPB ON PPPB V PPPB T PPPB HPPB
Code 17	PPPP OFF PPPP ON PPPP T PPPP V PPPP HPPP	—	—	—	—	—	PPPP OFF PPPP ON PPPP V PPPP T PPPP HPPP
Code 18	PPSS OFF PPSS ON PPSS T PPSS V PPSS HPPSS	—	—	—	—	—	—
Code 19	—	—	PPPLL PPPLL PPPLL PPPLL PPPLL HPPLL	—	—	—	—
Code 20	—	—	—	—	—	—	—





## SETS

## Telephone

## CARD DIALER

These are telephone sets arranged for card dialing. The top surface of the housing contains two storage pockets to accommodate two sets of P-24E238 Dialing Cards and a set of P-13E363 Alphabetical Index Cards which are furnished with the set. The molded plastic housing has a cavity frame type opening into which a removable plastic face plate is assembled. The face plate is retained by a latch. The dial letters and numbers appear on the under surface of the face plate in neutral gray while the rest of the surface is dark gray. Color must be specified as part of code number, otherwise green (-51) will be furnished. The dial requires an external 12 to 19 volt, 60 Hz ac power supply for the motor used to power the mechanical operation of the dials.

The power can be obtained from the number 4-6 tap on the KS-16886 Transformer.

Code No.	Comcode	Color
660AW1-3	100 702 042	Black
660AW1-50	101 366 136	Ivory
660AW1-51	100 702 059	Green
660AW1-53	101 366 144	Red
660AW1-56	100 702 067	Yellow
660AW1-58	100 702 075	White
660AW1-60	100 702 091	Light beige
660AW1-61	100 702 109	Light gray

**660AW1  
CARD DIALER**



A telephone set with overall dimensions of 9.650 inches wide by 9 inches deep by 4.481 inches high.

For use on individual lines, nonselective party lines, two-party selective flat rate, two-party selective message rate, and divided code ringing. Rearranging the mounting cord leads and set straps can provide tip party selective dial message rate, tip party flat rate automatic ticketing, tip party flat rate automatic message accounting, and zone registration services.

**662AW  
CARD DIALER**



A key type telephone set with overall dimensions of 9.650 inches wide by 9 inches deep by 4.293 inches high. A sheet of perforated blank designation strips is furnished with the set.

For use in the 1A1 and 1A2 Key Telephone Systems.

## SETS

## Telephone

## 662AW (Continued)

662AW2: Equipped with a 598A Key which has six pickup (P) buttons.

662AW3: Equipped with a 599B Key which has four pickup (P) buttons, one cutoff (C), and one hold (H) button.

Power can be obtained from the 2075A Transformer number 19 or 20 Power Unit or 18 volts tap on the 101G or 101J Power Plant.

Code No.	Comcode	Color
662AW2-3	100 702 760	Black
662AW2-51	100 702 778	Green
662AW2-56	100 702 786	Yellow
662AW2-58	100 702 794	White
662AW2-60	100 702 810	Light beige
662AW2-61	100 702 828	Light gray
662AW3-3	100 702 851	Black
662AW3-51	100 702 869	Green
662AW3-56	100 702 877	Yellow
662AW3-58	100 702 885	White
662AW3-60	100 702 901	Light beige
662AW3-61	100 702 919	Light gray

663AW1  
CARD DIALER

A telephone set with overall dimensions of 9.650 inches wide by 9 inches deep by 4.481 inches high.

The set is also arranged for use with a 52SW Head Telephone Set. It is provided with a turn and push button key for use with the head telephone set. When this button is turned to the HEADSET ON position, switching occurs which parallels the functions of the line switch. When the hand set is removed from the cradle, the head telephone set and the amplifier are connected into the circuit, and the hand set is disconnected. The ringer provides for a manual volume control in four steps without removing the housing. By making a minor adjustment the ringer can be silenced.

For use as a single line pickup in the 1A1 and 1A2 Key Telephone Systems.

Power requirements are the same as on 662AW type telephone sets.



## SETS

## Telephone

Code No.	Comcode	Color
663AW1-3	100 703 032	Black
663AW1-50	101 366 177	Ivory
663AW1-51	100 703 040	Green
663AW1-53	101 366 185	Red
663AW1-56	100 703 057	Yellow
663AW1-58	100 703 065	White
663AW1-60	100 703 081	Light beige
663AW1-61	100 703 099	Light gray

**664AW  
CARD DIALER**



hand set is disconnected. A sheet of P-44E129 Perforated Blank Designation Strips is furnished with the set. The ringer provides a manual control by means of the ringer arm projecting through the base. Power requirements are the same as on 662AW type telephone sets.

For use in the 1A1 and 1A2 Key Telephone Systems.

**664AW1:** Equipped with a 599A Key which has five pickup (P) buttons and one hold (H) button.

**664AW2:** Equipped with a 598A Key which has six pickup (P) buttons.

**664AW3:** Equipped with a 599B Key which has four pickup (P) buttons, one cutoff (C) button, and one hold (H) button.

Code No.	Comcode	Color
664AW1-3	100 703 396	Black
664AW1-50	101 366 193	Ivory
664AW1-51	101 703 404	Green
664AW1-53	101 366 201	Red
664AW1-56	100 703 412	Yellow
664AW1-58	100 703 420	White
664AW1-60	100 703 446	Light beige
664AW1-61	100 703 453	Light gray
664AW2-3	100 703 487	Black
664AW2-50	101 751 329	Ivory
664AW2-51	100 703 495	Green
664AW2-53	101 751 337	Red
664AW2-56	100 703 503	Yellow
664AW2-58	100 703 511	White
664AW2-60	100 703 537	Light beige
664AW2-61	100 703 545	Light gray
664AW3-3	100 703 578	Black
664AW3-50	101 751 345	Ivory
664AW3-51	100 703 586	Green
664AW3-53	101 751 352	Red
664AW3-56	100 703 594	Yellow
664AW3-58	100 703 602	White
664AW3-60	100 703 628	Light beige
664AW3-61	100 703 636	Light gray

A key type telephone set with overall dimensions of 9.560 inches wide by 9 inches deep by 4.381 inches high.

The set is also arranged for use with a 52SW Head Telephone Set. It is provided with a turn and push button key for use with a head telephone set. When this button is turned to the HEADSET ON position, switching occurs which parallels the functions of the line switch. When the hand set is removed from the cradle, the head telephone set and amplifier are connected into the circuit, and the



## SETS

## Telephone

## 680AW Type



General purpose key sets providing either two- or four-wire service. They are equipped with a line switch which provides six transfer contacts, a relay for switching between two- or four-wire circuits, an 8C Dial, a 4010B Network, an N1A Ringer, a G3AR type hand set, a D120C type mounting cord, and the apparatus shown in the following table.

Intended solely for specially engineered lines—Not for general telephone use.

Code No.	Comcode	Color	Left Key Position	Key Pos. 2	Key Pos. 3	Face Plate
680AW2-51	101 175 479	Green	599A	598A	598A	20EW1
680AW2-58	101 175 487	White				
680AW2-60	101 175 495	Light beige				
680AW2-61	101 175 503	Light gray				
680AW7-51	101 175 511	Green	599B	598A	598A	20EW1
680AW7-58	101 175 529	White				
680AW7-60	101 175 537	Light beige				
680AW7-61	101 175 545	Light gray				
680AW11-51	101 313 831	Green	599A	598A	(a) 667B	20GW1
680AW11-58	101 313 849	White				
680AW11-60	101 313 856	Light beige				
680AW11-61	101 313 864	Light gray				
680AW13-51	101 313 872	Green	599B	598A	(a) 667B	20GW1
680AW13-58	101 313 880	White				
680AW13-60	101 313 898	Light beige				
680AW13-61	101 313 906	Light gray				

(a) Speakerphone Transmitter

## SETS

## Telephone

## 681AW Type



General purpose key sets providing either two- or four-wire service. Equipped with a line switch which provides six transfer contacts, a relay for switching between two- and four-wire circuits, a head set amplifier and jacks, a flash button, a release button, an 8C Dial, a 4010B Network, an N1A Ringer, a G3AR type hand set, a D200F type mounting cord, and five plug-in positions for either keys or a speakerphone transmitter as indicated in the following table.

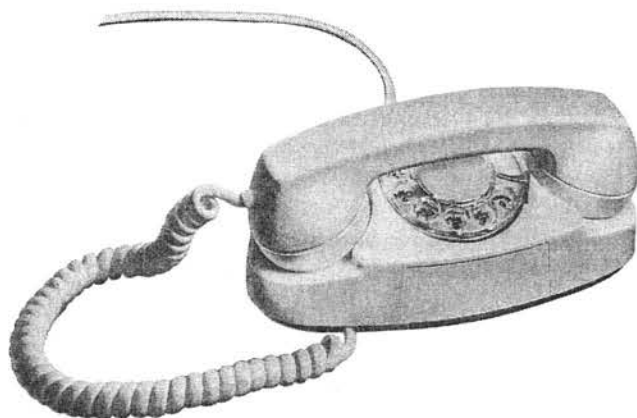
Intended solely for specially engineered lines—Not for general telephone use.

Code No.	Comcode	Color	Left Key Position	Key Pos. 2	Key Pos. 3	Key Pos. 4	Key Pos. 5	Face Plate
681AW3-51	101 175 628	Green	599A	598A	598A	598A	598A	21GW1
681AW3-58	101 178 630	White						
681AW3-60	101 178 648	Light beige						
681AW3-61	101 178 655	Light gray	599B	598A	598A	598A	598A	21GW1
681AW12-51	101 178 663	Green						
681AW12-58	101 178 671	White						
681AW12-60	101 178 689	Light beige	599A	598A	598A	598A	(a) 667B	21MW1
681AW12-61	101 178 697	Light gray						
681AW17-51	101 313 914	Green						
681AW17-58	101 313 922	White	599B	598A	598A	598A	(a) 667B	21MW1
681AW17-60	101 313 930	Light beige						
681AW17-61	101 313 948	Light gray						
681AW20-51	101 313 955	Green	599B	598A	598A	598A	(a) 667B	21MW1
681AW20-58	101 313 963	White						
681AW20-60	101 313 971	Light beige						
681AW20-61	101 313 989	Light gray						

(a) Speakerphone Transmitter

## SETS

## Telephone

702BW and 702DW  
PRINCESS

Code No.	Comcode	Color
702BW-3	100 704 212	Black
702BW-50	101 321 354	Ivory
702BW-51	100 704 220	Green
702BW-53	101 321 362	Red
702BW-56	100 704 238	Yellow
702BW-58	100 704 246	White
702BW-60	100 704 261	Light beige
702BW-61	100 704 279	Light gray
702DW-3	100 704 303	Black
702DW-50	101 321 396	Ivory
702DW-51	100 704 311	Green
702DW-53	101 321 404	Red
702DW-56	100 704 329	Yellow
702DW-58	100 704 337	White
702DW-60	100 704 352	Light beige
702DW-61	100 704 360	Light gray

These are common battery desk type dial telephone sets with overall dimensions of 8.444 inches long by 3.938 inches wide by 4.188 inches high.

**702BW:** This set is equipped with a lamp assembly for dial illumination. The lamp may also be used as a night light by operating a slide switch located on the rear of the set. A 6 to 8 volt ac or dc supply is required to operate the lamp. An ac supply may be obtained from a 2012A type or a KS-16184L1, L2, or L3 Transformer, none of which is furnished and must be ordered separately.

The ringer provides for manual volume control to loud, soft, and off by means of the ringer arm projecting through the base. Operation to the off position is prevented by a screw which is removable at the option of the installer.

Intended for individual lines, two-party selective flat rate, two-party selective message rate (tip and ring), divided code ringing, and nonselective party lines. Furnished wired for all of these services except tip party selective dial message rate and tip party flat rate automatic ticketing.

**702DW:** Same as 702BW Telephone Set except it is equipped with a lamp assembly (including a KS-16893L1 red neon glow lamp) to the left of the dial to provide a message waiting feature. Arranged to receive and hold a visual signal under control of an attendant at a PBX to indicate that an incoming call was not completed.

Intended for connection to a PBX or individual and two-party lines.

These sets are available in the colors shown in the table.

## SETS

## Telephone

**712BW  
PRINCESS**

A common battery desk type dial telephone set equipped with a lamp assembly for dial illumination. The lamp may also be operated as a night light. The lamp is removable to permit replacement. The ringer provides for volume control to loud, soft, and off by means of a ringer arm projecting through the base. The set has an exclusion feature which will disconnect an associated extension set manually. The set also has a turn button key for connection to either of two lines and a push button element for signaling.

With simple modifications at the time of installation, this set may be used for two-line pickup, hold on both lines with 1A1 Key Telephone System and 3B Speakerphone, two-line pickup with excludable extension on line 1, secretarial service with hold, door answering, and home interphone, and one-line pickup for cutoff extension station or extension line ringer.

This set is available in the colors shown in the table.

Code No.	Comcode	Color
712BW-3	100 704 584	Black
712BW-51	100 704 592	Green
712BW-56	100 704 600	Yellow
712BW-58	100 704 618	White
712BW-60	100 704 634	Light beige
712BW-61	100 704 642	Light gray

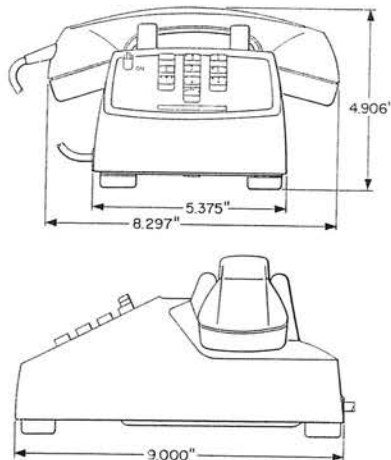




## SETS

## Telephone

1514BW-3



A black common battery desk type TOUCH-TONE telephone set. Equipped with a jack to provide for head telephone set or hand set operation. Equipped with a 253A TOUCH-TONE Dial, a G3AR-3 Hand Set, an N1A Ringer, a 642A Key, a D10P-3 Cord, a 241A Amplifier, a 425G Network, and a 100A Varistor. If Head Telephone Set is required, it must be ordered separately. A snap-on plastic face plate, arranged to accommodate a number card, is mounted on the top side of the housing.

The ringer provides for manual control to loud, soft, and off by means of a ringer arm projecting through the base. Move to the off position is prevented by a screw which is removable at the time of installation.

A key provides for switching between head telephone set and hand set operation and also provides a FLASH function for operator recall.

Used initially in 1A1 and 1A2 Key Telephone Systems.

Comcode: 101 231 298

2500DW



A common battery type telephone set with overall dimensions of 8.297 inches wide by 4.906 inches high by 9.000 inches deep. The face plate is finished on the underside in a color corresponding to the color of the telephone set and is retained by means of a latch.

The ringer provides for manual volume control in four steps without removing the housing and is so arranged that by removing the housing and making a minor adjustment, the ringer can be silenced.

Arranged for mounting, but not equipped, with a P-20F907 guard assembly which provides a polarity guard and a lightening surge protector for the polarity guard. Must be ordered separately when required.

For use on individual lines, two-party selective flat rate, two-party selective message rate, divided code ringing, nonselective party lines, four-party semiselective, regular PBX stations, and keyless PBX stations. By rearranging the ringer connections, tip party selective dial message rate, tip party flat rate automatic ticketing, tip party flat rate automatic message accounting, and zone registration may be furnished.

This set is available in the colors shown in the table.

Code No.	Comcode	Color
2500DW-3	101 366 466	Black
2500DW-51	101 366 474	Green
2500DW-58	101 366 482	White
2500DW-60	101 366 490	Light beige
2500DW-61	101 366 508	Light gray

Replaces 1500DW Telephone Set.

## SETS

## Telephone

2504BW  
TOUCH-TONE2564HLW  
TOUCH-TONE

A desk type, common battery, 12-button TOUCH-TONE dial telephone set equipped with a line switch which provides six transfer contacts and is arranged for two-wire service. The set is convertible to four-wire service at installation. Overall dimensions are approximately 8.297 inches wide by 4.906 inches high by 9.000 inches deep.

Consists essentially of a 35C3B TOUCH-TONE Dial, an N1A Ringer, a 425G Network, an exclusion switch assembly operated by lifting the left plunger, a card-operated line switch, a terminal strip assembly, a printed circuit polarity guard assembly, a metal base, a plastic housing assembly, a plastic snap-on face plate assembly in a coordinated color which mounts from the top side and is arranged to accommodate a number card, a G3Y-( ) Hand Set, and a D24E-( ) Mounting Cord. The set is arranged for mounting a KS-8109L1 Buzzer which is not furnished and if desired must be ordered separately.

Intended solely for specially engineered lines—Not for general telephone use.

Code No.	Comcode	Color
2504BW-3	101 321 610	Black
2504BW-51	101 321 628	Green
2504BW-53	101 321 636	Red
2504BW-56	101 321 644	Yellow
2504BW-58	101 321 651	White
2504BW-60	101 321 669	Light beige
2504BW-61	101 321 677	Light gray

Six-button desk type TOUCH-TONE key telephone sets with overall dimensions of 8.313 inches wide by 9.556 inches deep by 5.546 inches high.

Each has one hold (H) and five pickup (P) buttons. The spring combinations associated with the pickup (P) buttons may be converted for signaling. The pickup (P) buttons are of the illuminated type, i.e., when illuminated they serve as line busy and/or incoming call signals. A blocking ring is furnished for use in blocking an unused button. Equipped with 51A Lamps for illuminating the pickup (P) buttons (one lamp for each button). The hold (H) buttons are arranged for, but not equipped with, 51A Lamps. The face plate is finished on the underside in a color corresponding to the telephone set, with the exception of the clear spaces adjacent to each of the key buttons through which the button designations are viewed.

Each set contains a 636A Key, a 425K Network, an H1A Ringer, a 35A3A Dial, a G3AR Hand Set, and a D30D Mounting Cord. The volume of the ringer can be varied by means of a knurled cam projecting through the base. By removing the housing and making a minor adjustment, the ringer can be silenced. Arranged for mounting a KS-8109L1 Buzzer which is not furnished and, if desired, must be ordered separately.

Used in 1A1 and 1A2 Key Telephone Systems.  
Replace the 1564HLW Type Telephone Sets.



## SETS

## Telephone

Code No.	Comcode	Color
2564HLW-3	101 315 323	Black
2564HLW-50	101 315 331	Ivory
2564HLW-51	101 315 349	Green
2564HLW-53	101 315 356	Red
2564HLW-56	101 315 364	Yellow
2564HLW-58	101 315 372	White
2564HLW-60	101 315 398	Light beige

## 2568HUW



A desk type, common battery, TOUCH-TONE dial, six-button key telephone set arranged for two-wire service and equipped with a line switch which provides six transfer contacts. The set is convertible to four-wire service at installation. Overall dimensions are approximately 5.625 inches wide by 9.556 inches deep by 5.234 inches high.

The spring combinations associated with the six push buttons provide a hold and five line pickups with the last three pickups convertible for signaling. The pickup key buttons are illuminated and serve as line busy, held line and/or incoming call signals. The hold button is arranged for illumination but is not equipped with a 51A Lamp.

The set consists essentially of an N1A Ringer, a 636D Key, a 35C3A Dial, a 425G Network, a card operated type switch assembly having six transfer contacts, an exclusion switch assembly operated by lifting the left plunger, a printed wiring board assembly containing an MA4 Relay which performs the necessary switching between two- and four-wire configurations, a guard assembly which provides a polarity guard and a surge protector for the polarity guard, a metal base, a plastic housing assembly, a G3Y-( ) Hand Set, and a D50N-( ) Mounting Cord.

It is equipped with a plastic snap-on face plate in a coordinated color which mounts from the top side and is arranged to accommodate a number card and a designation strip for the key buttons.

The set is also arranged for mounting a KS-8109L2 Buzzer which is not furnished and if desired must be ordered separately. A blocking ring is furnished for use in blocking an unused key button.

Used in 1A1 and 1A2 Key Telephone Systems and 3B Speakerphone Systems.

Intended solely for specially engineered lines—Not for general telephone use.

Replaces the 2568HPW Telephone Set.

Code No.	Comcode	Color
2568HUW-3	101 266 591	Black
2568HUW-51	101 266 609	Green
2568HUW-53	101 266 617	Red
2568HUW-56	101 266 625	Yellow
2568HUW-58	101 266 633	White
2568HUW-60	101 266 708	Light beige
2568HUW-61	101 266 716	Light gray



## SETS

## Telephone

**2626AW1-3  
TOUCH-TONE**

A large capacity TOUCH-TONE type key telephone set arranged for use with four-wire switching systems. The overall dimensions are 12.500 inches wide by 8.250 inches deep by 4.226 inches high. This set is available in black (-3) only.

Equipped with a 220A1 Face Plate, a 22D3 Dial, a G3AR-3 Hand Set, a D120F-3 Cord, a 599A Key and two 598A Keys. Also equipped with an MA4 Relay which provides for switching between two- and four-wire circuits and an MB5 Relay which performs the same function as the common switch in the dial when any four procedure keys (top four buttons in position 3) are depressed.

The set also contains a KS-16390L4 20 uf Capacitor, a 4010B Network, an N1A Ringer, and a KS-13490L1 Resistor (1300 ohms). The ringer provides for manual control to loud, soft, and off by means of a ringer arm projecting through the base. The ringer may be used as a line ringer or a common audible signal. The set is also equipped with a KS-8109 Buzzer for use as an auxiliary audible signal.

Provided with a clear plastic face plate together with a silver color face mat for use under the face plate, and a snap-on bezel for retaining the face plate and mat, and three sheets of six perforated blank P44E129 designation strips.

Used in the number 307 Switching System.

Intended solely for specially engineered lines—Not for general telephone use.

Comcode: 100 717 024

**CARD DIALER**

These telephone sets are arranged for card dialing and equipped with a G3ARW Type Hand Set. The top surface of the housing contains two storage pockets to accommodate two sets of P-21F752 Dialing Cards, (20 cards per set), plus a set of P-13E363 alphabetical index cards which are furnished with each set. The molded plastic housing mounted on a gray metal base has a cavity frame type opening into which a removable plastic face plate is assembled, in a color corresponding to the color of the telephone set. The face plate is retained by means of a latch. A ringer arm projecting through the base provides manual control to loud, soft, and off. Subscriber operation to off position is prevented by a screw which is removable at the option of the installer. Dial permits manual dialing when the card is in the "stop" position. Color must be specified as part of code number, otherwise -51 (green) will be furnished. The dial requires an external 12 to 19 volt, 60 Hz ac power supply for the motor used to power the mechanical operation of the dials.

**2660AW Type  
CARD DIALER**

2660AW1: A twelve-button TOUCH-TONE type telephone set with overall dimensions of 9.650 inches wide by 9 inches deep by 4.381 inches high. Equipped with a D3BN Type Mounting Cord.

## SETS

## Telephone

For use on individual lines, two-party selective flat rate, two-party selective message rate (tip and ring), divided code ringing, non-selective party lines, four-party semi-selective, and regular PBX stations. May also be used in certain cases on common battery lines instead of local battery talking, common battery signaling telephone sets, and the associated battery.

**2660AW2:** Same as 2660AW1 except equipped with a D6AF Type Mounting Cord and an exclusion key.

**2660AW3:** Same as 2660AW1 except equipped with a D10R Type Mounting Cord and a 584A Key for two line service.

**2660AW4:** Same as 2660AW1 except equipped with a D10R Type Mounting Cord, an exclusion key, and a 584A Key for two line service.

Code No.	Comcode	Color
2660AW1-3	101 500 486	Black
2660AW1-50	101 500 494	Ivory
2660AW1-51	101 500 502	Green
2660AW1-53	101 500 510	Red
2660AW1-56	101 500 528	Yellow
2660AW1-58	101 500 536	White
2660AW1-60	101 500 551	Light beige
2660AW1-61	101 500 569	Light gray
2660AW2-3	101 544 351	Black
2660AW2-50	101 544 369	Ivory
2660AW2-51	101 544 377	Green
2660AW2-53	101 544 385	Red
2660AW2-56	101 544 393	Yellow
2660AW2-58	101 544 401	White
2660AW2-60	101 544 427	Light beige
2660AW2-61	101 544 435	Light gray
2660AW3-3	101 544 526	Black
2660AW3-50	101 544 534	Ivory
2660AW3-51	101 544 542	Green
2660AW3-53	101 544 559	Red
2660AW3-56	101 544 567	Yellow
2660AW3-58	101 544 575	White
2660AW3-60	101 544 591	Light beige
2660AW3-61	101 544 609	Light gray
2660AW4-3	101 546 430	Black
2660AW4-50	101 546 448	Ivory
2660AW4-51	101 546 455	Green
2660AW4-53	101 546 463	Red
2660AW4-56	101 546 471	Yellow
2660AW4-58	101 546 489	White
2660AW4-60	101 546 505	Light beige
2660AW4-61	101 546 513	Light gray

### 2662AW Type CARD DIALER



**2662AW1:** A twelve-button TOUCH-TONE type telephone set with overall dimensions of 9.650 inches wide by 9 inches deep by 4.381 inches high. Equipped with a 599A Key, a D50K Type Mounting Cord, and one sheet of six perforated blank designation strips.

For use in 1A1 and 1A2 Key Telephone Systems.

**2662AW2:** Same as 2662AW1 Telephone Set except equipped with a 598A Key.

**2662AW3:** Same as 2662AW1 Telephone Set except equipped with a 599B Key.

**2662AW4, AW5, & AW6:** Same as 2662AW1, AW2, & AW3, respectively, except provided with a P-24E456 exclusion key.

Code No.	Comcode	Color
2662AW1-3	101 500 593	Black
2662AW1-50	101 500 601	Ivory
2662AW1-51	101 500 619	Green
2662AW1-53	101 500 627	Red
2662AW1-56	101 500 635	Yellow
2662AW1-58	101 500 643	White
2662AW1-60	101 500 668	Light beige
2662AW1-61	101 500 676	Light gray



## SETS

## Telephone

## 2662AW Type (Continued)

Code No.	Comcode	Color
2662AW2-3	101 546 547	Black
2662AW2-50	101 546 554	Ivory
2662AW2-51	101 546 562	Green
2662AW2-53	101 546 570	Red
2662AW2-56	101 546 588	Yellow
2662AW1-58	101 546 596	White
2662AW2-60	101 546 612	Light beige
2662AW2-61	101 546 620	Light gray
2262AW3-3	101 546 653	Black
2662AW3-50	101 546 661	Ivory
2662AW3-51	101 546 679	Green
2662AW3-53	101 546 687	Red
2662AW3-56	101 546 695	Yellow
2662AW3-58	101 546 703	White
2662AW3-60	101 546 729	Light beige
2662AW3-61	101 546 737	Light gray
2662AW4-3	101 546 786	Black
2662AW4-50	101 546 794	Ivory
2662AW4-51	101 546 802	Green
2662AW4-53	101 546 810	Red
2662AW4-56	101 546 828	Yellow
2662AW4-58	101 546 836	White
2662AW4-60	101 546 851	Light beige
2662AW4-61	101 546 869	Light gray
2662AW5-3	101 546 919	Black
2662AW5-50	101 546 927	Ivory
2662AW5-51	101 546 935	Green
2662AW5-53	101 546 943	Red
2662AW5-56	101 546 950	Yellow
2662AW5-58	101 546 968	White
2662AW5-60	101 546 984	Light beige
2662AW5-61	101 546 992	Light gray
2662AW6-3	101 547 024	Black
2662AW6-50	101 548 832	Ivory
2662AW6-51	101 548 840	Green
2662AW6-53	101 548 857	Red
2662AW6-56	101 548 865	Yellow
2662AW6-58	101 548 873	White
2662AW6-60	101 548 899	Light beige
2662AW6-61	101 548 907	Light gray

2663AW1  
CARD DIALER

A twelve-button TOUCH-TONE telephone set with overall dimensions of 9.650 inches wide by 9 inches deep by 4.381 inches high. Equipped with a D6AF Type Mounting Cord.

Provided with a combined turn and pushbutton key for use with a head telephone set. By turning this button to the "HEADSET ON" position, switching occurs which parallels the functions of the line switch when the hand set is removed from the cradle, the head telephone set and amplifier are connected into the circuit, and the hand set is disabled. By depressing the turn-button, the PBX operator can be signaled when using a head telephone set.

For use as station apparatus in the 1A1, 1A2, and 6A Key Telephone Systems.

Code No.	Comcode	Color
2663AW1-3	101 500 700	Black
2663AW1-50	101 500 718	Ivory
2663AW1-51	101 500 726	Green
2663AW1-53	101 500 734	Red
2663AW1-56	101 500 742	Yellow
2663AW1-58	101 500 759	White
2663AW1-60	101 500 775	Light beige
2663AW1-61	101 500 783	Light gray

## SETS

## Telephone

2664AW Type  
CARD DIALER

Code No.	Comcode	Color
2664AW1-3	101 500 817	Black
2664AW1-50	101 500 825	Ivory
2664AW1-51	101 500 833	Green
2664AW1-53	101 500 841	Red
2664AW1-56	101 500 858	Yellow
2664AW1-58	101 500 866	White
2664AW1-60	101 500 882	Light beige
2664AW1-61	101 500 890	Light gray
2664AW2-3	101 751 360	Black
2664AW2-50	101 751 378	Ivory
2664AW2-51	101 751 386	Green
2664AW2-53	101 751 394	Red
2664AW2-56	101 751 402	Yellow
2664AW2-58	101 751 410	White
2664AW2-60	101 751 428	Light beige
2664AW2-61	101 751 436	Light gray
2664AW3-3	101 751 444	Black
2664AW3-50	101 751 451	Ivory
2664AW3-51	101 751 469	Green
2664AW3-53	101 751 477	Red
2664AW3-56	101 751 485	Yellow
2664AW3-58	101 751 493	White
2664AW3-60	101 751 501	Light beige
2664AW3-61	101 751 519	Light gray

2664AW1: A twelve-button TOUCH-TONE type telephone set with overall dimensions of 9.650 inches wide by 9 inches deep by 4.381 inches high. Equipped with a 599A Key, a D50K Type Mounting Cord, and one sheet of six perforated blank designation strips.

Provided with a combined turn and pushbutton key for use with a head telephone set. By turning this button to the "HEADSET ON" position, switching occurs which parallels the functions of the line switch when the hand set is removed from the cradle, the head telephone set and amplifier are connected into the circuit, and the hand set is disabled. By depressing the turn-button, the PBX operator can be signaled when using a head telephone set.

For use in the 1A1 and 1A2 Key Telephone Systems.

2664AW2: Same as 2664AW1 Telephone Set except equipped with a 598A Key.

2664AW3: Same as 2664AW1 Telephone Set except equipped with a 599B Key.



## SETS

## Telephone

## 2684AW Type



Two blocking rings are furnished for use in blocking unused buttons. Provided with a number 220 type clear plastic face plate together with mats of coordinated colors, plus silver and gold, for use under the face plates to provide a choice of color contrast, two piece bezel for retaining the face plate, a mat, one sheet of three perforated blank designation strips (P44E130) when indicated in table, and one sheet of six perforated blank designation strips (P44E129). Also provided with a 35C3B TOUCH-TONE Dial, a 4010B Network, two- and four-wire relay, a six transfer switch hook, an N1A Ringer, a G3Y-( ) type hand set, a D120C-( ) type mounting cord, and the apparatus shown in the table. Volume of the ringer may be varied in two steps. By removing the housing and making a minor adjustment, the ringer can be silenced.

Intended solely for specially engineered lines—Not for general telephone use.

Multiple row key combined telephone set with 18 line capacity TOUCH-TONE Dial. Overall dimensions are 12.500 inches wide by 8.250 inches deep by 4.226 inches high.

Code No.	Comcode	Color	Key Pos. 1	Key Pos. 2	Key Pos.3
2684AW1-51	101 346 963	Green	599A	598A	(a)
2684AW1-58	101 346 997	White			
2684AW1-60	101 347 011	Light beige			
2684AW1-61	101 347 029	Light gray			
2684AW2-51	101 347 060	Green	599A	598A	598A
2684AW2-58	101 347 094	White			
2684AW2-60	101 347 110	Light beige			
2684AW2-61	101 347 128	Light gray			
(b) 2684AW4-51	101 347 169	Green	599A	598A	617A
2684AW4-58	101 347 193	White			
2684AW4-60	101 347 219	Light beige			
2684AW4-61	101 347 227	Light gray			
2684AW6-51	101 347 268	Green	599B	598A	(a)
2684AW6-58	101 347 292	White			
2684AW6-60	101 347 318	Light beige			
2684AW6-61	101 347 326	Light gray			
2684AW7-51	101 347 367	Green	599B	598A	598A
2684AW7-58	101 347 391	White			
2684AW7-60	101 347 417	Light beige			
2684AW7-61	101 347 425	Light gray			
2684AW9-51	101 347 466	Green	598A	598A	(a)
2684AW9-58	101 347 490	White			
2684AW9-60	101 347 516	Light beige			
2684AW9-61	101 347 524	Light gray			
2684AW10-51	101 347 565	Green	598A	598A	598A
2684AW10-58	101 347 599	White			
2684AW10-60	101 347 615	Light beige			
2684AW10-61	101 347 623	Light gray			

## SETS

## Telephone

Code No.	Comcode	Color	Key Pos.1	Key Pos. 2	Key Pos. 3
2684AW11-51	101 347 664	Green	599A	598A	(c)
2684AW11-58	101 347 698	White			
2684AW11-60	101 347 714	Light beige			
2684AW11-61	101 347 722	Light gray	599A	617A	(c)
2684AW12-51	101 347 763	Green			
2684AW12-58	101 347 797	White			
2684AW12-60	101 347 813	Light beige	599B	598A	(c)
2684AW12-61	101 347 821	Light gray			
2684AW13-51	101 347 862	Green			
2684AW13-58	101 347 896	White	599A	598A	(d)
2684AW13-60	101 347 912	Light beige			
2684AW13-61	101 347 920	Light gray			
2684AW14-51	101 347 961	Green	599B	598A	(d)
2684AW14-58	101 347 995	White			
2684AW14-60	101 348 019	Light beige			
2684AW14-61	101 348 027	Light gray	599B	598A	(d)
2684AW15-51	101 751 527	Green			
2684AW15-58	101 751 535	White			
2684AW15-60	101 751 543	Light beige	599B	598A	(d)
2684AW15-61	101 751 550	Light gray			

- (a) 105B Apparatus Blank  
 (b) Provided with a P44E130 Designation Strip  
 (c) 667B Transmitter  
 (d) 59A Lamp Socket

## 2685AW Type



Two blocking rings are furnished for use in blocking unused buttons. Provided with a number 220 type clear plastic face plate together with mats of coordinated colors, plus silver and gold, for use under the face plate to provide a choice of color contrast, a snap-on bezel for retaining the face plate and mat, one sheet of three perforated blank designation strips (P-44E130) when indicated in table, and one sheet of six perforated blank designation strips (P-44E129). Also provided with a 35C3B TOUCH-TONE Dial, a 4010B Network, two- and four-wire relay, a six-transfer switch hook, an N1A Ringer with manual volume control in two steps—a third step silences the ringer, a G3Y-( ) type hand set, a D200F-( ) type mounting cord, and the apparatus shown in the table.

Intended solely for specially engineered lines—Not for general telephone use.

Multiple row key combined telephone set with 30-line capacity TOUCH-TONE Dial. Overall dimensions are 15.125 inches wide by 8.250 inches deep by 4.226 inches high.

## SETS

## Telephone

## 2685AW Type (Continued)

Code No.	Comcode	Color	Key Pos. 1	Key Pos. 2	Key Pos. 3	Key Pos. 4	Key Pos. 5
2685AW1-51	101 348 167	Green	599A	598A	598A	(a)	(a)
2685AW1-58	101 348 191	White					
2685AW1-60	101 348 217	Light beige					
2685AW1-61	101 348 225	Light gray	599A	598A	598A	598A	(a)
2685AW2-51	101 348 266	Green					
2685AW2-58	101 348 290	White					
2685AW2-60	101 348 316	Light beige	599A	598A	598A	598A	(a)
2685AW2-61	101 348 324	Light gray					
2685AW3-51	101 348 365	Green					
2685AW3-58	101 348 399	White	599A	598A	598A	598A	598A
2685AW3-60	101 348 415	Light beige					
2685AW3-61	101 348 423	Light gray					
2685AW4-51	101 348 464	Green	599A	598A	598A	598A	617A
2685AW4-58	101 348 498	White					
2685AW4-60	101 348 514	Light beige					
2685AW4-61	101 348 522	Light gray	599A	598A	598A	617C	(c)
(b) 2685AW5-51	101 348 563	Green					
2685AW5-58	101 348 597	White					
2685AW5-60	101 348 613	Light beige	599A	598A	598A	(a)	(c)
2685AW5-61	101 348 621	Light gray					
2685AW9-51	101 348 662	Green					
2685AW9-58	101 348 696	White	599A	598A	598A	(a)	(c)
2685AW9-60	101 348 712	Light beige					
2685AW9-61	101 348 720	Light gray					
2685AW10-51	101 348 761	Green	599B	598A	598A	(a)	(a)
2685AW10-58	101 348 795	White					
2685AW10-60	101 348 811	Light beige					
2685AW10-61	101 348 829	Light gray	599B	598A	598A	598A	(a)
2685AW11-51	101 348 860	Green					
2685AW11-58	101 348 894	White					
2685AW11-60	101 348 910	Light beige	599B	598A	598A	598A	598A
2685AW11-61	101 348 928	Light gray					
2685AW12-51	101 348 969	Green					
2685AW12-58	101 348 993	White	599B	598A	598A	598A	598A
2685AW12-60	101 349 017	Light beige					
2685AW12-61	101 349 025	Light gray					
2685AW13-51	101 349 066	Green	598A	598A	598A	(a)	(a)
2685AW13-58	101 349 090	White					
2685AW13-60	101 349 116	Light beige					
2685AW13-61	101 349 124	Light gray	598A	598A	598A	598A	(a)
2685AW14-51	101 349 165	Green					
2685AW14-58	101 349 181	White					
2685AW14-60	101 349 215	Light beige	598A	598A	598A	598A	(a)
2685AW14-61	101 349 223	Light gray					



## SETS

## Telephone

Code No.	Comcode	Color	Key Pos. 1	Key Pos. 2	Key Pos. 3	Key Pos. 4	Key Pos. 5
2685AW15-51	101 349 264	Green	598A	598A	598A	598A	598A
2685AW15-58	101 349 298	White					
2685AW15-60	101 349 314	Light beige					
2685AW15-61	101 349 322	Light gray	599A	598A	598A	(a)	(d)
2685AW16-51	101 349 363	Green					
2685AW16-58	101 349 397	White					
2685AW16-60	101 349 413	Light beige	599A	598A	598A	598A	(d)
2685AW16-61	101 349 421	Light gray					
2685AW17-51	101 349 462	Green					
2685AW17-58	101 349 496	White	599A	598A	598A	598A	(d)
2685AW17-60	101 349 512	Light beige					
2685AW17-61	101 349 520	Light gray					
2685AW18-51	101 349 561	Green	599A	598A	598A	617A	(d)
2685AW18-58	101 349 595	White					
2685AW18-60	101 349 611	Light beige					
2685AW18-61	101 349 629	Light gray	599A	598A	598A	598A	(c)
2685AW19-51	101 349 660	Green					
2685AW19-58	101 349 694	White					
2685AW19-60	101 349 710	Light beige	599A	598A	598A	598A	(c)
2685AW19-61	101 349 728	Light gray					

(a) 105 Apparatus Blank

(b) Provided with a P-44E130 Designation Strip

(c) 598A Lamp Socket

(d) 667B Transmitter

## 2714AW Type



Common battery, desk-type PRINCESS, TOUCH-TONE telephone sets. Arranged for two lines.

Equipped with a 35E4A Dial, a G3YW Hand Set, a D14L Cord, a KS-19387L1 Lamp and a KS-19240L2 Lamp Socket, a 638B Key, a 4010D Network, a polarity guard

and surge protector, and other component apparatus. The lamp is used for dial illumination and may also be operated as a night light.

Approximate overall dimensions are 8.44 inches long by 3.82 inches wide by 4.188 inches high. Available in the following colors:

Intended solely for two-line use in 1A2 Key Telephone Systems and 3B Speakerphone Systems which have been specially engineered. Not for general telephone use.

Code No.	Comcode	Color
2714AW-3	101 351 286	Black
2714AW-51	101 390 698	Green
2714AW-53	101 390 706	Red
2714AW-58	101 390 714	White
2714AW-60	101 390 722	Light beige
2714AW-61	101 390 730	Light gray





## SETS

## Telephone

**3504BW  
TOUCH-TONE**



**3568HHW and 3568HTW  
TOUCH-TONE**



A common battery, desk type, telephone set arranged for two- or four-wire service. The sets are factory wired for four-wire service. Overall dimensions are 8.312 inches wide by 9 inches deep by 4.906 inches high.

Each set consists of a 66A3A Dial, an N1A Ringer, a 425G Network, a printed circuit board assembly containing a 460A Diode (used as a polarity guard), and a 425D Diode (used as a surge protector), an exclusion switch assembly, operated by lifting the left plunger, a card operated type line switch, two terminal strip assemblies, a metal base, a plastic housing assembly, a plastic snap-on face plate which mounts from the top side and is arranged to accommodate a number card, a G3AR Hand Set, and a D24E Cord.

Each set is arranged to mount but not equipped with a KS-8109L1 Buzzer. Buzzer must be ordered separately if required.

Used with the 758C PBX.

Intended solely for specially engineered lines—Not for general telephone use.

Code No.	Comcode	Color
3504BW-3	101 171 411	Black
3504BW-51	101 171 429	Green
3504BW-53	101 173 235	Red
3504BW-56	101 173 243	Yellow
3504BW-58	101 173 250	White
3504BW-60	101 173 276	Light beige
3504BW-61	101 173 284	Light gray

Common battery, desk type, six-button key telephone sets arranged for two- or four-wire service. Overall dimensions are 8.312 inches wide by 9.556 inches deep by 4.906 inches high. The spring combinations associated with the six push buttons provide a hold (H) and five line pickups (P) with all pickups convertible for signaling. The pickup (P) key buttons are illuminated and serve as line busy, hold line and/or incoming call signals. The hold (H) button is also arranged for illumination. The key is arranged to permit the interchangeability of any pickup line to any pickup position.

Each set consists of a 66A3A Dial, a 635A2 Key, an N1A Ringer, a 425E Network, a printed circuit board assembly, containing a 460A Diode (used as polarity guard), a 425D Diode (used as a surge protector), and an MA4 Relay which performs the necessary switching between two-wire and four-wire configurations, an exclusion switch assembly operated by lifting the left plunger, a card operated type line switch, two terminal strip assemblies, a metal base, a plastic housing assembly, a plastic snap-on face plate which mounts from the top side and is arranged to accommodate a number card, a G3AR Hand Set, and a D50W Cord. Each set is arranged for but not equipped with a KS-8109L1 Buzzer, which must be ordered separately if required. The 3568HTW and 3568HHW are the same except the 3568HHW contains a 66A4B Dial (illuminated) instead of a 66A3A Dial (unilluminated).

Intended solely for specially engineered lines—Not for general telephone use.

## SETS

## Telephone

## 3568HHW and HTW (Continued)

Code No.	Comcode	Color
3568HHW-3	100 981 521	Black
3568HHW-51	100 981 539	Green
3568HHW-53	100 981 547	Red
3568HHW-56	100 981 554	Yellow
3568HHW-58	100 981 562	White
3568HHW-60	100 981 588	Light beige
3568HHW-61	100 981 596	Light gray
3568HTW-3	100 981 620	Black
3568HTW-51	100 981 638	Green
3568HTW-53	100 981 646	Red
3568HTW-56	100 981 653	Yellow
3568HTW-58	100 981 661	White
3568HTW-60	100 981 687	Light beige
3568HTW-61	100 981 695	Light gray

3640AW Type  
TOUCH-TONE

A desk type telephone set in a plastic housing with a sloping top surface having overall dimensions of 12.5 inches wide by 8.250 inches deep by 4.226 inches high. Has a clear, antiglare plastic face plate (P-29E340) and a coordinated colored mat which are assembled in a stainless steel bezel which snaps in place and can be readily removed from the housing for maintenance.

The set is also equipped with a 66A3A or 66A4B Dial, a G3AR Hand Set, a D150 Cord, a 4010B Network, an N1A Ringer, exclusion switch assembly, line switch assembly, and a printed circuit board containing an MA4 Relay (for connecting to four-wire circuits) with polarity guard and surge protector.

The set is available in key configurations shown in table following CALL DIRECTOR telephone sets.

The sets coded with the suffix AW1A, AW2A, AW11A are equipped with a 66A3A Dial. Sets that have the suffix AW1B, AW2B, AW11B are equipped with 66A4B Illuminated Dials. The numbers 1, 2, and 11 indicate the key code configuration. The exclusion switch is located near the upper left hand corner of the face plate. The set is arranged for but not equipped with a KS-8109L2 Buzzer. The buzzer must be ordered separately if required.

The basic telephone set code, the key configuration code, the color code, and dial code must be specified when ordering, i.e., 3640AW1B-56.

Used with AUTOVON key systems.

Intended solely for specially engineered lines—Not for general telephone use.

Code No.	Comcode	Color
3640AW1A-3	101 173 680	Black
3640AW1A-51	101 173 706	Green
3640AW1A-53	101 173 714	Red
3640AW1A-56	101 173 722	Yellow
3640AW1A-58	101 173 730	White
3640AW1A-60	101 173 755	Light beige
3640AW1A-61	101 173 763	Light gray
3640AW1B-3	101 173 805	Black
3640AW1B-51	101 173 813	Green
3640AW1B-53	101 173 821	Red
3640AW1B-56	101 175 636	Yellow
3640AW1B-58	101 175 644	White
3640AW1B-60	101 175 669	Light beige
3640AW2A-3	101 175 701	Black
3640AW2A-51	101 175 719	Green
3640AW2A-53	101 175 727	Red
3640AW2A-56	101 175 735	Yellow
3640AW2A-58	101 175 743	White
3640AW2A-60	101 175 768	Light beige
3640AW2A-61	101 175 776	Light gray
3640AW2B-3	101 175 800	Black
3640AW2B-51	101 175 818	Green
3640AW2B-53	101 175 826	Red
3640AW2B-56	101 175 834	Yellow
3640AW2B-58	101 175 842	White
3640AW2B-60	101 175 867	Light beige
3640AW2B-61	101 175 875	Light gray
3640AW11A-3	101 175 909	Black
3640AW11A-51	101 175 917	Green
3640AW11A-53	101 175 925	Red
3640AW11A-56	101 175 933	Yellow
3640AW11A-58	101 175 941	White
3640AW11A-60	101 175 966	Light beige
3640AW11A-61	101 175 974	Light gray



## SETS

## Telephone

Code No.	Comcode	Color	Code No.	Comcode	Color
3640AW11B-3	101 176 006	Black	3641AW1B-3	101 183 804	Black
3640AW11B-51	101 176 014	Green	3641AW1B-51	101 183 812	Green
3640AW11B-53	101 176 022	Red	3641AW1B-53	101 183 820	Red
3640AW11B-56	101 176 030	Yellow	3641AW1B-56	101 183 838	Yellow
3640AW11B-58	101 176 048	White	3641AW1B-58	101 183 846	White
3640AW11B-60	101 176 063	Light beige	3641AW1B-60	101 183 861	Light beige
3640AW11B-61	101 176 071	Light gray	3641AW1B-61	101 183 879	Light gray

### 3641AW Type TOUCH-TONE

A desk type telephone set in a plastic housing with a sloping top surface having overall dimensions of 15.125 inches wide by 8.250 inches deep by 4.226 inches high. Similar to 3640AW type except 3641AW type has five key positions. Has a clear, antiglare plastic face plate (P29E342) and a coordinated colored mat which are assembled in a stainless steel bezel which snaps in place and can be readily removed from the housing for maintenance.

The set is also equipped with a 66A3A or 66A3B Dial, a G3AR Hand Set, a D250 Cord, a 4010B Network, an N1A Ringer, exclusion switch assembly, line switch assembly, and a printed circuit board containing an MA4 Relay (for connecting to four-wire circuits) with polarity guard and surge protector.

The set is available in key configurations shown in table following the CALL DIRECTOR telephone sets.

The sets coded with the suffix AW1A, AW2A, AW3A, AW16A, and AW17A are equipped with a 66A3A Dial. Sets that have the suffix AW1B, AW2B, AW3B, AW16B, and AW17B are equipped with 66A4B Illuminated Dials. The numbers 1, 2, 3, 16, and 17 indicate the key code configuration. The exclusion switch is located near the upper left hand corner of the face plate. The set is arranged for but not equipped with a KS-8109L2 Buzzer. The buzzer must be ordered separately if required.

The basic telephone set code, the key configuration code, the color code, and the dial code must be specified when ordering, i.e., 3641AW1B-56.

Intended solely for specially engineered lines—Not for general telephone use.

Code No.	Comcode	Color	Code No.	Comcode	Color
3641AW1A-3	101 183 705	Black	3641AW16A-3	101 185 601	Black
3641AW1A-51	101 183 713	Green	3641AW16A-51	101 185 619	Green
3641AW1A-53	101 183 721	Red	3641AW16A-53	101 185 627	Red
3641AW1A-56	101 183 739	Yellow	3641AW16A-56	101 185 635	Yellow
3641AW1A-58	101 183 747	White	3641AW16A-58	101 185 643	White
3641AW1A-60	101 183 762	Light beige	3641AW16A-60	101 185 668	Light beige
3641AW1A-61	101 183 770	Light gray	3641AW16A-61	101 185 676	Light gray
			3641AW16B-3	101 185 700	Black
			3641AW16B-51	101 185 718	Green
			3641AW16B-53	101 185 726	Red
			3641AW16B-56	101 185 734	Yellow
			3641AW16B-58	101 185 742	White



## SETS

## Telephone

## 3641AW Type (Continued)

Code No.	Comcode	Color
3641AW16B-60	101 185 767	Light beige
3641AW16B-61	101 185 775	Light gray
3641AW17A-3	101 185 809	Black
3641AW17A-51	101 185 817	Green
3641AW17A-53	101 185 825	Red
3641AW17A-56	101 189 439	Yellow
3641AW17A-58	101 189 447	White
3641AW17A-60	101 189 462	Light beige
3641AW17A-61	101 189 470	Light gray
3641AW17B-3	101 189 504	Black
3641AW17B-51	101 189 512	Green
3641AW17B-53	101 189 520	Red
3641AW17B-56	101 189 538	Yellow
3641AW17B-58	101 189 546	White
3641AW17B-60	101 189 561	Light beige
3641AW17B-61	101 189 579	Light gray

3666AW1A and 3666AW1B Types  
TOUCH-TONE AND CARD DIALER

A six-button TOUCH-TONE desk type telephone set equipped with a 67A type or a 67B type card dialer. Overall dimensions are 10.010 inches wide by 9.000 inches deep by 4.381 inches high.

The sets are equipped with a 635A2 Key which has one hold (H) button and six illuminated pickup (P) buttons. It is also equipped with an M1A Ringer, an MA4 Relay, a G3AR Hand Set, and a D50W Cord, an exclusion switch located in the upper left corner of the face plate, a line

switch which provides the switching required by high security circuits, a 460A Diode used as a polarity guard, and a 425D Diode which is used to provide surge protection. The sets are provided with two card sets, P29E718 (20 cards) and P29E719 (nine index cards). The M1A Ringer volume is adjustable from loud to soft and may be silenced by removing the housing and making a minor adjustment. The MA4 Relay provides two- or four-wire service. The sets are arranged for but not equipped with a KS-8109L2 Buzzer which must be ordered separately if required.

The 3666AW1A and 3666AW1B are the same except that the 3666AW1A is equipped with a 67A type dial and the 3666AW1B is equipped with a 67B illuminated type dial.

Used in AUTOVON.

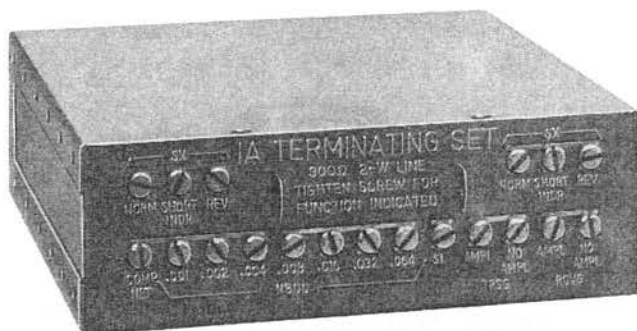
Intended solely for specially engineered lines—Not for general telephone use.

Code No.	Comcode	Color
3666AW1A-3	101 093 904	Black
3666AW1A-50	101 390 748	Ivory
3666AW1A-51	101 093 912	Green
3666AW1A-53	101 093 920	Red
3666AW1A-56	101 093 938	Yellow
3666AW1A-58	101 093 946	White
3666AW1A-60	101 093 961	Light beige
3666AW1A-61	101 093 979	Light gray
3666AW1B-3	101 189 629	Black
3666AW1B-50	101 390 763	Ivory
3666AW1B-51	101 189 637	Green
3666AW1B-53	101 189 645	Red
3666AW1B-56	101 189 652	Yellow
3666AW1B-58	101 189 660	White
3666AW1B-60	101 189 686	Light beige
3666AW1B-61	101 189 694	Light gray

## SETS

## Terminating

## 1 Type



Code No.	Comcode
1A	100 718 592
1B	100 718 600
1C	100 718 618
1D	100 718 626
1G	100 718 634
1H	100 718 642
1J	100 718 659

Provides four-wire and two-wire termination of a trunk.

Each consists of component apparatus mounted on a printed wiring board and assembled into an aluminum can having overall dimensions of 5.250 inches wide by 1.750 inches high by 7.000 inches deep. Each set is equipped with a 20-pin, 503A Connector.

Each is composed of a two-transformer hybrid, compromise networks with adjustable building-out capacitor, and screw-type switches on the end opposite the plug end for selecting various circuit options.

Nominal impedance of the four-wire branches is 600 ohms.

Arranged to be removed from a mounting by means of a 602D Tool.

**1A and 1B:** Each has an inductor in the "simplex" leads. The 1A set is for use with nominal 900 ohm two-wire lines and the 1B set is for use with nominal 600 ohm two-wire lines.

**1C, 1D, and 1G:** Intended for general use in nonrepeatered circuits. Each contains two sockets to accommodate number 89 type resistors for level adjustment on the transmitting and receiving branches of four-wire lines. The 1C set is for use with nominal 900 ohm two-wire lines. The 1D set is used with nominal 600 ohm two-wire lines. The 1G set is for nominal 900 ohm two-wire lines and provides an optional 1 mf or 4 mf capacitor across the A and B leads for duplex signaling applications.

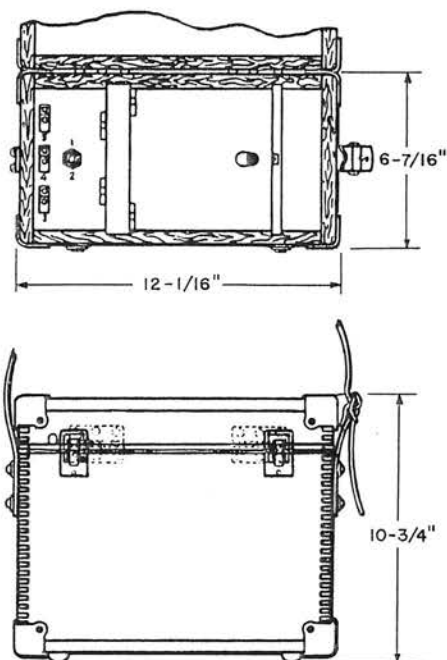
**1H:** Similar to the 1A set except it provides a 11,600 ohm input impedance instead of 900 ohms and includes a fixed balancing network for controlling the transhybrid loss.

**1J:** Similar to the 1A set except for use in bridging on 600 ohm four-wire lines and provides a 450 ohm input impedance on the two-wire side.

## SETS

## Test

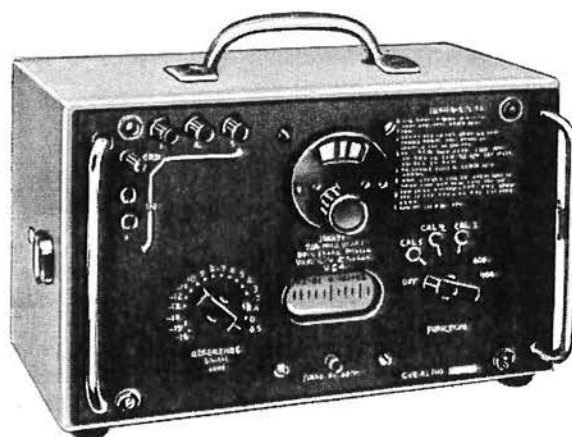
20C



A portable test set consisting of a vibrator-type tone source, a motor driven interrupter, and associated apparatus mounted in a wood case. Continuous or intermittent tone can be selected by means of a switch. The set is powered by four ASA number 6 dry cell batteries which are not furnished.

The set provides a source of audio frequency tracing current for use in following the path of buried cable or in running down faults in cable where a heavy tracing current is required.

Comcode: 100 718 667

22A Milliwatt Reference Meter  
(J94022A)

A portable transistorized battery operated test set enclosed in a metal case. The dimensions are 9-1/2 inches high by 13-3/4 inches long by 10 inches wide. Weight is 15 pounds (including batteries).

A number of patching cords, plugs, and tools suitable for making connections to different types of switchboard equipment are available. The type of switchboard must be specified. These accessories are not furnished as part of test set and must be ordered separately.

Cords required for connection must be ordered separately. The output is equipped with two jacks so that cords with either 309 or 310 type plugs may be used.

The set is powered by three self-contained batteries, one NEDA 207 type 45-volt and two D-size 1.5-volt which are not furnished.

Used to calibrate the milliwatt 1000 cycle outlets and related losses in the telephone office within  $\pm 0.3$  db at 1000 cps. The meter is shielded so as not to be affected by electrical and magnetic fields. The operating ranges are -16 to 0 dbm in 1 db steps and +0.5, +4.0, and +7.0 dbm. Output impedance is 600 to 900 ohms.

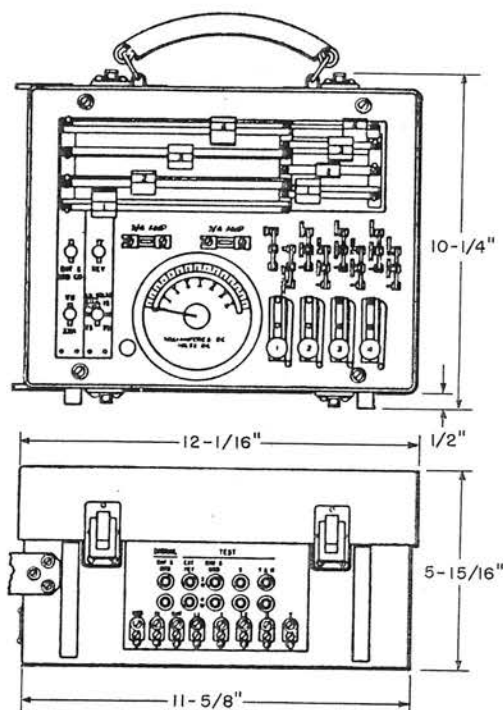
Comcode: 600 017 800



## SETS

## Test

## 35F Test Set (J94714B-1)



A dc regulating and measuring device intended for use in testing and adjusting relays and other apparatus for which current flow and voltage requirements are specified.

Equipped with meter, variable resistances, and associated control keys by means of which it is possible to set up four different and independent testing conditions at one time for checking current flow or voltage drop requirements specified for relays or other apparatus. The set is wired for central offices having positive pole of the central office battery grounded.

Current range of meter provides for full-scale deflections of 3, 15, 75, and 750 milliamperes and voltage range provides for full scale deflections of 15, 75, and 300 volts. These ranges are under control of two nonlocking lever type keys.

The 35F Test Set may be ordered for various patching applications. Following is a description of each.

Number	Description
35F (J94714B-1 List 1 and C)	Basic test set.
35F (J94714B-1 List 2)	Patching cord for use with 92 type jack.
35F (J94714B-1 List 3)	Patching cord for use with 49 type jack.

## 35F Test Set (J94714B-1) (Continued)

Number	Description
35F (J94714B-1 List 4)	Patching cords for use in panel and crossbar offices.
35F (J94714B-1 List 5)	Patching cords for use in step-by-step offices.
35F (J94714B-1 List 6)	A combination of list 2, 4, and 5.
35F (J94714B-1 List 7)	A combination of list 3, 4, and 5.
35F (J94714B-1 List 8)	Patching cords for use in testing 223 type switches in TD-2 Microwave Systems.

The desired list number as described above must be specified in the order.

In addition the operating voltage must be specified by requesting List A for 2S Lamp (24 volts) and List B for 2Y (48 volts).

Comcode: 100 718 733

100 718 741 E/W 24 volt lamp

100 718 758 E/W 48 volt lamp

### 36A Video Visual Gain and Delay Distortion Measuring Set (J64036)

The 36A transmitting set consists of solid-state circuits divided into three modular units, two solid-state regulated power supplies, and two control knobs. The 36A receiving set consists of solid-state circuits divided into four modular units, an attenuator, level meter, and two solid-state regulated power supplies, plus some control knobs.

A J64036AA video visual gain and delay distortion measuring set transmitter, used in conjunction with one or more J64036AB video visual gain and delay distortion measuring set receivers, provides a convenient means for the precise measurement of gain and delay distortion over video transmission facilities throughout the 12- to 330-kHz low frequency range. Line voltage is 105 to 125 volts. The sensitivity is 0.03 db for gain and 0.02 usec for delay.

The sets are available in combination cases only; they can be used either as portables or as 19-inch rack mounted units. Angle mounting brackets are furnished with the sets and storage for the brackets is provided in the case covers.

Comcode: 100 718 766

Unit	Height (Inches)	Width (Inches)	Depth (Inches)	Weight (Pounds)
J64036AA-1 L1	6-3/4	16-3/4	13	22
J64036AB-1 L1	8-3/4	16-3/4	14	26



## SETS

## Test

### 36B Video Visual Gain and Delay Distortion Measuring Set (J64036)

The 36B set is designed for continuous measurement and display of the gain and delay characteristics of the high video range of 200 kHz to 10 MHz. The 36B receiving set in combination with the 36B transmitting set provides a comprehensive system for analysis of video transmission. The set displays the gain and delay versus frequency characteristics on an oscilloscope (not included). The sensitivity of the instrument is 0.03 db for gain and 10 nanoseconds for delay. The high frequency sweep limit is adjustable from 3 MHz to 10 MHz. A SYNC pulse, running at about horizontal rate, is included so that measurements may be made on video circuits with the clampers operating.

Separate transmitting (J64036BA-1 L1) and receiving (J64036BB-1 L1) sets are provided for making either loop or straight-away measurements. Both sets are equipped to operate in either 75 ohm unbalanced or 124 ohm balanced circuits. A frequency marker is included in the receiver for precise indication of frequency points.

Comcode: 100 718 774

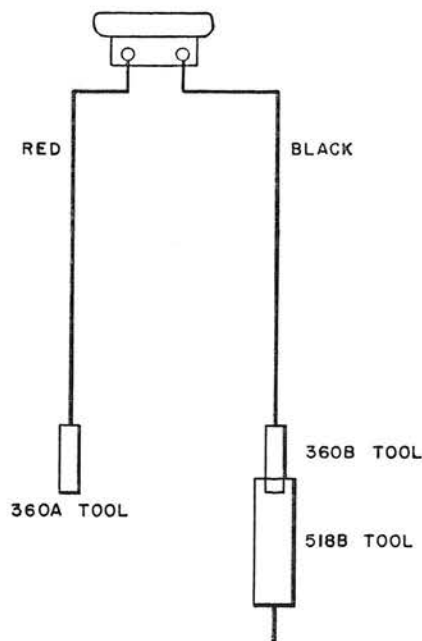
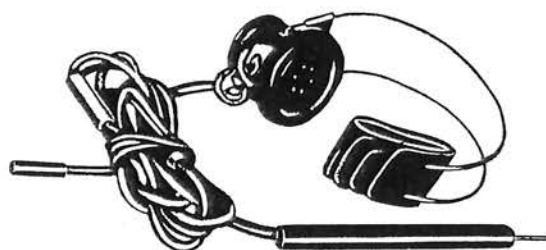
#### Electrical Characteristics:

Line voltage	105 to 125 volts ac
Frequency range	200 kc to 10 mc
Transmitter output	+3 to -7 dbv
Receiver input	+3 to -12 dbv
Dynamic range gain	+1 to -10 db
Delay	+14 usec

The (J64036BA-1 L1) transmitting unit is 17 inches wide by 14 inches high by 7 inches deep and weighs 24 pounds.

The (J64036BB-1 L1) receiving unit is 17 inches wide by 15 inches high by 9 inches deep and weighs 28 pounds.

67C



This test set consists of a number 509 Receiver, 15G-3 Headband, 360A and 360B Tools, and 518B Tool assembled with a W2CJ Cord. The 518B Tool is equipped with a switch which when depressed shunts a 51,000 ohm  $\pm 5$  percent resistor (part of the tool) out of the circuit.

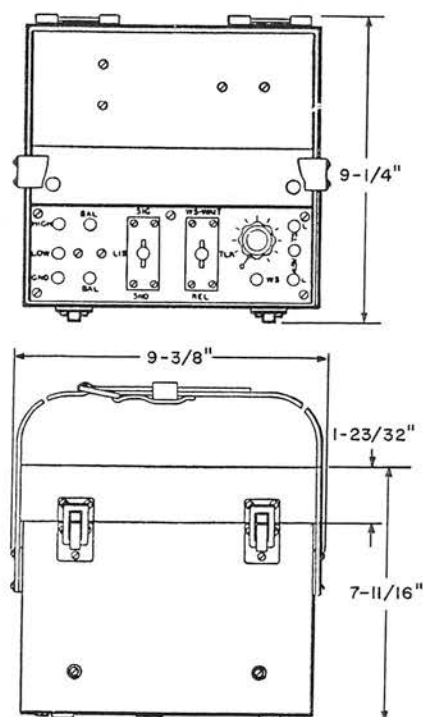
Used as a probe on distributing and apparatus frames in manual and dial central offices.

Comcode: 100 718 865

## SETS

## Test

76C



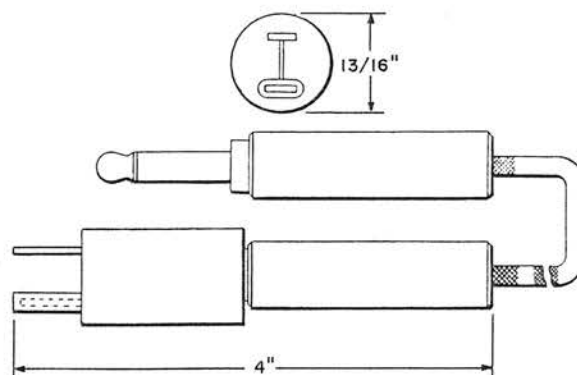
A portable battery operated electron tube oscillator for use by cable splicers on exchange and toll cable for identifying cable wires and other tone testing purposes. Trays for batteries and storage for splicer's talking set (52EW Head Telephone Set) is provided in the case.

The set is powered by two ASA type 30, 4.5-volt and two 16F80 flat cell type 24-volt batteries which are not furnished.

Provides a 500 cycle tone, modulated at a 7 cps rate. A dc relay arrangement for identifying cable wires through wet spots, and a calling-in signal arrangement are also provided.

Comcode: 100 718 881

79D



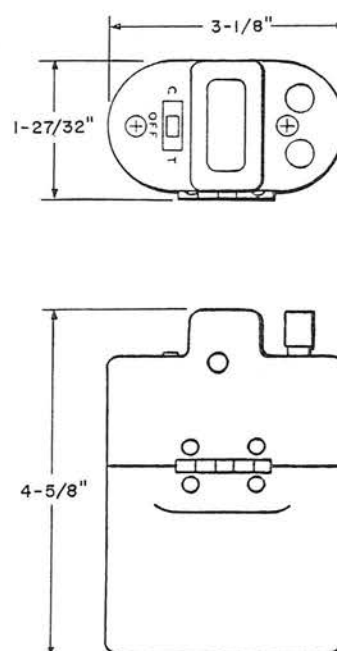
This test set consists of an exploring coil enclosed in a metal case equipped with a handle and a P2AS Cord equipped with a 347B Plug.

Used with the 147B Amplifier for distinguishing between working and dead coaxial pairs by detecting the presence or absence of power hum. Also intended with the aid of audio frequency tracing currents for identifying exchange cable pairs, such as those used for multiple battery feeds, and PBX extensions that have low resistance to ground on both tip and ring sides.

Replaces the 79C Test Set.

Comcode: 101 406 429

81AW



## SETS

## Test

## 81AW (Continued)

This test set consists of a buzzer, capacitor, and switch housed in an insulated molded case with cover. There are two spring-type binding posts for connecting leads.

This set is powered by two ASA type BA-30 or D Batteries which are not furnished.

Used to make tone and dc continuity tests in tracing dead drop, block, and inside wires.

Comcode: 100 718 923

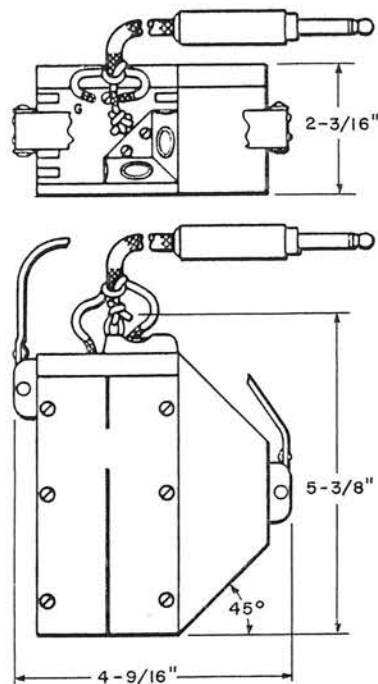
## 91A

This test set consists of a KS-14132 Carrying Case, a 147B Amplifier, a 2W4A Cord equipped with a 723A Receiver and a 15F Headband, and a W2BJ Cord equipped with a 347B Plug and a 513A Tool. Two Eveready batteries, one number 1015 and one number 412, are required but are not furnished.

For use in identifying wires in toll and exchange cables. It can be used with a 75B, 101B, or 105B Test Set for running down conductor troubles in cables, with a 93A Test Set for tracing the path of buried cables, and with a 79C Test Set for identifying coaxial cable conductors in toll cables to determine whether the coaxial tube is energized and for identifying cable wires where a magnetic type of probe is necessary, such as multiple battery leads in private branch exchanges.

Comcode: 100 718 980

## 93A



This unit consists of a single winding coil on a straight iron core enclosed in a wood case. It is equipped with a two bubble level, a W2CG Cord, and a 347B Plug for making external connections. It utilizes a tracing current supplied by a tone source such as a 20C or number 76 type test set.

For use in conjunction with an audio frequency tracing current for determining the position and depth of buried cable and wires. It is placed vertically for determining position and at an angle of 45 degrees for determining depth.

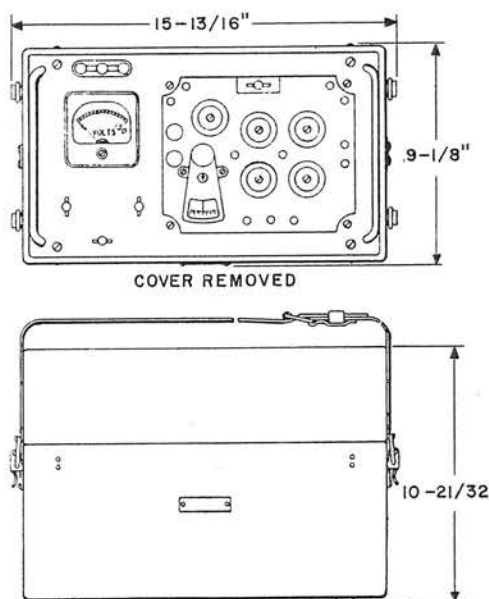
Comcode: 100 718 998



## SETS

## Test

96A and B



**96A:** A portable test set consisting of a voltmeter and Wheatstone bridge units, with associated apparatus for supplying dc and ac bridge potentials. It is mounted on a metal panel and enclosed in a metal case provided with a removable cover and a carrying strap. Contains a compartment for the batteries and one for storing the cord and battery leads.

Furnished with one W3AG Cord and six P-340034 Battery leads. Seven ASA type 15A Batteries are required for the operation of this set but are not furnished and must be ordered separately.

Used in making insulation resistance tests and locating faults, including opens, in telephone cables.

Comcode: 100 719 020

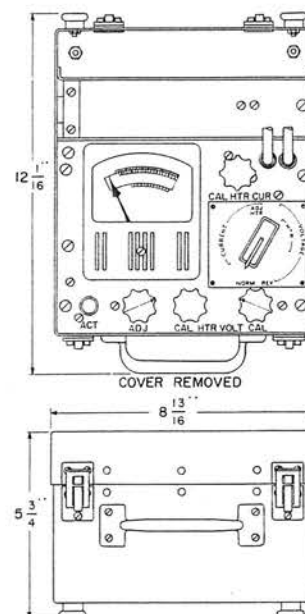
**96B:** Same as 96A except provided with additional elements and control key to permit the supply of ac potentials of 1/2 and 1/4 the frequency regularly provided by the 96A Test Set. Also equipped with an adapter unit which contains a compartment for a battery.

Seven ASA type 15A Batteries, and one 2BBP Battery, Burgess Battery Co. or one 152S Battery, Specialty Battery Co. (for adapter unit) are required but are not furnished and must be ordered separately.

Used in making insulation resistance tests and locating faults, including opens, in telephone cables and capacitance and resistance measurements on telephone ocean cables.

Comcode: 100 719 038

97A



Consists of component apparatus assembled on a metal panel and enclosed in a metal box having a removable cover. A W6E Cord is provided. Contains a compartment for dry cells and another for storing the cords and plugs.

This is a special test set for in-service measurement of ac heater voltage, dc plate voltage, and amplifier and regulator plate currents in the L1 Carrier System. Internal provision is also made for loading repeater heater circuits to reduce heater voltage for an activity test.

The set has a multiscale millivoltmeter with appropriate series and shunt resistors for making dc measurements. Can also be used to measure calibrating voltages applied to two thermocouples (furnished as part of set) and as an indicating meter when measuring with thermocouples. The thermocouples are used for ac measurements. A rotary switch is used to set up the circuit combinations for calibration and measurement, permitting measurements to be made immediately after calibration.

The set has a dc voltage range of 40 to 200 volts; dc current ranges of 4 to 20 milliamperes and 10 to 50 milliamperes; an ac voltage range of 3 to 7.5 volts and an ac current range of 0.6 to 1.1 amperes.

Two ASA type 3D batteries are required for operation but are not furnished.

Used in measuring power supply voltages and current in the type L Carrier Telephone Systems.

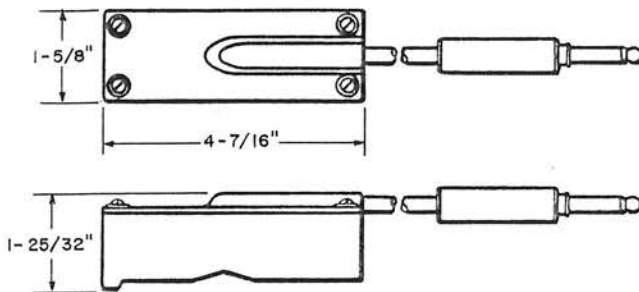
Comcode: 100 719 046



## SETS

## Test

101B



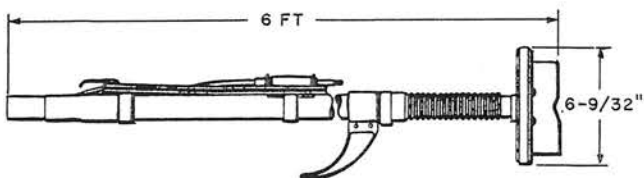
A low impedance test set consisting of an exploring coil enclosed in a cast resin block. A 6-foot cord equipped with a 347A Plug is permanently connected within the block.

Used in conjunction with a number 147 type amplifier and a head receiver.

Intended as a magnetic pickup for audio frequency tracing currents and for running down faults in cables. Utilizes tracing current supplied by tone source such as 76 type test set.

Comcode: 100 719 087

105D



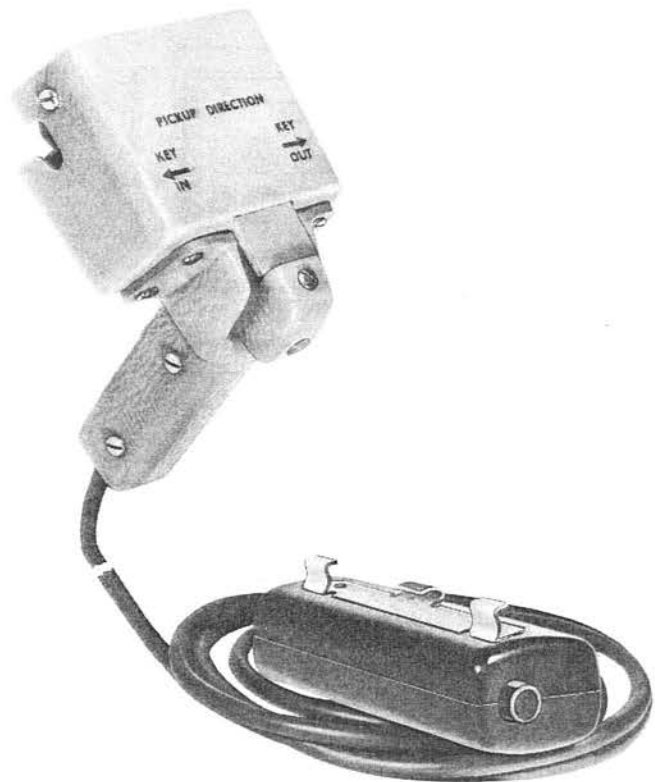
A low impedance test set which consists of an exploring coil mounted on an insulated extension handle and equipped with a W3AM Cord. The corrugated section is flexible to permit positioning of the coil. The hook permits hanging the test set on a strand or cable. The length of the test set can be increased by adding one or two AT-6600 Small Tree Pruner extension sections.

Utilizes tracing current supplied by a tone source such as the 76C Test Set.

Used as a magnetic pickup for audio frequency tracing currents in running down faults in cables in conjunction with a 147B Amplifier and a head receiver.

Comcode: 100 719 111

106A



A portable test set consisting of an exploring coil unit assembled in a housing of insulating material having a pistol grip connected by means of a 6-foot cord to a switch box containing a push button key and terminated in a 238A Jack.

The overall dimensions of the exploring coil unit are 4-11/16 inches high by 3-11/16 inches wide by 4-13/16 inches deep. Overall dimensions of the switch box are 1-7/8 inches high by 4-1/2 inches long by 1-3/4 inches wide.

For use with the number 107 type test set for making directional fault location tests for grounds, shorts, and crosses on open wire circuits.

Comcode: 100 719 129

## SETS

## Test

## 107A and B



107A: A portable test set housed in a case of insulating material. It consists of a hand-operated ringing generator and talking facilities and contains a filter for use on carrier circuits. It provides local and common battery talking facilities when used with the head telephone set, 20 and 135 cps ringing facilities, and a test tone for directional fault locating with the 106A Test Set. The set is equipped with 6-foot leads for connection to open wire lines and a jack for connection of the head telephone set.

One 53HCW Head Telephone Set is required for operation but is not furnished and must be ordered separately. One ASA type 3D Battery is required but is not furnished.

For use by linemen for talking and testing on open wire lines.

Comcode: 100 719 137

107B: Same as the 107A except that it has a dial having high dielectric strength.

Comcode: 100 719 145

## 110A and 111A

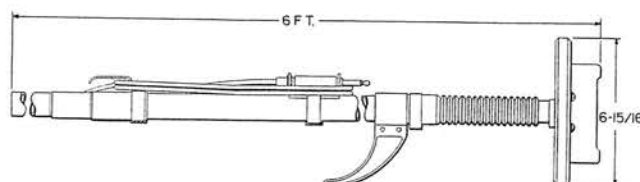


Fig. 1

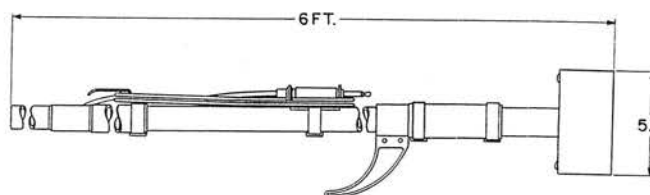


Fig. 2

Each consists of an exploring unit mounted on an insulated extension handle and equipped with a W3AM Cord. The hook permits hanging the test set on a strand or cable. The length of the test set can be increased by adding one or more AT-6600 small tree pruner extension sections.

110A: Fig. 1. Low impedance test set for use in conjunction with a 99B Test Set and a head receiver. An insulated flexible coupling facilitates positioning of the exploring unit.

Utilizes tracing current supplied by a 20 cps ringing generator. Used as a magnetic pickup for low frequency tracing currents in running down faults in long or loaded cables.

Comcode: 100 719 178

111A: Fig. 2. High impedance test set for use in conjunction with a number 147 type amplifier. A coupling of heavy duty rubber tubing minimizes damage to probe end.

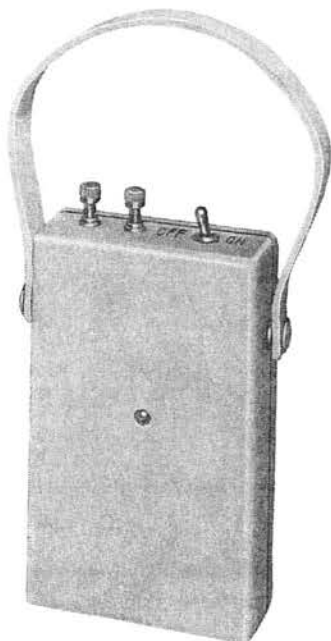
Utilizes tracing voltage supplied by the 76C Test Set or equivalent.

Comcode: 100 719 186

## SETS

## Test

114A



A battery operated, transistorized oscillator. Overall dimensions are 7.44 inches high (to the terminals, not including the carrying strap) by 4.75 inches wide by 1.44 inches deep.

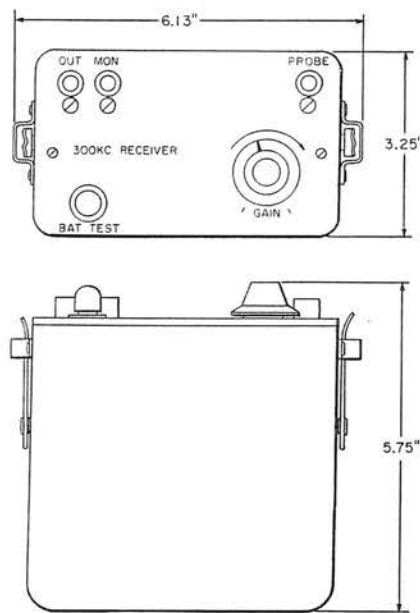
It consists of apparatus such as diodes, capacitors, inductors, resistors, and transistors, on a printed wiring board assembled in a plastic case having a removable cover. Wiring board is equipped with two battery holders. Two P. R. Mallory mercury batteries, TR135R (6.5 volts) are required for operation, but are not furnished.

Used as a source of test tone for identifying individual conductors in cables and, in conjunction with a 111A Test Set, for locating opens in multiple wire facilities, such as B urban and B rural wire.

It provides a 500 cps signal interrupted at approximately 10 times per second.

Comcode: 100 719 228

115A



A portable transistorized battery operated detector intended to pick up a 300 kc signal from the 116A Test Set and convert it into an audible signal for identifying working wires in a cable without removing the wires from service in K and N Carrier Telephone Systems. Provision is made for listening to the tone by means of a talking pair and the headphone of a cableman's talking set.

Two ASA type AA Batteries are required for operation but they are not furnished and must be ordered separately. The set is equipped with a leather carrying strap.

Used with the 120A Test Set.

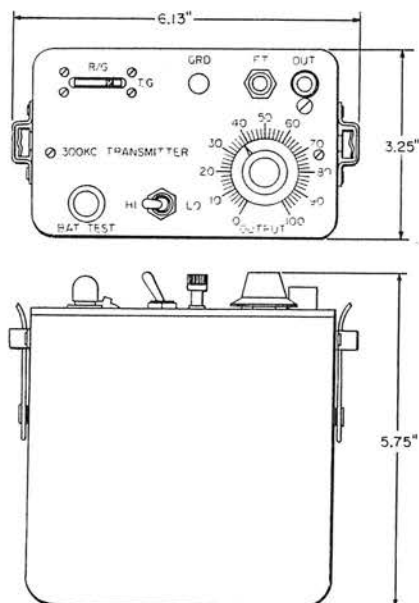
Comcode: 100 719 236



## SETS

## Test

116A



A portable transistorized battery operated crystal controlled oscillator, the output of which consists of an unmodulated carrier frequency of 300 kc  $\pm$ 100 cps.

For use with the 115A Test Set for identifying working wires in a cable without removing the wires from service in K and N Carrier Telephone Systems.

Four ASA type AA Batteries are required for operation but are not furnished. Set is equipped with a leather carrying strap.

Used with the 120A Test Set.

Comcode: 100 719 244

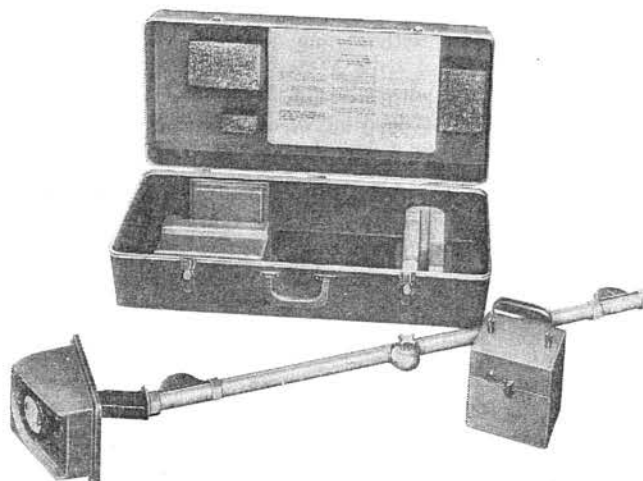
120A

A test set consisting of a KS-19237L1 Carrying Case, a 115A Test Set, a 116A Test Set, a W2CC Cord equipped with 310 Plug, a W1AN Cord, and three W2FC Cords.

For use in identifying working wires in a cable without removing the wires from service in K and N Carrier Telephone Systems.

Comcode: 100 719 251

121A

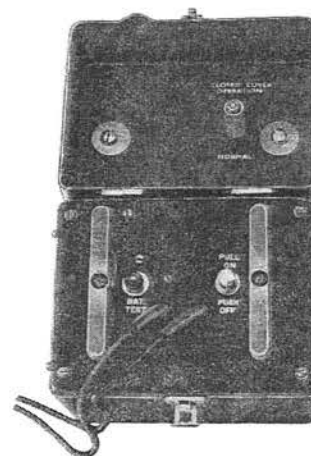


Consists of a 122A and a 123A Test Set contained in a gray-black plastic carrying case with dimensions of 30.1 inches long by 13.1 inches deep by 8.2 inches high, not including the handle which extends approximately .75 inches beyond the 13.1 inch dimension.

Used to check location and depth of telephone cable buried up to 50 inches deep.

Comcode: 100 719 269

122A





## SETS

## Test

## 122A (Continued)

A battery operated, transistorized, signal source housed in a metal case with a hinged cover. The inside of the cover is equipped with a two position switch guard to allow operation with the cover closed and to insure that the case will be turned off when it is not in use. The set is 6 inches long by 5 inches deep by 6 inches high, not including the handle which extends about 1 inch above the 6 inch high dimension. It weighs approximately 4-3/4 pounds.

Two 8-foot single conductor test leads are provided for connecting the set between ground and the metal sheath of the cable to be located. A bulge in the hinged cover rim allows the cover to be closed during operation without damaging the test leads. **In no circumstance should a test lead from this set be applied to a conductor or pair in a cable.** When not in use, the test leads are secured around two cleats on the panel.

The set has a 20 kc output limited to a maximum current of 50 ma on the shield to minimize interference with telephone circuits.

The set operates for approximately 100 hours from a set of four ASA type D dry cell batteries. **The batteries are not furnished.** Provision is made for checking the battery by pulling the switch to on and then depressing the plastic cap of the BAT TEST Lamp.

Used with a 123A Test Set (depthometer) in tracing the path and determining the depth of buried telephone cable.

Comcode: 100 719 277

## 123A



A 20 kc test set (depthometer) for use with a 122A Test Set.

Overall dimensions are 8.4 inches long by 6.3 inches wide by 4.5 inches high, not including the folding leg which is 3 feet 6-1/2 inches long when extended for use.

Consists of battery powered circuitry mounted on a printed wiring board assembled in a housing which is equipped with a folding metal leg containing two inductors used as pickup coils for detecting the 20 kc signal generated by the 122A Test Set. Depth of cable can be read on a meter calibrated in inches. **Four ASA Type AA primary batteries are required for operation of this set but are not furnished.**

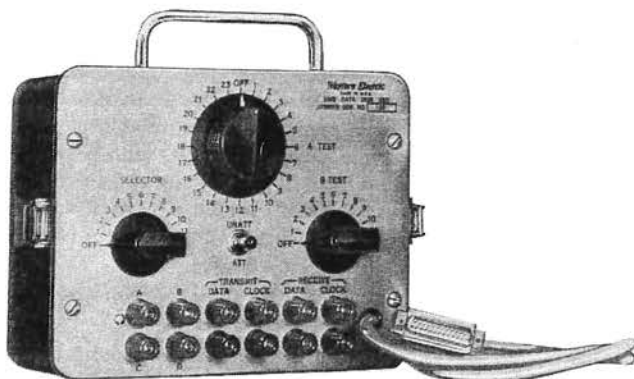
Used to check location and depth of telephone cable buried up to 50 inches deep. Greatest ranges from point of tone application are 1 mile for plastic sheathed cables, 1/5 mile (approximately 1000 feet) for jute covered cables, and 100 feet for lead sheathed cables.

Comcode: 100 719 285

## SETS

## Data Test

## 901B (J79901B L2)



A portable test set used to make out-of-service installations and routine trouble checks on data sets. Operation of the switches simulates various business machine actions to the data set. A two-position toggle switch is used to control automatic answering circuits of the data sets equipped for unattended operation.

The dimensions are 7 inches high by 7 inches wide by 9 inches deep, and the weight is 6 pounds.

The set is designed to operate alone and may further be used in conjunction with 902 and 903 Data Test Sets to provide accessible interface connections.

The set will test 103AW, BW, DW, and FW, 201AW and BW, 202AW, BW, CW, and DW, 301BW, 401AW, BW, CW, EW, JW, and LW, 402CW and DW, 601AW and BW, and 602AW Data Sets. Power is supplied by set under test when required.

The following adapter cords are required and must be ordered separately.

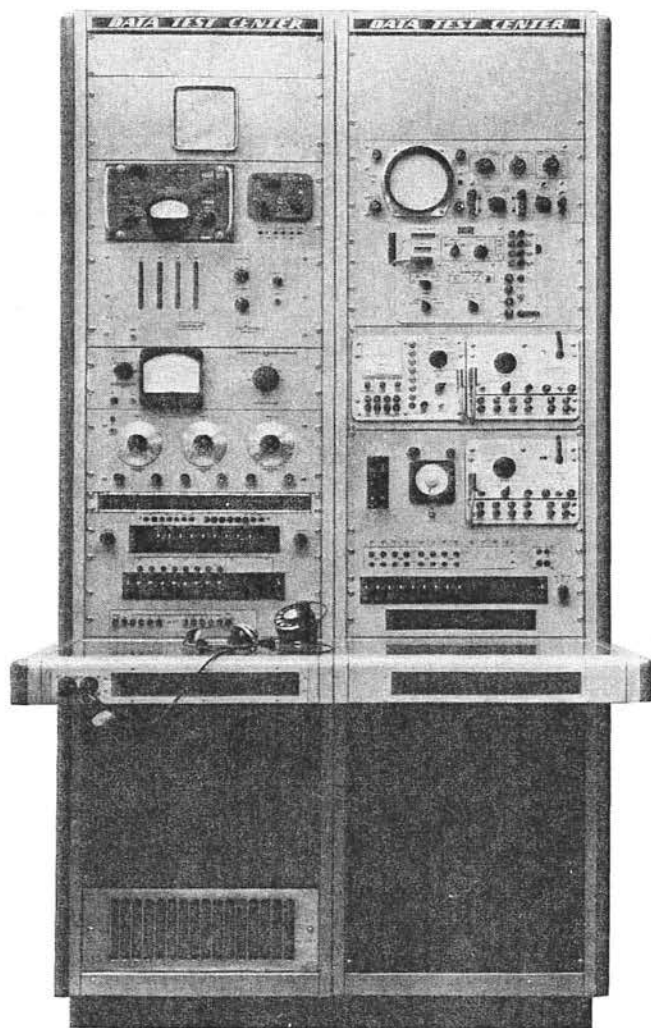
Quantity	Cord No.	For Use With Data Set
1	M26D	401BW
1	M26F	401AW

Used alone for making voltage measurements for isolating trouble in data sets.

Comcode: 600 016 539

## SETS

## Data Test

904 A, B, C, and D Data Test Center  
(J79904A, B, C, and D)

904A

904B

This test set is used for remote testing of the data set associated with DATA-PHONE and Voice Band Private line data services and to assist in the installation, repair, and maintenance of DATA-PHONE service.

904A: Consists of general purpose test equipment required for static testing such as oscillators, frequency counters, oscilloscopes, and level meters mounted in a cabinet approximately 2-feet wide by 2-feet deep by

7-feet high. The wiring of the equipment is arranged to terminate in test keys and plug-in jacks so that connections can be made by means of patch cords.

904B: It is used in association with the 904A to perform dynamic testing. It performs the same tests as the 904A plus transmitting, receiving, and evaluating data signals between the station and the Data Test Center over both DATA-PHONE and private line data service networks. This unit includes 901B, 902B, and 903B Data Test sets. The equipment wiring is arranged to terminate in test keys and cord reel units which are used to make circuit connections to the trunk line. The unit is mounted in a 7-foot cabinet similar to the 904A.

904C: Same as the 904A except it is mounted on a 23-inch relay rack 11 feet 6 inches high.

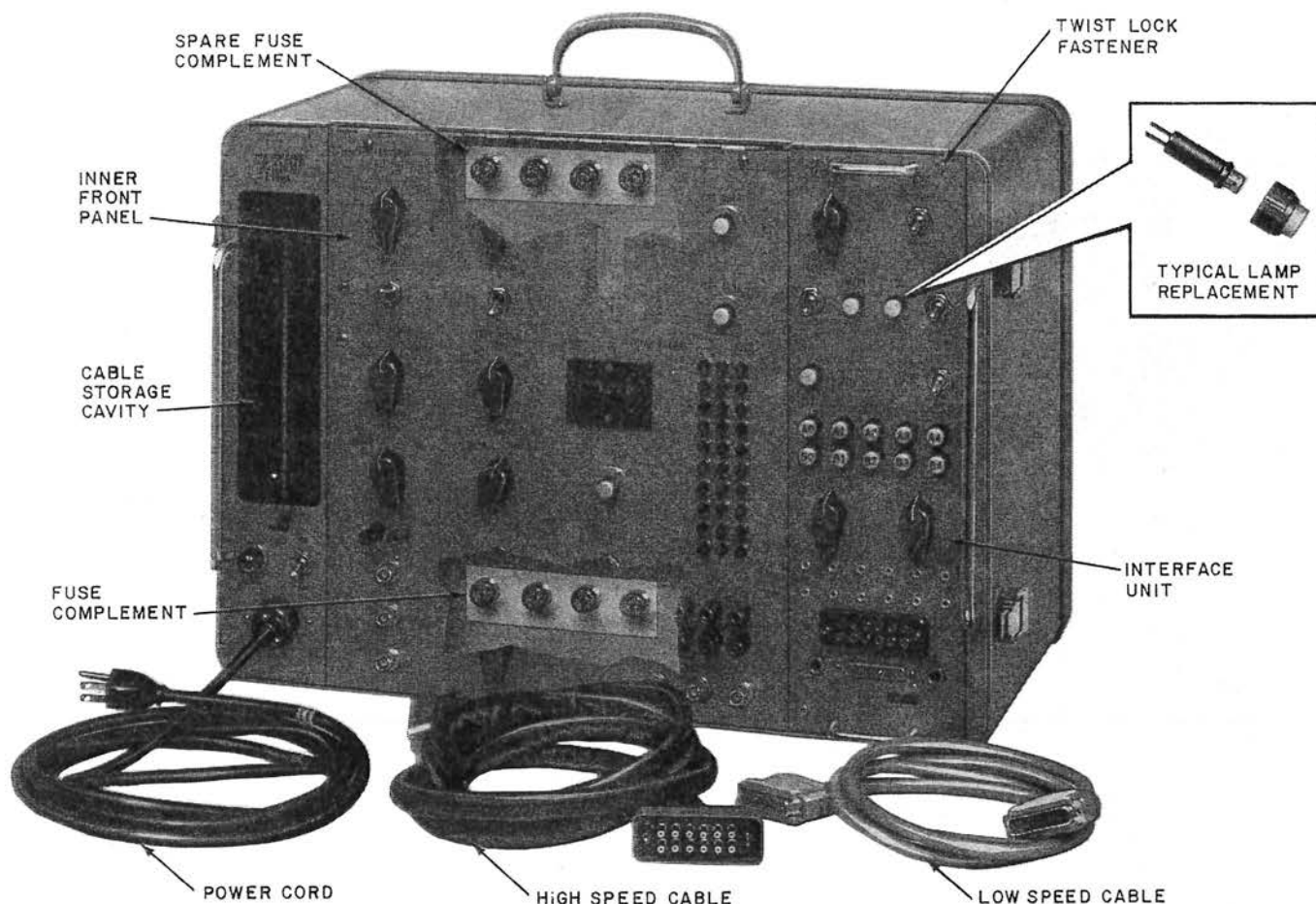
904D: Same as the 904B except it is mounted on a 23-inch relay rack 11 feet 6 inches high with special front and rear adapters.



## SETS

## Data Test

## 912A (J79912)



The 912A Wideband Data Test Set is used to test wideband data stations or sets which operate in the range of 9 to 2000 kilobits per second. The test set, designed to be either portable or fixed, determines error rates, tests all interface functions of a wideband data set or station, makes margin tests of received nonsynchronous data and can test low-speed Data Sets 400BW which may be associated with a wideband data station.

The test set is composed of two major units, the basic test set and a plug-in interface unit. Each interface unit is supplied with suitable interface cables and contains the interface connectors, control lamps, switches, cable drivers and terminators peculiar to a group of data sets or to a test set application. As an example the interface unit interfaces the test set with Data Sets 301 type and

303 type and provides a means of testing a Data Set 404BW which is often part of a 303 type Wideband Data Station. The interface unit can connect to a maximum of five Data Sets 301 or 303 type. A switch on the interface unit selects the data set to be used.

The power supply is fused and converts 117 volt, 60 Hz ac power into three regulated dc outputs (+12V, -12V and +6V) which are distributed to all parts of the test set.

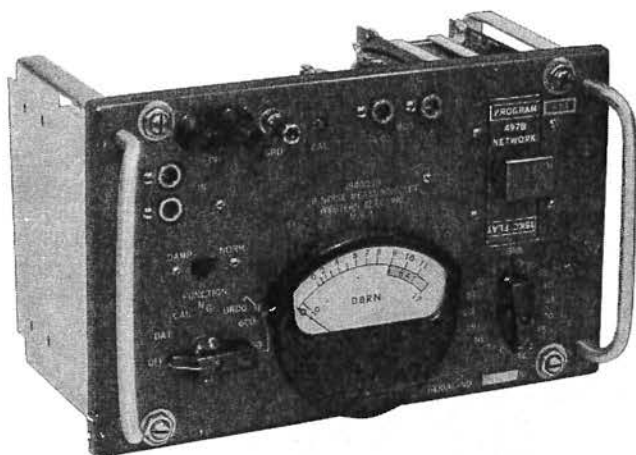
The 912A Wideband Data Test Set is a light gray unit with dark decaled markings and is enclosed, when portable, in a light gray luggage type case. The overall dimensions of the test set are 21 inches by 15 inches by 12 inches and the weight is 45 pounds.



## SETS

## Noise Measuring

3B (J94003B)



The 3B is a compact, transistorized, rack mounted noise measuring set. The set measures noise in dbrn on message and program circuits. It has both dynamic and frequency characteristics which make its readings comparable to the response of the human ear.

A 497A Network for use on C Message and 3 KHz Flat circuits is furnished as part of the set. 497B Network for use on Program and 15 KHz Flat circuits is available but must be ordered separately if needed. The networks can be changed on a plug-in basis. C Message weighting has been accepted by the Edison Electric Institute for Telephone Coordination Measurement and conforms to the ASA Noise Reference.

The 3B will measure noise metallic into self-contained 600 or 900 ohm terminations or on a bridging basis without any auxiliary apparatus. Direct reading at noise-to-ground can also be made. A built-in battery supply filter eliminates false noise readings due to battery noise. Provision is made for a jack-field appearance of the input

circuit. Internal calibration is provided. For special investigations, both ac and dc outputs are available for monitoring and for connection to external recording devices.

## Characteristics

Reference Noise	-90 dbm at 1000 Hz (ASA Standard)
Range	0 to 97 dbrn (above reference noise)
Accuracy	$\pm 1$ dbrn
Input Impedance	Noise Metallic 600 to 900 ohms Bridging 10,000 ohms Noise to Ground 10,000 ohms
Weighting Networks	(497A) C Message and 3 KHz flat (497B) Program and 15 KHz flat
Size	7 inches high by 9 inches deep on 19 inch or 23 inch panel
Weight	9.5 lbs—19 inch panel 11.3 lbs—23 inch panel
Power	48 volt central office battery

When ordering the 3B Noise Measuring Set, the following should be utilized:

3B Noise Measuring Set (J94003B List 4) should be shown on the order when the assembly, equipment, wiring, and cover for one 3B Noise Measuring Set are required.

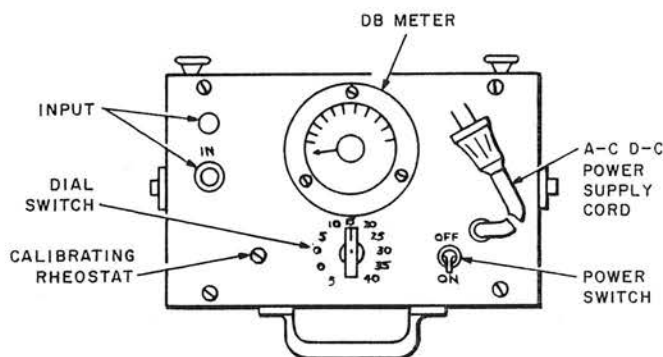
3B Noise Measuring Set (J94003B List 6) should be shown on the order when List 4 and the assembly, equipment, and wiring for mounting on a 19 inch panel are required.

3B Noise Measuring Set (J94003B List 7) should be shown on the order when List 4 and the assembly, equipment, and wiring for mounting on 23 inch panel are required.

## SETS

## Transmission Measuring

13A



A test set consisting of a three-stage negative feedback amplifier and a rectified-type meter mounted on a panel chassis and enclosed in a metal box. Overall dimensions are 10-7/8 inches by 8-1/8 inches wide by 8-5/16 inches deep with cover.

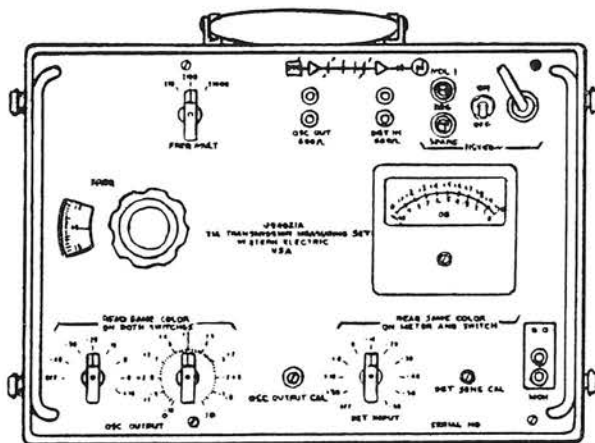
The meter has gain and loss scales of 5 db range each. The transmission range is -45 to +10 db, referred to 1 milliwatt over a range of 30 to 15,000 Hz, with an input impedance of 600 ohms. Slide rheostat is provided for calibration and is screwdriver-adjustable through the panel.

Operates on 105 to 125 volts dc or 105 to 125 volts, 50 to 60 Hz or 25 Hz ac power supply. Consumes approximately 50 watts.

Used in conjunction with a number 19 type oscillator or other suitable source of testing power for lining up and equalizing circuits for program transmission.

Comcode: 100 719 418

21A (J94021A-1 List 1 and A)



A portable test set available in two forms: as an ac operated oscillator and detector or an ac operated oscillator only. It can be adapted for mounting in 19- or 23-inch equipment racks. Dimensions excluding cover are 17 inches long by 12 inches high by 8 inches deep. Weight is 37 pounds. Operates on 115 volts, 60 Hz.

As an oscillator and detector: Used to measure gain and loss of amplifiers, line sections and other components on voice channel and program transmission circuits, including telephone repeaters.

As an oscillator: Furnishes constantly adjustable frequencies from 20 to 20,000 Hz at variable output levels.

Oscillator specifications: Adjustable in these ranges: 20 to 200, 200 to 2,000, and 2,000 to 20,000 Hz.

Oscillator output: Adjustable from +20 to -50 dbm.

As a detector: Provides sensitivity from -70 to +30 dbm.

Possible measuring gains up to 80 db of losses up to 90 db.

To provide additional Detector Equipment, order J94021A-1 L2 and B.

If to be mounted on 19-inch relay racks, order J94021A-1 L3 and D; if on 23-inch relay racks, order as J94021A-1 L4 and E.

23A, B, and C (J94023)



The 23A, B, and C (J94023) type sets have a measurement range from -25 to +10 dbm in the frequency range of 300 to 5000 Hz.

23A (J94023A-1 L1): A simple, passive, portable set which replaces the 12B Transmission Measuring Set. It can be used to measure levels of -25 to +10 dbm over the frequency range of 300 to 5000 Hz on both 600 and 900 ohm circuits. Holding and dialing features are also provided for setting up a connection on a trunk preparatory to making measurements. No batteries or external power are required. Characteristics of the set are given



## SETS

## Transmission Measuring

in Table A. The set consists essentially of eight consecutive circuits as follows: input, holding, blocking, impedance matching, attenuator, filter, detector, and meter.

The 23A is packaged in an aluminum case of the deep-drawn type. It is provided with a retractable handle for carrying and has a small door in the side for access to the calibration controls. See Table B for size and weight.

**23B (J94023B-2):** Designed for jack panel mounting and requires no power connection or internal batteries. It will measure levels of  $-25$  to  $+10$  dbm over the frequency range of 300 to 5000 Hz on either 600 or 900 ohm circuits. No holding or dialing features are provided as these are normally provided elsewhere on the test panel. Characteristics of the set are given in Table A. The set consists essentially of six consecutive circuits as follows: blocking, impedance matching, attenuator, filter or pad, detector, and meter. The 23B type set is available with (list 4) or without (list 2) the front panel as, in some usages, the set may be mounted on subpanels behind existing facepanels. When the 505T Filter is not required, it is replaced by a pad which has a loss equal to the flat loss of the filter. This pad is furnished in all 23B type sets even though not used. The filter is furnished only when called for by the list number.

The 23B is packaged in a wrap-around type aluminum case with removable back and with or without the front panel. The calibration controls appear at the front of the set.

**23C (J94023C-1 L1):** Same as 23A except is arranged for panel mounting.

Any patching cord terminating in 309, 310, or 240A type plug may be used in the jacks provided in these sets. Suggested cords are 3P3A(6 feet), 3P12H(8 feet), 1W13B(6 feet). 1W13B includes two 360A Tools and either number 364 (spade tip) Tool or number 365 (alligator clip) Tool should be used with the 360 type tool.

Patching cords if required must be ordered separately.

Code No.	Comcode
23A (J94023A-2 L1)	600 017 842
23B (J94023B-2 L2)	600 017 859
23B (J94023B-2 L4)	600 017 867
23C (J94023C-1 L1)	600 017 875

TABLE A

Item	23A (J94023A-1 L1) and 23B (J94023B-2)
Power Requirements	None
Input Impedance	600 to 900 ohms
Frequency Range	300 to 5000 Hz
Measurement Range	$-25$ to $+10$ dbm
Meter Range	$-6$ to 0 dbm
Measurement Accuracy	
1000 Hz	
( $-20$ to $+10$ dbm)	$\pm 0.2$ db
( $-25$ to $-20$ dbm)	$\pm 0.3$ db
400 to 5000 Hz	
( $-25$ to $+10$ dbm)	$\pm 0.5$ db
300 to 400 Hz ( $-25$ to $+10$ dbm)	$-0.3 \pm 0.6$ db (23A) $-0.25 \pm 0.6$ db (23B)
Frequency Suppression	
180 Hz	$> 4$ db
60 Hz	$> 25$ db
Temperature Range	40 to 100F
Position of Use	Horizontal and Vertical (23A) Vertical (23B)
DC Resistance of Holding Circuit	700 ohms (23A) Not applicable (23B)

TABLE B

Unit	Width (Inches)	Height (Inches)	Depth (Inches)	Weight (Pounds)
		Overall		
23A (J94023A-1)				
L1	9-3/8	6	5-1/4	6
23B (J94023B-2)				
L2	8-3/32	4-27/32	6-1/4	4
L4	8-3/32	5	6-1/4	4-1/4
23C (J94023C-1)				
L1	13-9/16(a)	4-11/16	3-5/32	5-3/4

(a) Includes mounting brackets.

## SOCKETS

## Lamp

12 Type

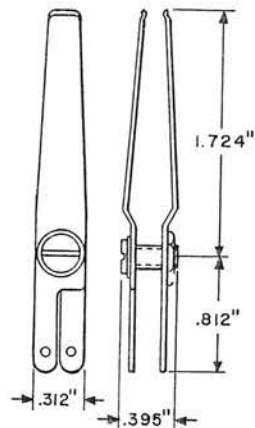


Fig. 1

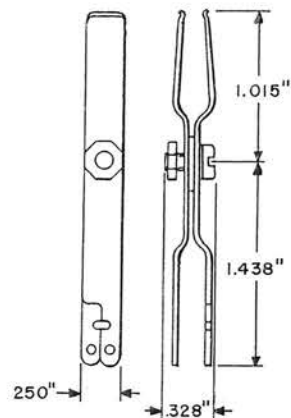


Fig. 2

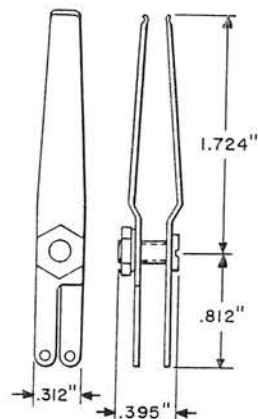


Fig. 3

The number 12 type lamp sockets are strip-mounted and are furnished only on orders for lamp socket mountings.

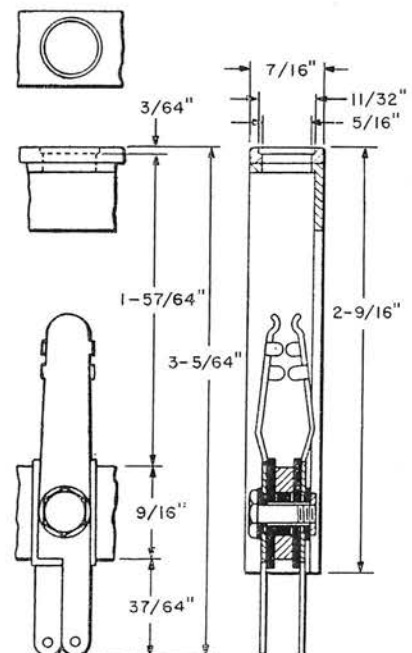
Arranged for number 2 type lamps and number 2 or 72 type lamp caps.

12: Arranged for (hard rubber) number 101, 102, 103 104, 105, 111, 122, 123, 125, 131, 132, 133, 134, 136, 137, 277A, 291A, and 297A Lamp Socket Mountings. See Fig. 1.

12B: Arranged for (molded phenolic) 137B Lamp Socket Mounting. See Fig. 2.

12C: Arranged for (molded phenolic) 136C Lamp Socket Mounting. See Fig. 3.

30 Type



The number 30 Lamp Sockets are strip-mounted and are furnished only on orders for lamp socket mountings.

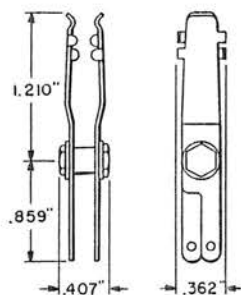
Arranged for number 2 type lamps and number 8 type lamp caps. Used with number 101, 102, 103, 104, 111, 123, 125, 130, 131, 257, 258, and 294A Lamp Socket Mountings.



## SOCKETS

## Lamp

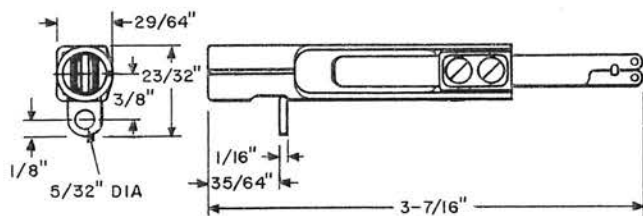
43A



The 43A Lamp Sockets are strip-mounted and are furnished only on orders for lamp socket mountings.

Arranged for number 2 type lamps and number 263, 264, 265A, 276, 278, 281, 282A and B, 283, 290, 295, 298, and 300 Lamp Socket Mountings.

47B



The 47B Lamp Sockets are singly mounted and are arranged for number 2 type or A-type lamps and number 2 or 72 type lamp caps. Mounting screw is furnished.

Used on number 184, 185, 230, and 231 type jack mountings and mount in the same drillings as the 217A, 242CK, or similar type jacks.

Comcode: 100 722 875

49A, 49B, and 50A

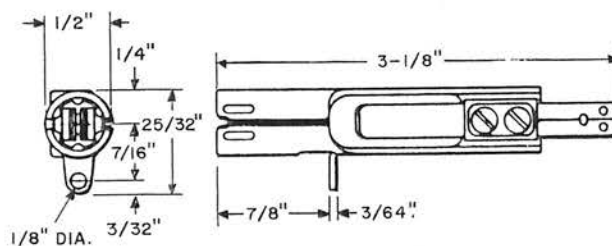


Fig. 1

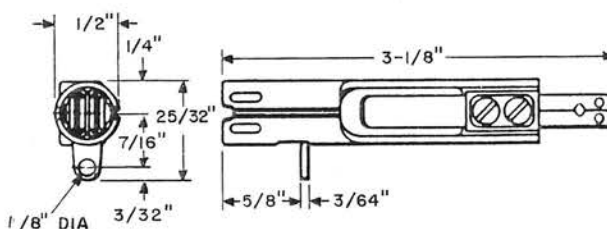
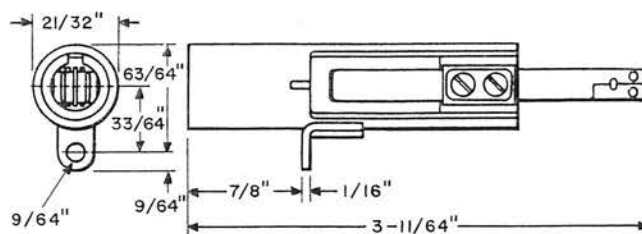


Fig. 2

The 49A and B and 50A Lamp Sockets are singly mounted and are arranged for number 2 type lamps and number 2 or 72 type lamp caps. Mounting screw is furnished.

Code	Comcode	Fig. No.	Finish
49A	100 722 909	1	Brass
49B	100 722 917	1	Nickel
50A	100 722 925	2	Brass

51B



## SOCKETS

## Lamp

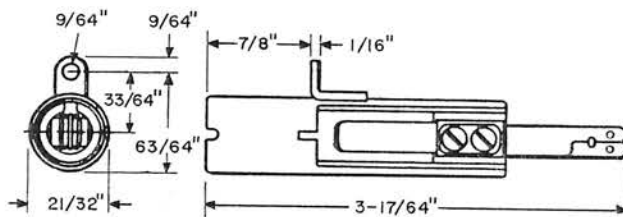
The 51B Lamp Sockets are singly mounted and are arranged for number 2 type lamps under a beehive type lens.

Mounting lug is arranged for use with 5/8 inch and 7/8 inch shelves. Furnished with mounting lug arranged for 7/8 inch shelf unless otherwise specified. Mounting screw is furnished.

Used on 275N, P, W, and Y, 279E, 279F, 292A, 293A, and 296A Lamp Socket Mountings.

Comcode: 100 722 933 On 5/8 inch shelf  
100 722 941 On 7/8 inch shelf

53A



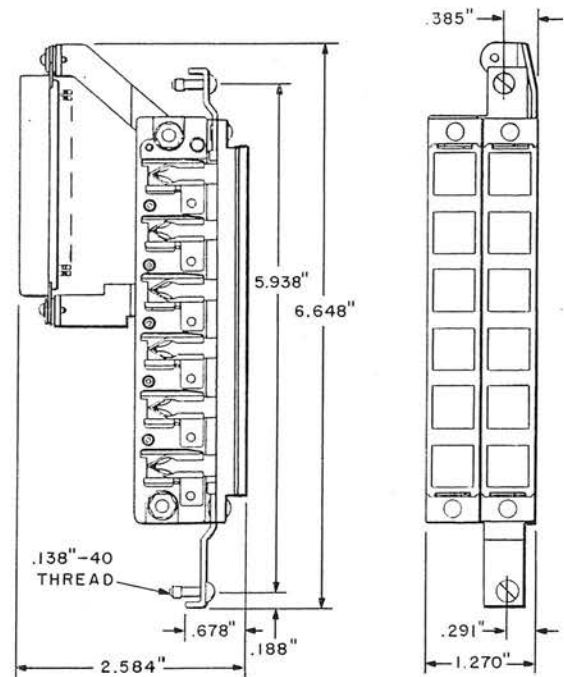
A singly mounted socket arranged to mount a number 2 type lamp and a number 4 type lamp cap.

Arranged for use with 5/8 inch, 11/16 inch, 7/8 inch, 1 inch, 1-3/16 inch, 1-1/4 inch, or 1-13/16 inch shelf. Mounting lug arranged for 7/8 inch shelf unless otherwise specified. Mounting screw is furnished.

Used with the number 141, 142, 146, 147, and similar lamp socket mountings.

Comcode: 100 722 974 On 5/8 inch shelf  
100 722 982 On 11/16 inch shelf  
100 722 990 On 7/8 inch shelf  
100 723 006 On 1 inch shelf  
100 723 014 On 1-3/16 inch shelf  
100 723 022 On 1-1/4 inch shelf  
100 723 030 On 1-13/16 inch shelf

59A



Consists of two molded lamp strips, each containing six lamp sockets equipped with 51A Lamps, and a KS-16672L1 Connector assembled to a metal bracket. Lamp sockets are wired to the connector.

An E4646 Designation Strip and a light shield are provided.

Arranged to mount interchangeably with a 598A Key or a 105B Apparatus Blank.

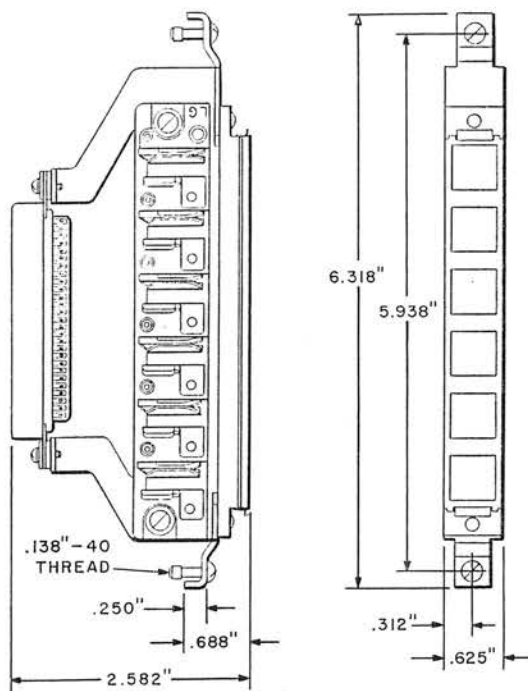
Forms a part of the number 630 type telephone sets.

Comcode: 100 723 097

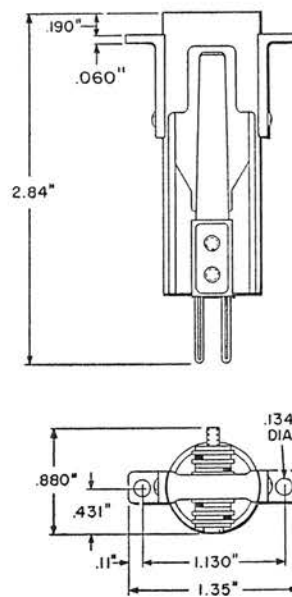
## SOCKETS

## Lamp

61A



65A



Consists of a molded lamp strip containing six lamp sockets, which are arranged for 51A or 52A Lamps, and a KS-16672L1 Connector assembled on a metal bracket.

The lamp strip is equipped with a light shield and a removable translucent red face strip. The lamp sockets are wired to the connector, which is provided with a nonreturnable dust cover.

For use with the 623A Key in the number 301 and 302 Switching Systems.

Comcode: 100 723 139

A singly mounted socket arranged to mount a number 2 type lamp under a 77A Lamp Cap. Mounting screws are furnished.

Terminals are arranged for mechanically wrapped connections.

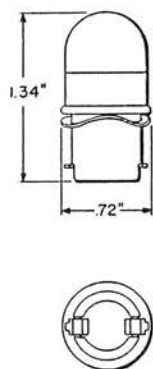
For use in switching systems.

Comcode: 100 723 147

## SOCKETS

## Lamp

## 66 Type

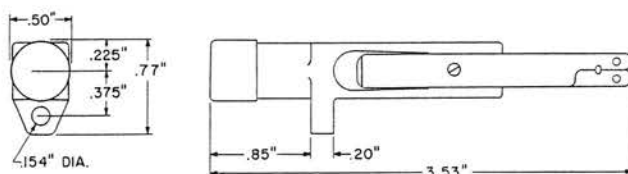


The 66 type sockets contain two springs which serve as contacts for a number 2 type lamp, and are equipped with a lamp cap and a spring washer.

Code No.	Comcode	Color of Lamp Cap
66A	100 723 154	Red
66B	100 723 162	Amber
66C	100 723 170	White
66D	100 723 188	Green

Arranged to mount in 18A, 19A, 21A, 22, or 23 type fuse blocks or a 308A Lamp Socket Mounting.  
For use in switching systems.

## 67A and 67B



The 67A and 67B Lamp Sockets are singly mounted and are arranged for a number 2 type or an A type lamp.

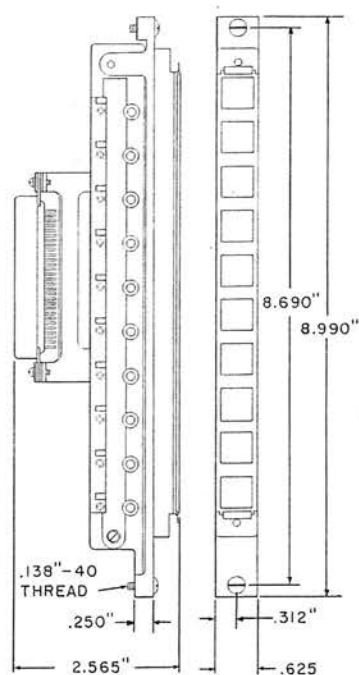
67A: Equipped with a red lamp cap.

Comcode: 100 723 196

67B: Equipped with a white lamp cap.

Comcode: 100 723 204

## 69A



The 69A Lamp Socket consists of one ten-lamp, lamp strip which provides receptacles for mounting 51A Lamps. The lamp strip is attached to a steel frame to which also mounts a lamp block to contain the light and a 50 terminal KS-16672L1 Connector. A light shield holds a colored transparent plastic strip over the lamp block.

Used in station systems.

Comcode: 100 723 212

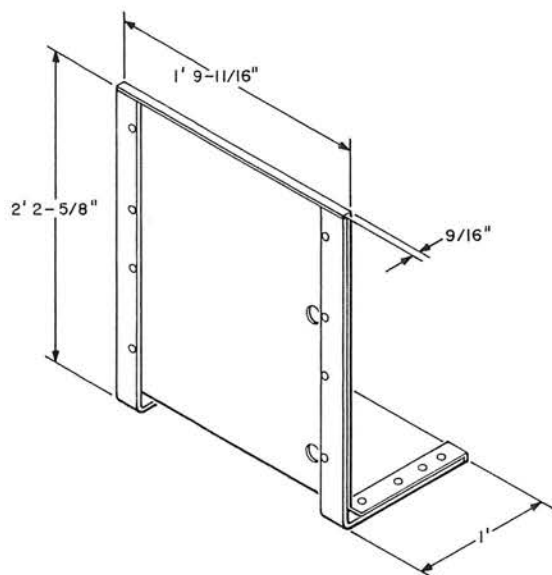




## STANDS

## Floor

## ED-91296-70, Group 4



A metal stand which consists of two supports and a cover having a light olive gray enamel finish. Stand has capacity for two cabinets. Screws for mounting are furnished.

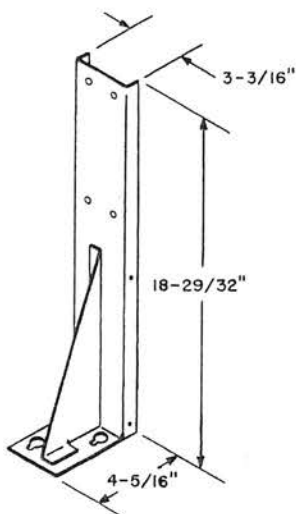
Used for floor mounting the ED-91472-70 Apparatus Cabinet.

Comcode: 600 017 883

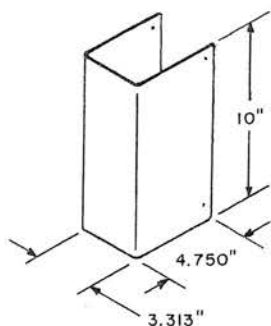
## STANDS

## Mounting

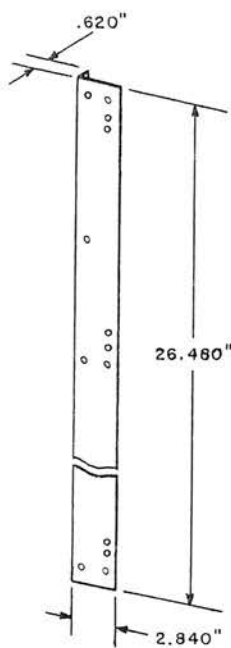
ED-95023-70



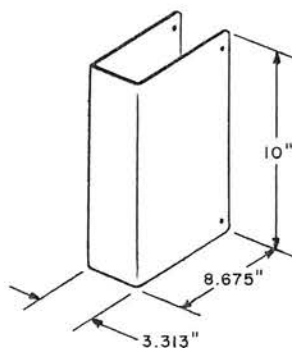
Group 3 and 7



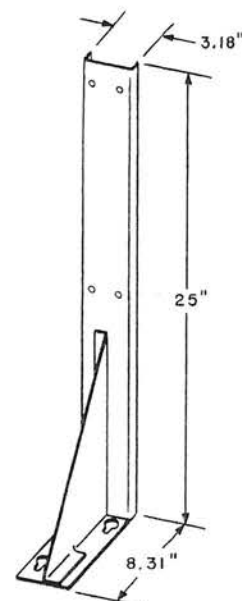
Group 5 and 8



Group 11 and 12



Group 4



Group 10

Metal stand for use with 16C Apparatus Mountings, 177A Backboards, and J86731A-4 (101G) Power Plants. The groups required, as described below, must be specified on the order. All parts are shipped separately and mounting hardware is furnished.

Group	Description
3	Metal stand consisting of two leg assemblies for mounting J86731A-4 L4 Power Plant. Comcode: 600 017 891
4	Two covers for use with group 10. Comcode: 600 017 909
5	Two covers for use with group 3. Comcode: 600 017 917
7	Metal stand consisting of one leg assembly for mounting J86731A-4 L5 or L6 Power Plant. Comcode: 600 017 925
8	One cover for use with group 7. Comcode: 600 017 933
10	Metal stand consisting of two leg assemblies for mounting 16C Apparatus Mounting or 177A Backboard. Two sets of mounting material are furnished. Unused material should be discarded. Comcode: 600 017 941
11	Two auxiliary legs for mounting J86731A-4 L4 Power Plant above 16C Apparatus Mounting. Comcode: 600 017 958
12	One auxiliary leg for mounting J86731A-4 L5 or L6 Power Plant above 16C Apparatus Mounting or above 177A Backboard. Comcode: 600 017 966

## STRIPS

## Designation

## 8 Type

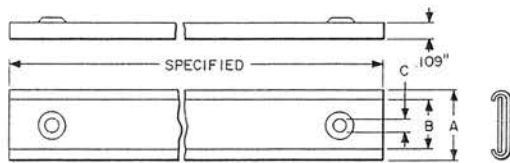


Fig. 1

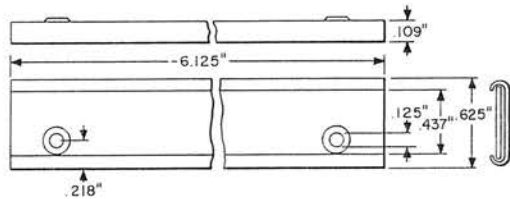


Fig. 2

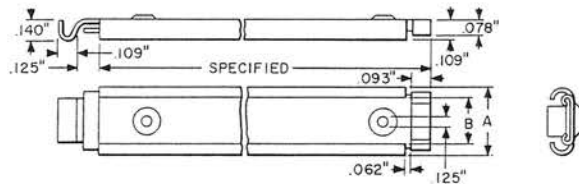


Fig. 3

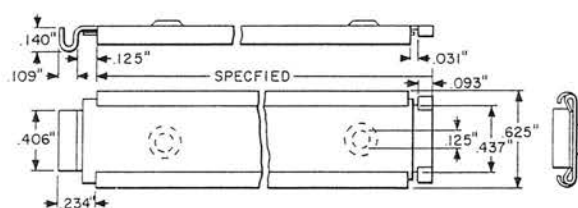


Fig. 4

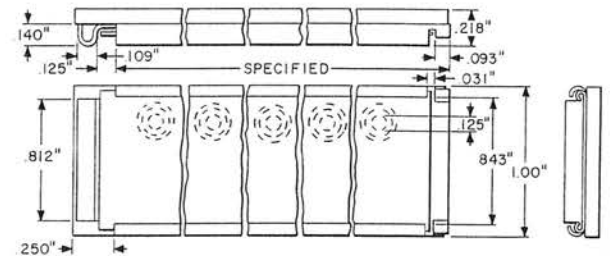


Fig. 5

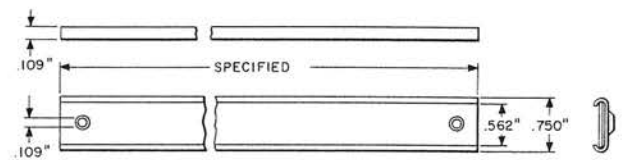


Fig. 6

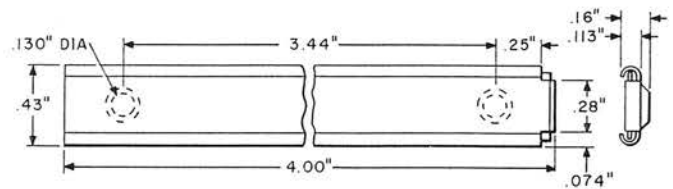


Fig. 7

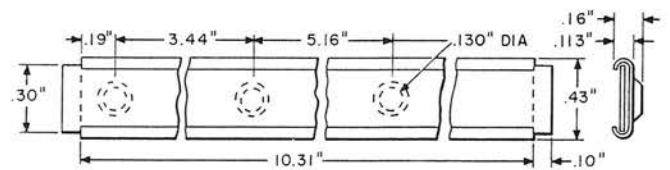


Fig. 8



## STRIPS

## Designation

## 8 Type (Continued)

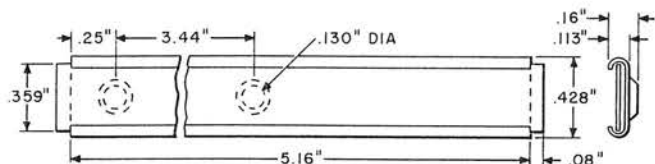


Fig. 9

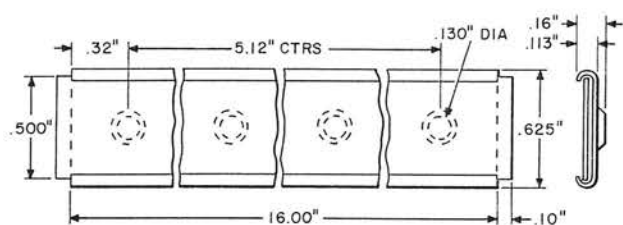


Fig. 10

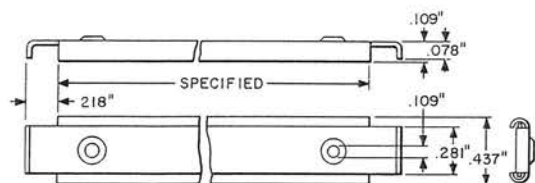


Fig. 11

Code No.	Fig. No.	Dimensions		
		A	B	C
8E	1	.250	.125	.109
8F	11	—	—	—
8G	1	.437	.296	.109
8H	1	.375	.203	.109
(a) 8K	2	—	—	—
(b) 8L	3	.437	.296	—
(b) 8M	3	.375	.203	—
(b) 8U	4	—	—	—
(b) 8W	5	—	—	—
8Y	6	—	—	—
(a) 8AK	2	—	—	—
(b) 8AL	3	.437	.296	—
8AM	7	—	—	—
8AN	8	—	—	—
8AP	9	—	—	—
8AR	10	—	—	—
(b) 8AS	3	.375	.203	—
8AT	1	.375	.203	.109
8AW	1	.625	.437	.120
8AY	1	.437	.296	.109
8BA	4	—	—	—

(a) 6.125 inches long used in connection with number 128 and 129 Jack Mountings on number 4 Toll Test Board.

(b) Ends are turned up to prevent strips from slipping out.

Metal retaining strips equipped with transparent face strips. Arranged to mount a strip of printed figures under the face strip.

Furnished with mounting screw, except 8E which is furnished with escutcheon pins for mounting.

8E, F, G, H, K, L, M, U, W, and Y: Have a black finish.

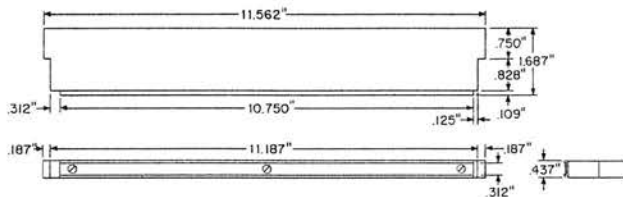
8AK, AL, AM, AN, AP, AR, AS, AT, AW, AY, and BA: Have a gray enamel finish.

Required length, not exceeding 3 feet, must be specified in the order, except for 8AK which is 6.125 inches long. Where strips longer than 3 feet are required, two or more strips of equal length should be ordered.

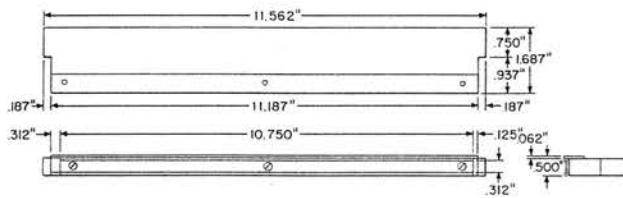
## STRIPS

**Designation**

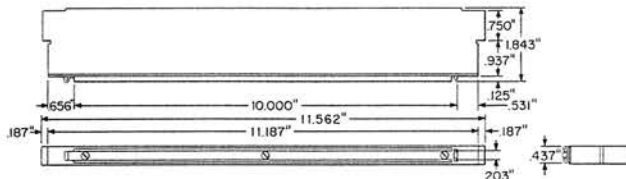
## 55 Type



**Fig. 1**



**Fig. 2**



**Fig. 3**

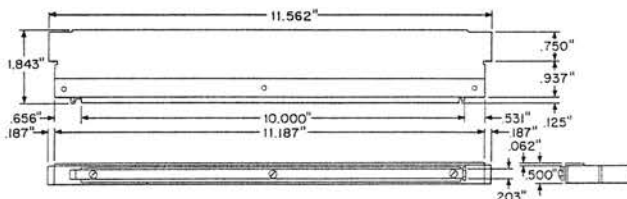


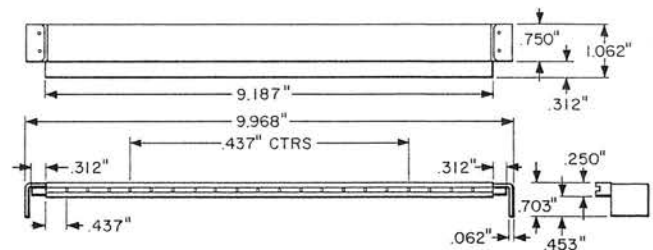
Fig. 4

Each consists of a wooden mounting equipped with a metal retaining strip and transparent face strip. Arranged to mount a strip of printed figures under the face strip. Will mount with number 112 or similar type jack mountings.

Number 55B and D are equipped with a holly strip, otherwise they are same as number 55A and C.

Code	Comcode	Fig. No.
55A	100 729 169	1
55B	100 729 177	2
55C	100 729 185	3
55D	100 729 193	4

**57A**

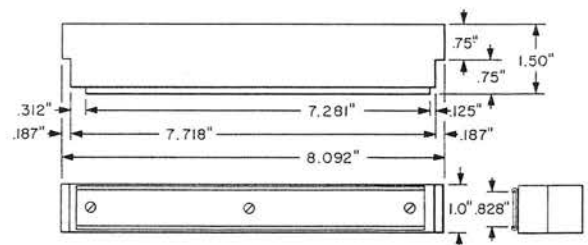


A wooden mounting strip with a black hard rubber face arranged to mount 20 number 17 Number Plates.

Arranged to mount with number 114 Jack Mountings.

Comcode: 100 729 219

## 61A



A wooden mounting strip equipped with a black finished metal retaining strip. Arranged to mount a strip of printed figures under the face strip.

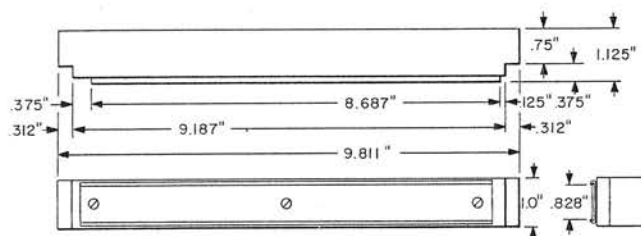
Will mount with number 113, 138, and 139 Jack Mountings.

Comcode: 100 729 284

## STRIPS

## Designation

62A



A wooden mounting strip equipped with a black finished metal retaining strip and transparent face strip. Arranged to mount a strip of printed figures under the face strip.

Will mount with number 114, 141, and 142 Jack Mountings.

Comcode: 100 729 292

## STRIPS

## Terminal

65B, 149B, 163 Type, 173A, 182C, 183 Type,  
and 700A

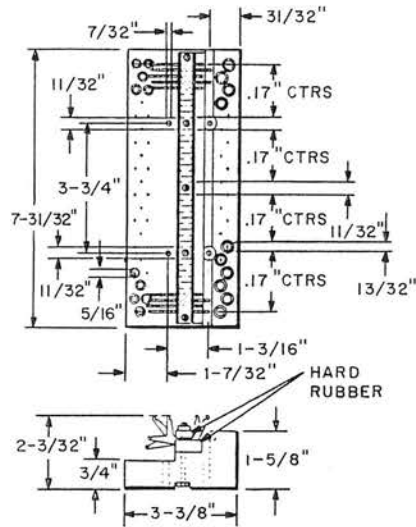


Fig. 1

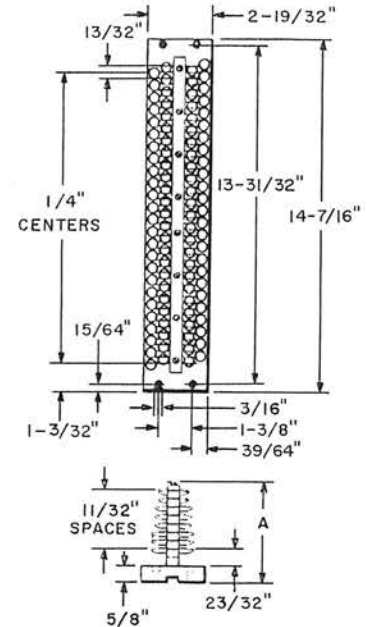


Fig. 3

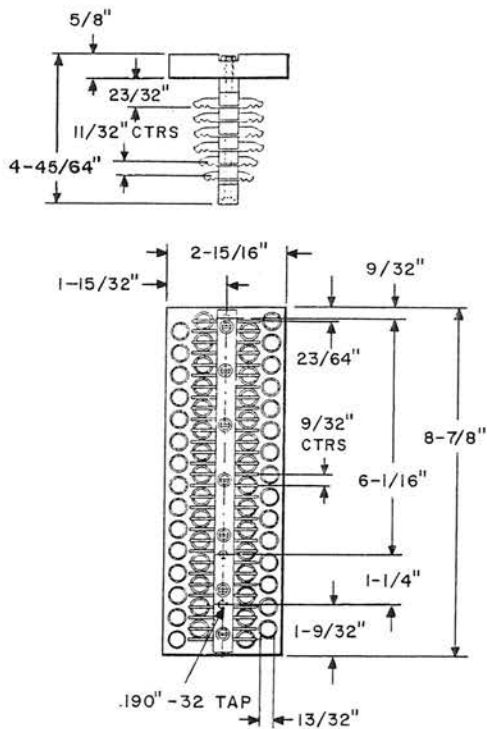


Fig. 2

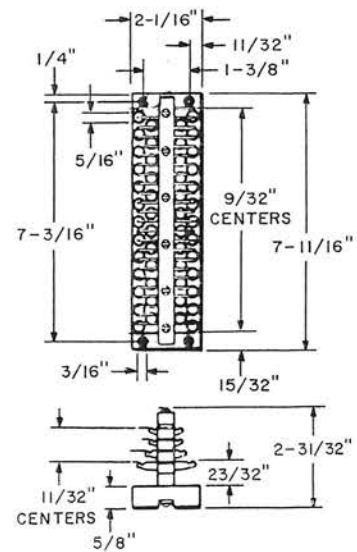


Fig. 4



## STRIPS

## Terminal

65B, 149B, 163 Type, 173A, 182C, 183 Type,  
and 700A (Continued)

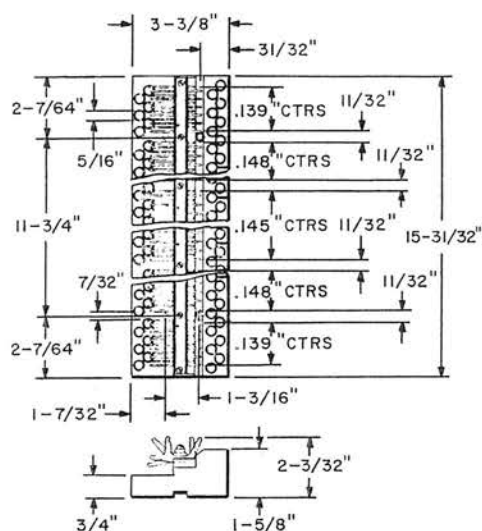


Fig. 5

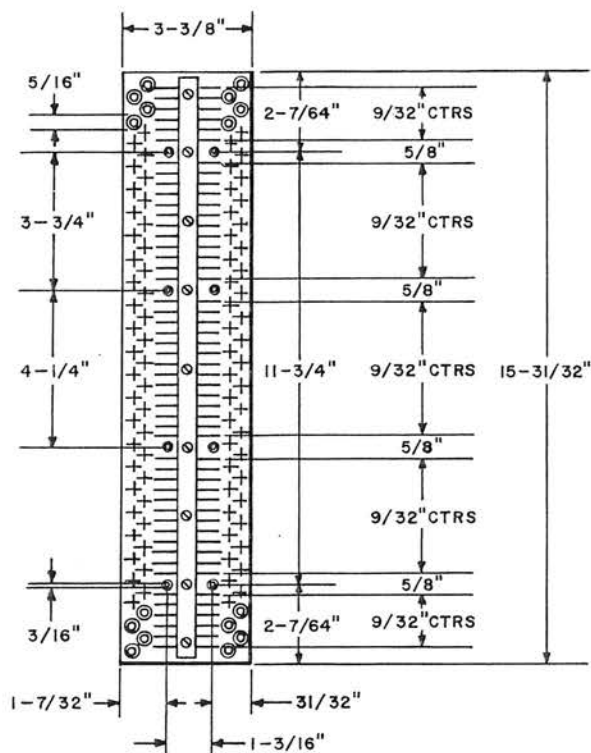


Fig. 6

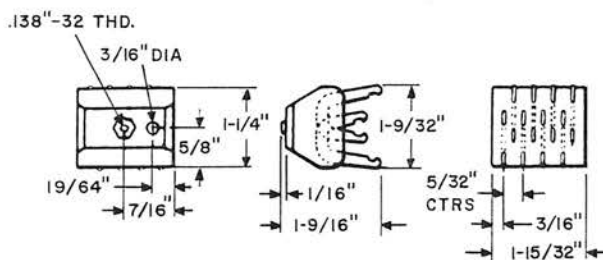


Fig. 7

STRIPS

Terminal

The terminal strips shown above have phenol fiber insulation with one or more fanning strips, and solder connection type terminals. Mounting screws are furnished. For detail information, refer to the table.

183J, L, and M are strapped when manufactured. See Fig. 1, 2, and 3 following the table for strapping configuration.

Code No.	Comcode	Fig. No.	Rows	Terminals Per Row	Dimension A (Inches)	Strap Fig.
65B	100 730 928	1	1	40, 3-Way	2-3/32	—
149B	100 731 181	2	8	30	4-45/64	—
163B	100 731 678	3	8	50	4-1/8	—
163C	100 731 686	3	10	50	4-13/16	—
173A	100 731 744	4	4	25	2-31/32	—
182C	100 731 983	5	1	100, 3-Way	15-31/32	—
183C	100 732 007	6	4	50	3-5/32	—
183D	100 732 015	6	5	50	3-3/16	—
183E	100 732 023	6	6	50	3-1/2	—
183F	100 732 031	6	4	50	2-15/16	—
183G	100 732 049	6	3	50	2-39/64	—
183H	100 732 056	6	7	50	2-13/16	—
183J	100 732 064	6	8	50	5	1
183L	100 732 080	6	5	50	3-3/16	2
183M	100 732 098	6	7	50	3-3/16	3
183N	100 732 106	6	4	50	3-9/16	—
183P	100 732 114	6	8	50	5	—
700A(a)	100 734 706	7	2	8	—	—

(a) Bakelite insulation.

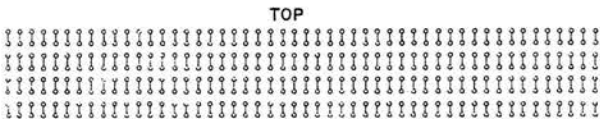


Fig. 1

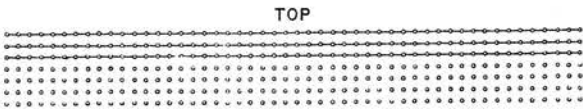


Fig. 3



Fig. 2

## STRIPS

## Terminal

F Type, J4A, L Type, M Type, N Type  
P Type, R Type, and S6A

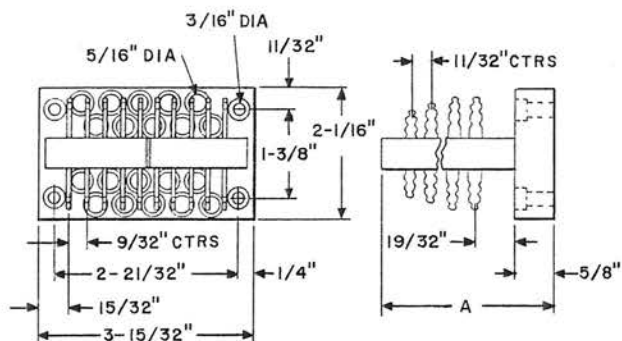


Fig. 1

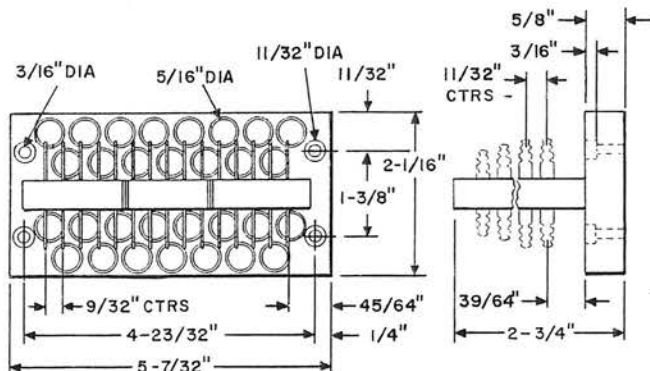


Fig. 2

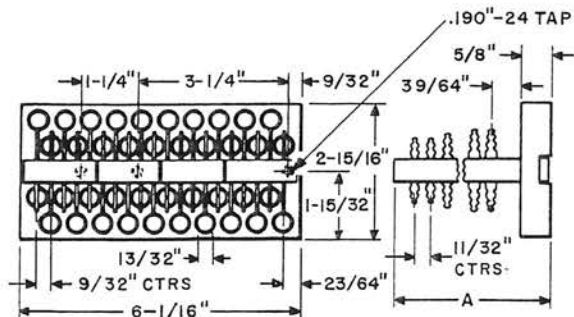


Fig. 3

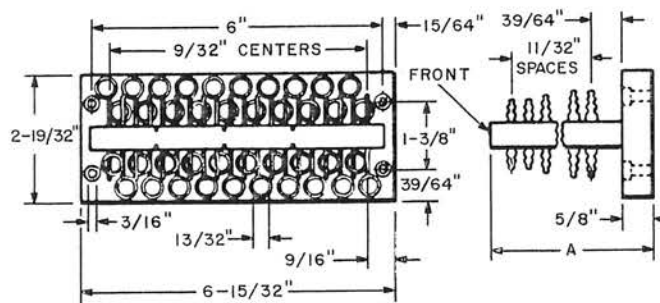


Fig. 4

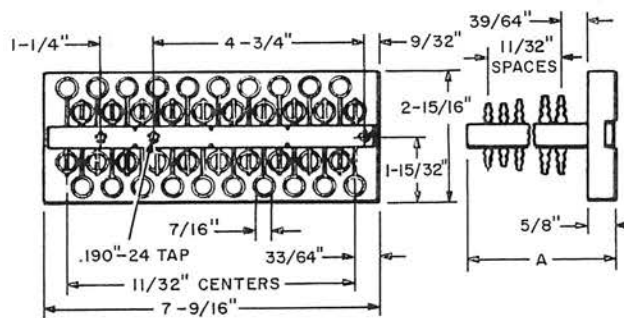


Fig. 5

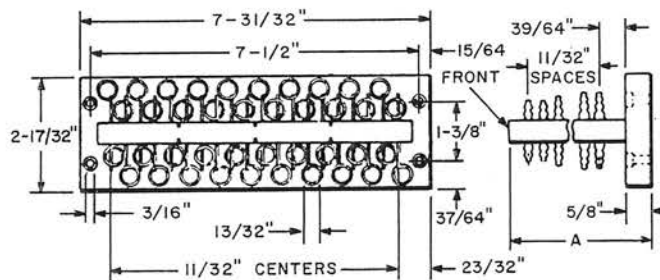


Fig. 6

## STRIPS

## Terminal

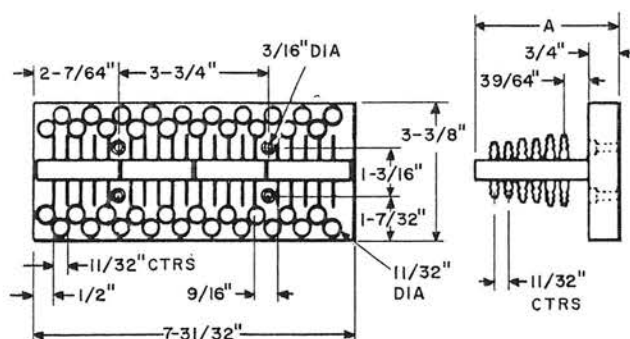


Fig. 7

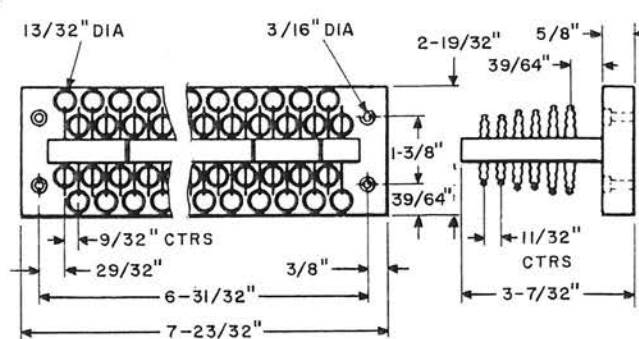


Fig. 8

The terminal strips shown above each consist of a molded cast resin block mounted on a wooden base. One or more fanning strips and a solder connection type terminal are provided. Mounting hardware is furnished. For detail information, refer to the table.

Some of the M and P type terminal strips are strapped when manufactured as indicated in table. See Fig. 1 through 25, following the table, for strapping configuration.

Code No.	Comcode	Fig. No.	Rows	Terminals Per Row	Dimension A (Inches)	Strap Fig.
F4A	100 734 870	1	4	10	2-3/4	—
F6A	100 734 888	1	6	10	3-7/16	—
F8A	100 734 896	1	8	10	4-1/8	—
J4A	100 734 912	2	4	15	2-3/4	—
L3A	100 734 920	3	3	20	2-13/32	—
L4A	100 734 938	3	4	20	2-3/4	—
L5A	100 734 946	3	5	20	3-3/32	—
L6A	100 734 953	3	6	20	3-7/16	—
L8A	100 734 979	3	8	20	4-1/8	—
M3A	100 734 987	4	3	20	2-13/32	—
M4A	100 734 995	4	4	20	2-3/4	—
M5A	100 735 000	4	5	20	3-3/32	—
M5B	100 735 018	4	5	20	3-3/32	1
M6A	100 735 026	4	6	20	3-7/16	—
M6B	100 735 034	4	6	20	3-7/16	2
M6C	100 735 042	4	6	20	3-7/16	3
M6D	100 735 059	4	6	20	3-7/16	4
M6E	100 735 067	4	6	20	3-7/16	9
M7A	100 735 075	4	7	20	3-25/32	—
M7B	100 735 083	4	7	20	3-25/32	5
M7C	100 735 091	4	7	20	3-25/32	6
M8A	100 735 109	4	8	20	4-1/8	—
M8B	100 735 117	4	8	20	4-1/8	7
M8C	100 735 125	4	8	20	4-1/8	8
N4A	100 735 133	5	4	20	2-3/4	—
N6A	100 735 141	5	6	20	3-7/16	—
N8A	100 735 158	5	8	20	4-1/8	—
P3A	100 735 166	6	3	20	2-13/32	—
P4A	100 735 174	6	4	20	2-3/4	—
P4B	100 735 182	6	4	20	2-3/4	10
P4C	100 735 190	6	4	20	2-3/4	11



## STRIPS

## Terminal

F Type, J4A, L Type, M Type, N Type  
P Type, R Type, and S6A (Continued)

Code No.	Comcode	Fig. No.	Rows	Terminals Per Row	Dimension A (Inches)	Strap Fig.
P5A	100 735 208	6	5	20	3-3/32	—
P5B	100 735 216	6	5	20	3-3/32	12
P5C	100 735 224	6	5	20	3-3/32	13
P6A	100 735 232	6	6	20	3-7/16	—
P6B	100 735 240	6	6	20	3-7/16	14
P6C	100 735 257	6	6	20	3-7/16	15
P6D	100 735 265	6	6	20	3-7/16	16
P6E	100 735 273	6	6	20	3-7/16	17
P6F	100 735 281	6	6	20	3-7/16	18
P6G	100 735 299	6	6	20	3-7/16	19
P6H	100 735 307	6	6	20	3-7/16	20
P6K	100 735 315	6	6	20	3-7/16	25
P7A	100 735 323	6	7	20	3-25/32	—
P7B	100 735 331	6	7	20	3-25/32	21
P7C	100 735 349	6	7	20	3-25/32	22
P8A	100 735 356	6	8	20	4-1/8	—
P8B	100 735 364	6	8	20	4-1/8	23
P8C	100 735 372	6	8	20	4-1/8	24
R3A	100 735 380	7	3	20	2-17/32	—
R4A	100 735 398	7	4	20	2-7/8	—
R5A	100 735 406	7	5	20	3-7/32	—
R6A	100 735 414	7	6	20	3-9/16	—
R8A	100 735 422	7	8	20	4-1/4	—
S6A	100 735 430	8	6	22	3-7/16	—



Fig. 1

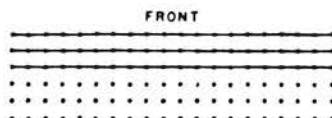


Fig. 3

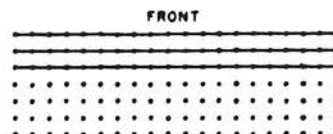


Fig. 5

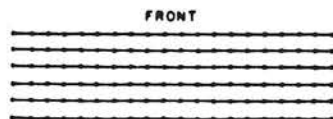


Fig. 2

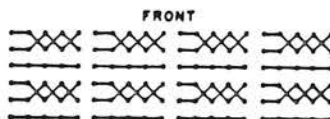


Fig. 4

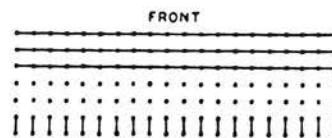


Fig. 6

STRIPS

Terminal

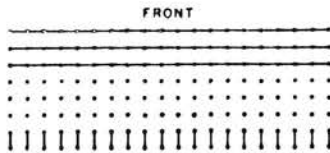


Fig. 7

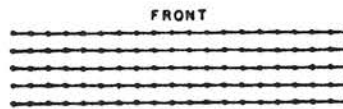


Fig. 12

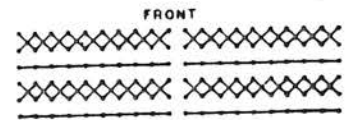


Fig. 17

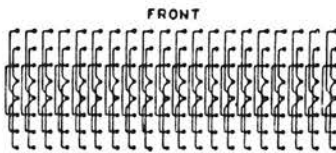


Fig. 8

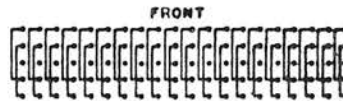


Fig. 13

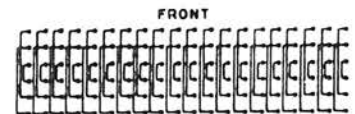


Fig. 18



Fig. 9

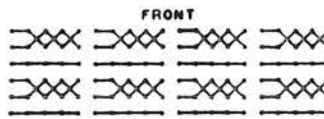


Fig. 14

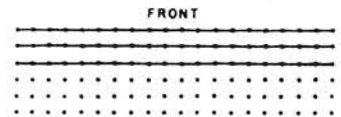


Fig. 19

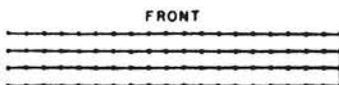


Fig. 10

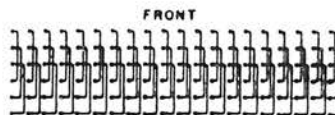


Fig. 15

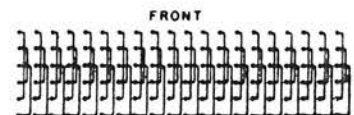


Fig. 20

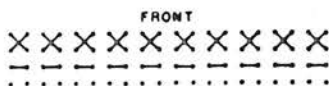


Fig. 11

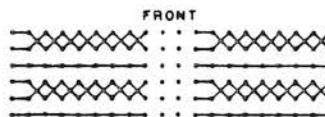


Fig. 16

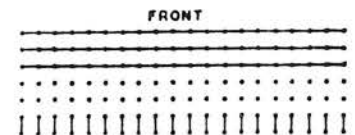
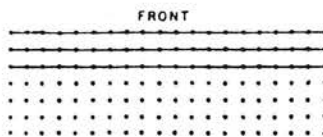


Fig. 21

## STRIPS

## Terminal

**F Type, J4A, L Type, M Type, N Type  
P Type, R Type, and S6A (Continued)**



**Fig. 22**

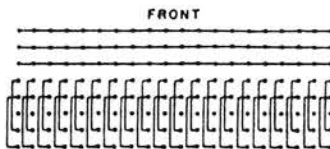
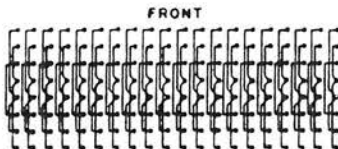
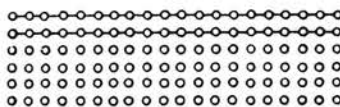


Fig. 23

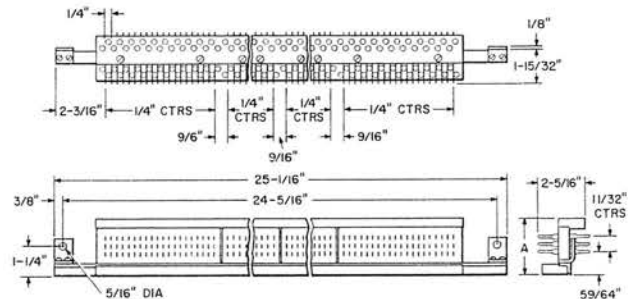


**Fig. 24**



**Fig. 25**

BK3A, BK6A, and BK6B



Each has 80 terminals per row molded in cast resin blocks mounted on a metal angle equipped with mounting lugs. The terminals are arranged for mechanically wrapped connections.

Each terminal strip is provided with .216-inch 24 self-tapping screws and lockwashers for mounting.

BK3A: Has three rows and the A dimension is 2-13/32 inches.

Comcode: 100 735 547

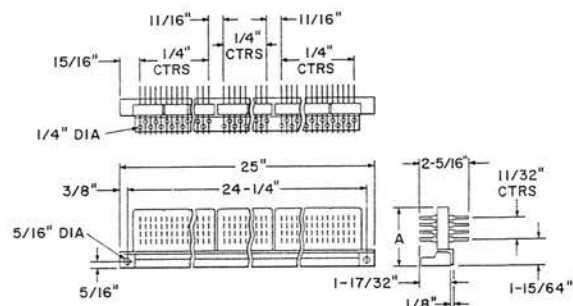
BK6A: Has six rows and the A dimension is 3-7/16 inches.

Comcode: 100 735 554

**BK6B:** Same as BK6A except top fanning strip faces in the same direction as the bottom fanning strip instead of as shown in illustration and depth is 1-13/16 inches instead of 1-7/8 inches.

Comcode: 100 735 562

BL4A and BL7A



BL4A. ALSO GENERAL DESIGN  
AND DIMENSIONS OF BL TYPE

## STRIPS

## Terminal

Each has 90 terminals per row molded in cast resin blocks on a metal mounting bracket and provided with a fanning strip. Terminals are arranged for mechanically wrapped connections.

Each terminal strip is provided with .216-inch 24 machine screws and lockwashers for mounting.

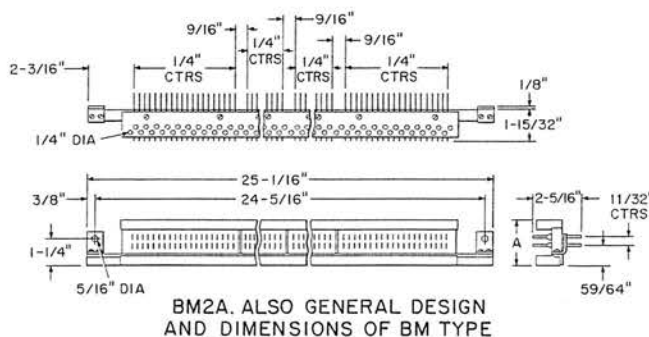
**BL4A:** Has four rows and the A dimension is 2-3/4 inches.

Comcode: 100 735 570

**BL7A:** Has seven rows and the A dimension is 3-25/32 inches.

Comcode: 100 735 588

## BM2A and BM5A



Each has 80 terminals per row molded in cast resin blocks mounted on a metal angle equipped with mounting lugs and provided with fanning strips. The terminals are arranged for mechanically wrapped connections.

Each terminal strip is provided with .216-inch 24 machine screws and lockwashers for mounting.

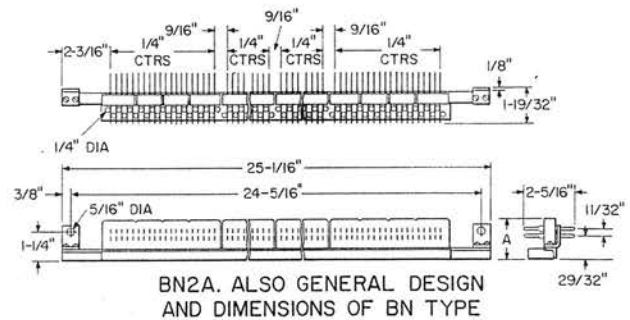
**BM2A:** Has two rows and the A dimension is 2-1/16 inches.

Comcode: 100 735 596

**BM5A:** Has five rows and the A dimension is 3-3/32 inches.

Comcode: 100 735 604

## BN Type



Each has 80 terminals per row molded in cast resin blocks mounted on a metal angle equipped with mounting lugs and provided with a fanning strip. Terminals are arranged for mechanically wrapped connections.

Each terminal strip is provided with .216-inch 24 machine screws and lockwashers for mounting.

**BN2A:** Has two rows and the A dimension is 1-3/4 inches.

Comcode: 100 735 612

**BN3A:** Has three rows and the A dimension is 2-3/32 inches.

Comcode: 100 735 620

**BN5A:** Has five rows and the A dimension is 2-25/32 inches.

Comcode: 100 735 638

**BN6A:** Has six rows and the A dimension is 3-1/8 inches.

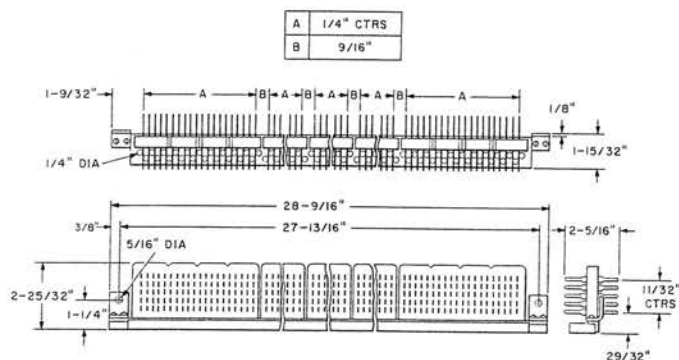
Comcode: 100 735 646



## STRIPS

## Terminal

## BP5A



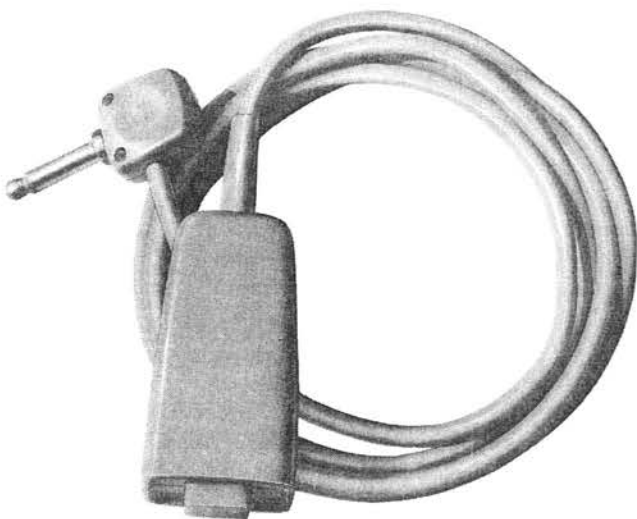
Has five rows of 100 terminals each molded in a cast resin block mounted on a metal angle equipped with a mounting lug and fanning strip. Terminals are arranged for mechanically wrapped connections.

Provided with .250 inch-20 machine screws and lock-washers for mounting.

Comcode: 100 735 653

## SWITCHES

261A



Each consists of a plastic housing, a 224A Switch and a spring loaded plunger assembly. Equipped with an M2ER type cord and a 444A Plug.

The switch is normally open, SPST, momentary operating type.

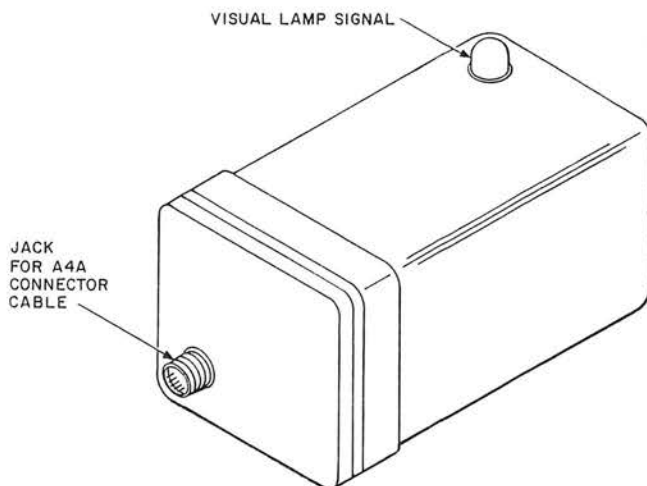
Overall dimensions are 3.0 inches long by 1.540 inches wide by 1.00 inch high.

Available in the following colors:

Code No.	Comcode	Color
261A-58	101 416 840	White
261A-60	101 416 857	Light beige
261A-61	101 416 865	Light gray

Used with the M2ER type cord to form the nurse's call cord for use with the number 802 type telephone in the 3A (hospital) Communication System.

270AW



Provides for automatic connections of either one or two Central Office or PBX lines.

It is a factory-sealed unit. The approximate overall dimensions, excluding connectors, indicator lines, and mounting brackets, are 5.83 inches long, 3.70 inches wide, and 2.90 inches high.

**Intended solely for specially engineered lines — not for general telephone use.**

The switch operates on either 18 volts A.C. or 20 volts D.C. The A.C. voltage can be supplied by a 2012B transformer, using a separate transformer for each switch. The D.C. voltage may be supplied from a key telephone system power supply, if available. A transformer with a grounded secondary cannot be used. Drain should be figured at 50 mils of current for each switch.

A 51A Lamp is used in the switch.

Comcode: 101 629 053

Connector cables, cords, and transformers must be ordered separately but will be shipped with the switch. These are:

**A4A Connector Cable:** An input cable, installed between the switch and distribution point. Available in 50, 100, or 200-foot lengths.

**M4AJ Cord:** An output cord used between the switch and a desk-type telephone set. Replaces the cord normally supplied with the telephone set. Supplied in four-foot lengths.

**M4AK Cord:** An output cord used between the switch and a wall-type telephone set. Supplied in ten-foot lengths.

**2012B Transformer:** A separate transformer is required for each switch.

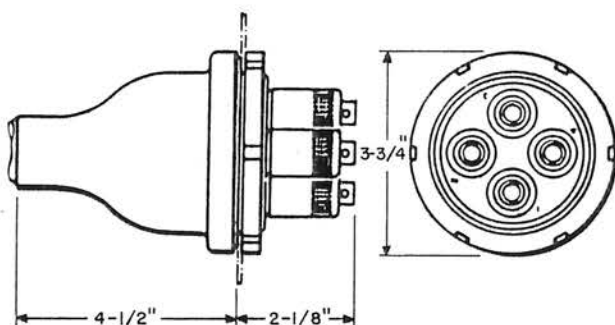
**2A Clamp:** To provide a clamping arrangement to prevent accidental dislodgement of the 2012B Transformer from an electrical outlet installation.



## TERMINALS

## Cable

38A



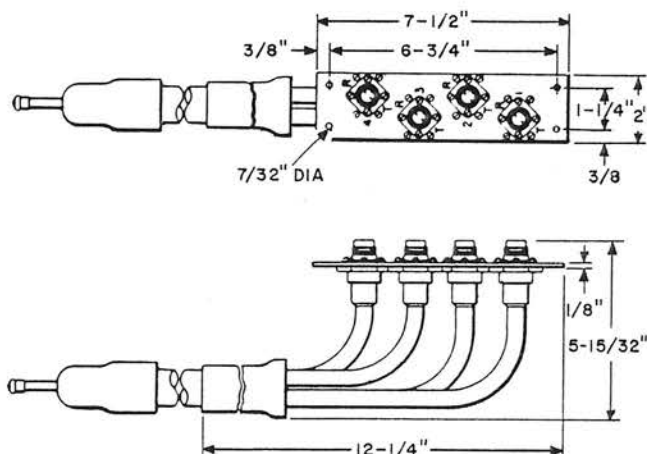
Gas tight cable terminal consisting of a cylindrical coupling provided with a four shielded pair number 19 AWG stub cable 15 feet long. Each pair of conductors is connected to a soldering terminal provided with a shielding cap.

Mounts on a bracket or in an apparatus case. A 3-1/32 inch diameter hole is required for mounting.

Used for terminating video pairs in central offices or manholes.

Comcode: 100 744 754

45A



Gas tight cable terminal consisting of a metal plate equipped on one side with four KS-14743 Connectors and on the other side with a tube assembly which is terminated with a four-pair video type lead covered polyethylene insulated stub cable having number 16 AWG conductors. Each

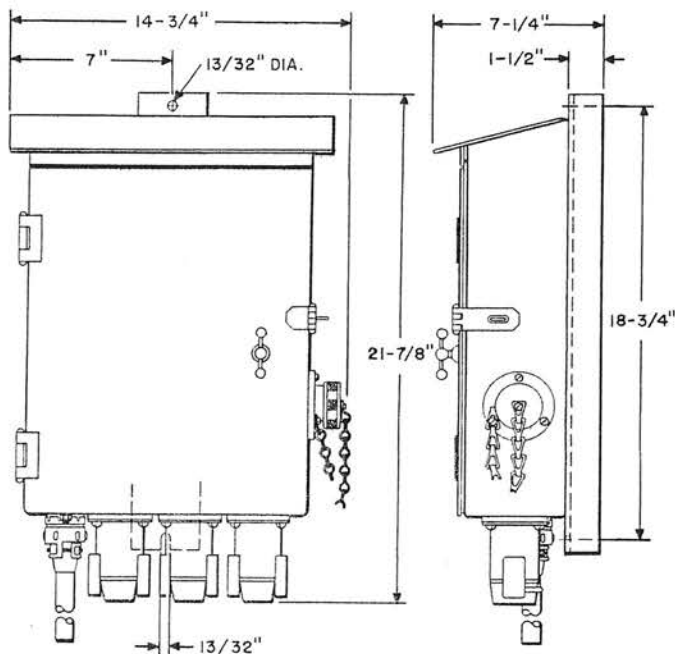
of the four pairs of conductors passes through a tube of the tube assembly and connects to the contacts of one of the connectors.

The terminal is filled with dry air or nitrogen under pressure and equipped with an air valve in the cable stub. Cable stubs are available in 15, 25, 30, and 75-foot lengths. Length must be specified on order.

Used for terminating video pairs in central offices or program pickup points.

Comcode: 100 744 861 E/W 15 ft Stub  
 100 744 887 E/W 25 ft Stub  
 100 744 895 E/W 30 ft Stub  
 100 744 978 E/W 75 ft Stub

48B and C



Each consists of a G16B Binding Post Chamber mounted in a weatherproof metal box which is arranged for mounting on a post or pole.

Each contains one 4-conductor and three 10-conductor cables. The conductors at one end of each cable are connected to terminals on the binding post chamber. At the other end conductors are terminated in one 4-contact and three 10-contact external connectors respectively.



## TERMINALS

## Cable

## 48B and C (Continued)

Used for connecting the control cable between the two areas of a NIKE B battery to the equipment in each area in installations where the telephone company provides the intra-battery cable.

48B: Used at the Battery Control location.

Comcode: 100 745 074

48C: Used at the Launch Area.

Comcode: 100 745 082

Each consists of a base of molded insulating material, reinforced with metal and contains a six-pair terminal block. Cover is of molded insulating material and is assembled to the base by means of wire clips.

Arranged for three additional six pair P-18A782 Terminal Blocks which are not furnished and must be ordered separately.

Equipped with three distributing rings for support of drop wires and arranged for suspension from strand by means of clamps that are part of the base.

Used as distribution terminals for polyethylene insulated cable of diameter indicated in table. Also suitable for enclosing sheath openings at straight splices of polyethylene insulated cables. Provision is made for electrical continuity of the metallic portions of the two cable sheaths.

## 49A2, 49A3, and 49B2

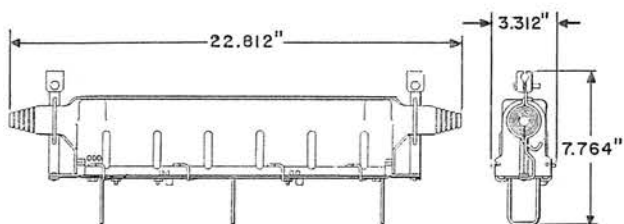


Fig. 1

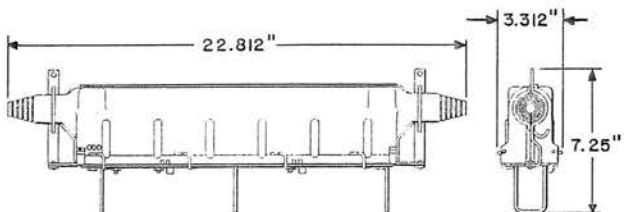


Fig. 2

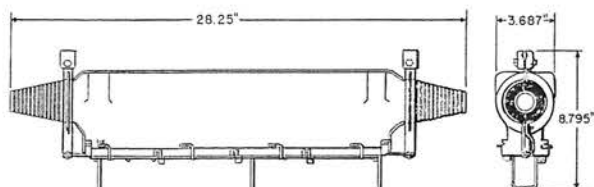


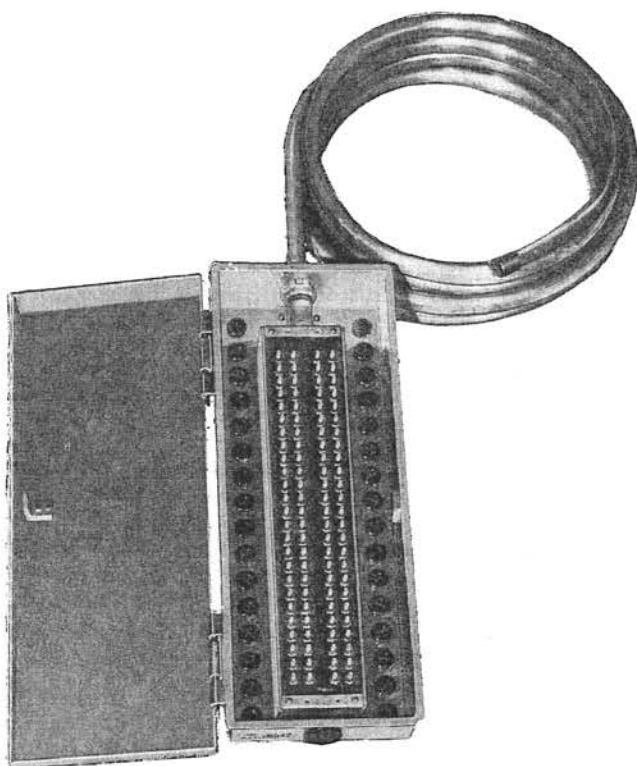
Fig. 3

Code No.	Comcode	Fig. No.	Diameter of Cable Arranged for (Inches)
49A2	100 745 108	1	1.0 and less
49A3	100 997 832	2	0.9 and less
49B2	100 745 124	3	1.0 to 2.2

## TERMINALS

## Cable

53A3-50

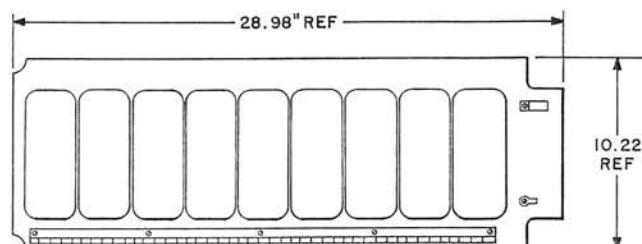


The 53A3-50 Cable Terminal is a 50 pair cable terminal used as an unprotected distribution terminal at locations where there is a heavy concentration of drop or block wires and is intended for wall or pole mounting. Overall dimensions are 22-7/8 inches high by 8-3/16 inches wide by 2-1/2 inches deep.

This terminal consists of a sheet metal box having a hinged cover and a gastight 2C1-50 Terminal Block into which a lead sheathed cable has been molded. The front of the box is flanged to prevent the entrance of moisture and the door is furnished with a gravity-type locking catch which must be raised on the hinges to open. The terminal block is equipped with a 50 pair fully color coded PVC insulated conductor stub having a lead sheath and a gastight plug. The stub is six feet long but stubs of 12 and 25 feet are also available but must be specified on the order if required.

Comcode: 100 745 199 E/W 6 ft Stub  
 100 745 207 E/W 12 ft Stub  
 100 745 215 E/W 25 ft Stub

64B1-75 and 64B1-100



Consists of a fanning strip mounted on a terminal plate assembly 1 inch deep with a six foot AT-7441D Inside Wiring Cable.

64B1-75: A 75 pair cable is wired to the terminal plate. For use in the 1A1 Key Telephone System.

Comcode: 100 745 397

64B1-100: A 100 pair cable is wired to the terminal plate. For use in the 6A Key Telephone System.

Comcode: 100 745 405

## TERMINALS

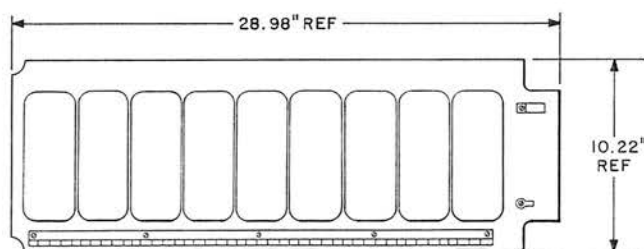
## Cable

The 53A3-50 Cable Terminal is a 50 pair cable terminal used as an unprotected distribution terminal at locations where there is a heavy concentration of drop or block wires and is intended for wall or pole mounting. Overall dimensions are 22-7/8 inches high by 8-3/16 inches wide by 2-1/2 inches deep.

This terminal consists of a sheet metal box having a hinged cover and a gastight 2C1-50 Terminal Block into which a lead sheathed cable has been molded. The front of the box is flanged to prevent the entrance of moisture and the door is furnished with a gravity-type locking catch which must be raised on the hinges to open. The terminal block is equipped with a 50 pair fully color coded PVC insulated conductor stub having a lead sheath and a gastight plug. The stub is six feet long but stubs of 12 and 25 feet are also available but must be specified on the order if required.

Comcode: 100 745 199 E/W 6 ft Stub  
 100 745 207 E/W 12 ft Stub  
 100 745 215 E/W 25 ft Stub

## 64B1-75 and 64B1-100



Consists of a fanning strip mounted on a terminal plate assembly 1 inch deep with a six foot AT-7441D Inside Wiring Cable.

64B1-75: A 75 pair cable is wired to the terminal plate. For use in the 1A1 Key Telephone System.

Comcode: 100 745 397

64B1-100: A 100 pair cable is wired to the terminal plate. For use in the 6A Key Telephone System.

Comcode: 100 745 405

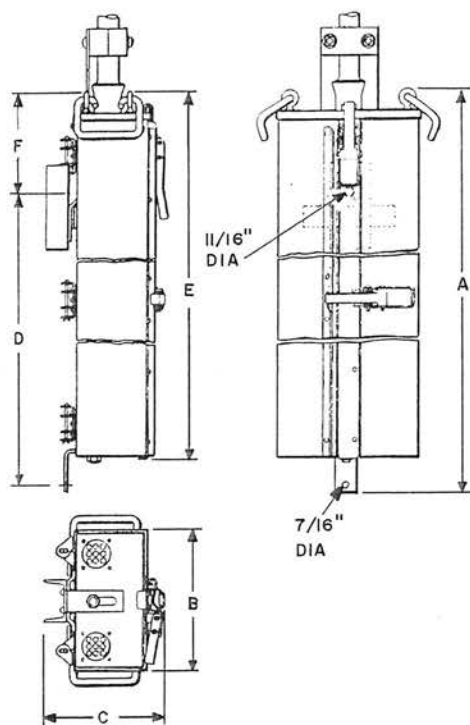




## TERMINALS

## Cable

## BH Type



Each terminal consists of a metal sealing chamber having an insulating panel equipped with terminal posts, screws and washers, a 10- or 25-foot long (alpath sheath) stub cable connected to the binding posts inside the chamber, and a metal box with hinged doors. Stub cable length must be specified on order.

The stub cable has a gastight resin plug, is fully color coded the same as standard even count PIC cable, and has the same number of pairs of number 24 AWG PVC insulated conductors as there are pairs of binding posts, thus providing in and out line connections. The stub cable pairs are connected to the binding posts in horizontal sequence and the appropriate lug numbers are stenciled on the marking strips to facilitate splicing to even count PIC cable.

Holes in the bottom of the box and five additional pairs of binding posts at the bottom of the panel are provided for bringing in and terminating drop wires. Brackets for pole or wall mounting are furnished. The terminal housing is equipped with a locking device to prevent the horizontal door latch from being opened. This device is locked and unlocked with a 216B Tool which must be ordered separately.

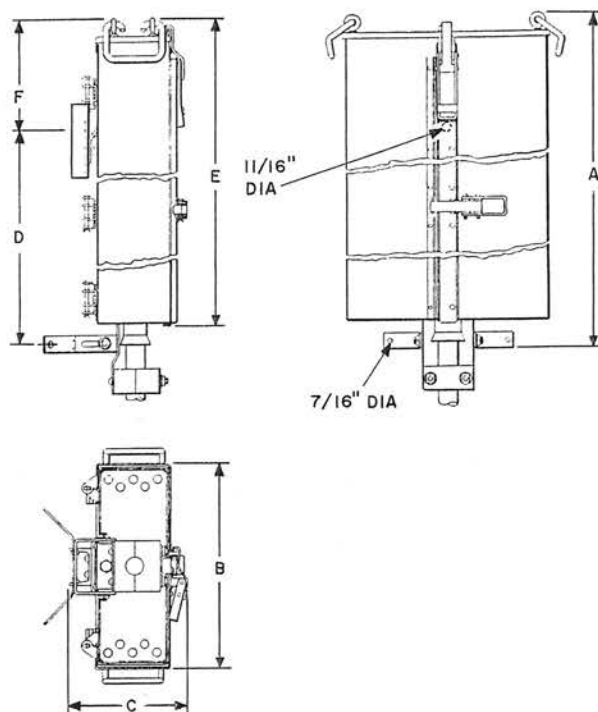
These terminals are designed for installation between feeder cables and distribution cables and within runs of these cables to provide flexibility through cross connections.

Code No.	Comcode	Stub Cable Length (ft)	No. of Pairs	Dimensions (Inches)					
				A	B	C	D	E	F
BH100	100 745 702	10	100	29-1/4	10-3/16	8-1/2	21-1/4	26-7/8	7-1/2
	100 745 710	25							
BH200	100 745 728	10	200	46-7/8	10-3/16	8-1/2	38-7/8	44-1/2	7-1/2
	100 745 736	25							
BH300	100 745 744	10	300	39-1/2	16-9/16	9-1/4	30	37-1/16	9
	100 745 751	25							
BH400	100 745 769	10	400	48-3/8	16-9/16	9-1/4	38-7/8	46	9
	100 745 777	25							
BH600	100 745 785	10	600	53-1/4	18-5/16	11-1/8	44-1/2	50-7/8	8-5/16
	100 745 793	25							

## TERMINALS

## Cable

## BJ Type



Each cable terminal consists of an insulating panel assembly equipped with terminal posts, screws, washers, and a bottom mounted 25-foot long stalpeth sheath stub cable connected to the binding posts. The panel assembly is enclosed in a galvanized steel box equipped with hinged doors.

The stub cable has a gastight resin plug, is fully color coded the same as standard even count PIC cable, and has the same number of pairs of number 24 AWG PVC insulated conductors as there are pairs of binding posts, thus providing in and out line connections. The stub cable pairs are connected to the binding posts in horizontal sequence and appropriate lug numbers are stenciled on the marking strips to facilitate splicing to even count PIC cable.

Holes in the bottom of the box and ten additional pairs of binding posts at the bottom of the panel are provided for bringing in and terminating service wires. Brackets for pole or wall mounting are furnished. The terminal housing is equipped with a locking device to prevent the horizontal door latch from being opened. This device is locked and unlocked with a 216B Tool which must be ordered separately.

Used to furnish cross connecting facilities in the distribution cable plant where a bottom access stub cable is required for connecting to buried or underground systems.

Replaces BG200 and BG400 Cable Terminals.

Code No.	Comcode	No. of Pairs	Dimensions (Inches)					
			A	B	C	D	E	F
BJ200	100 997 972	200	46-7/8	10-3/16	8-1/2	38-7/8	44-1/2	7-1/2
BJ400	100 997 998	400	48-3/8	16-9/16	9-1/4	38-7/8	46	9
BJ600	100 745 801	600	53-3/8	18-5/8	11	38-3/4	51	14-1/8

## TERMINALS

## Cable

## NC and NF Type

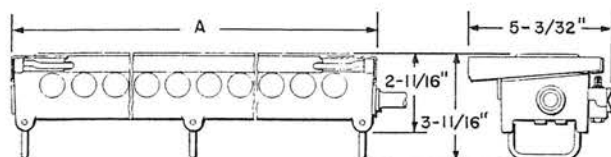


Fig. 1

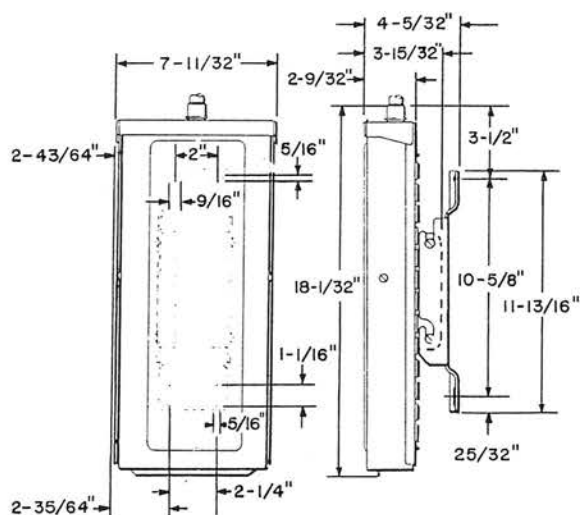


Fig. 2

NC10 and NC16, NF10 and NF16: Each consists of a cast metal housing having a hinged metal cover and containing terminals and a lead covered polyvinyl chloride insulated nonquadded stub cable molded in a gas tight terminal block. NC type cable terminals contain protector units as indicated in table. Cable terminals are equipped with a 3-foot stub cable having number 24 AWG conductors. Can be obtained equipped with a stub cable 5 feet 6 inches, 8, 12, or 25 feet long when specified. Each has three distributing rings for supporting drop wires. Terminal block can be reversed to permit entrance of stub cable from opposite end of housing.

For use in outdoor distributing systems and can be mounted directly on the cable and strand. Can also be mounted on a pole or wall by means of a 45A Bracket which if required must be ordered separately.

NC25 and NF25: Each consists of a sheet metal housing containing terminals and a lead covered polyvinyl chloride insulated nonquadded cable molded in a gas tight terminal block. Equipped with a 5-foot 6-inch stub cable having number 24 AWG conductors. Can be obtained with a stub cable 8, 12, or 25 feet long when specified. Terminal block can be reversed to permit entrance of stub cable at bottom of housing.

For use in cable distributing systems for pole or wall mounting.

Code No.	Comcode	Stub Cable Length (ft)	Fig. No.	No. of Pairs of Conductors Arranged for	Qty 2A1B Protector Units Contained	Dimension A (Inches)
NC10	100 745 959	3	1	10	20	12-3/8
	100 745 967	5 1/2				
	100 745 975	8				
	100 745 983	12				
	100 745 991	25				
NC16	100 746 007	3	1	16	32	18-3/4
	100 746 015	5 1/2				
	100 746 023	8				
	100 746 031	12				
	100 746 049	25				
NC25	—	3	2	25	50	—
	100 746 056	5 1/2				
	100 746 064	8				

## TERMINALS

## Cable

Code No.	Comcode	Stub Cable Length (ft)	Fig. No.	No. of Pairs of Conductors Arranged for	Qty 2A1B Protector Units Contained	Dimension A (Inches)
NC25	100 746 072	12	2	25	50	—
	100 746 080	25				
NF10	100 746 098	3	1	10	—	12-3/8
	100 746 106	5½				
	100 746 114	8				
	100 746 122	12				
	100 746 130	25				
NF16	100 746 148	3	1	16	—	18-3/4
	100 746 155	5½				
	100 746 163	8				
	100 746 171	12				
	100 746 189	25				
NF25	100 746 197	3	2	25	—	—
	100 746 205	5½				
	100 746 213	8				
	100 746 221	12				
	100 746 239	25				



## TERMINALS

## Cable

## NH16 and NH25

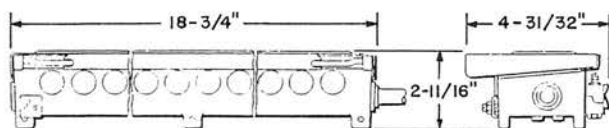


Fig. 1

Each is provided with a clamp fixture for terminating the number 6 ground wire to the housing to provide protector ground, and a 12-foot lead covered polyvinyl chloride insulated nonquadded stub cable having number 24 AWG conductors. Can also be obtained with stub cable 25 feet long when specified.

Arranged for pole or wall mounting. The terminal block can be reversed to permit entrance of stub cable at bottom of housing.

Used as fuseless protected building terminals, either indoors or outdoors.

NH16: Consists of a cast metal housing having a hinged metal cover and containing terminals and the stub cable molded in a gastight terminal block. A 45A Bracket (not shown in illustration) is provided for pole or wall mounting.

NH25: Consists of a sheet metal housing containing terminals and the stub cable molded in a gastight terminal block.

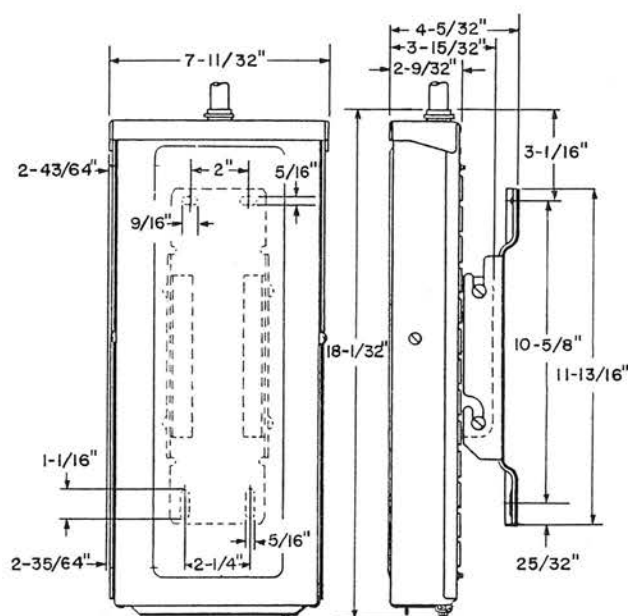


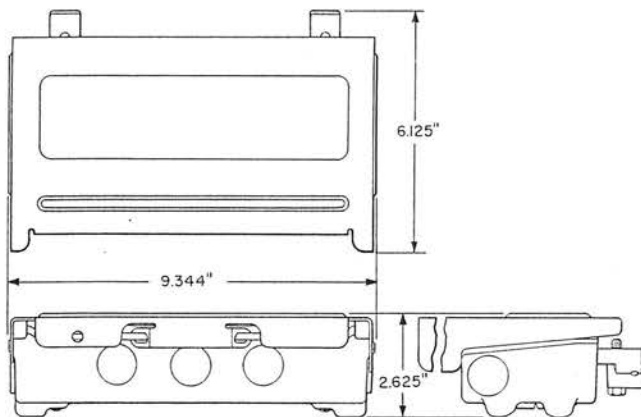
Fig. 2

Code No.	Comcode	Stub Cable Length (ft)	Fig. No.	No. of Pairs of Conductors Arranged for	Qty 2A1A Protector Units Contained
NH16	100 746 247	12	1	16	32
	100 746 254	25			
NH25	100 746 288	12	2	25	50
	100 746 296	25			

## TERMINALS

## Wire

104B3-6



Consists of a cast metal housing having a hinged metal cover containing a connecting block equipped with six pairs of binding post and two terminals for ringing ground connections;

Arranged for mounting on the support wire of multiple line wire. Knockouts are provided in the housing for pole or cross arm mounting.

Provided with rubber grommets for entrance of wires.

Used for outdoor use with multiple line wire for drop wire connections where protection is not required.

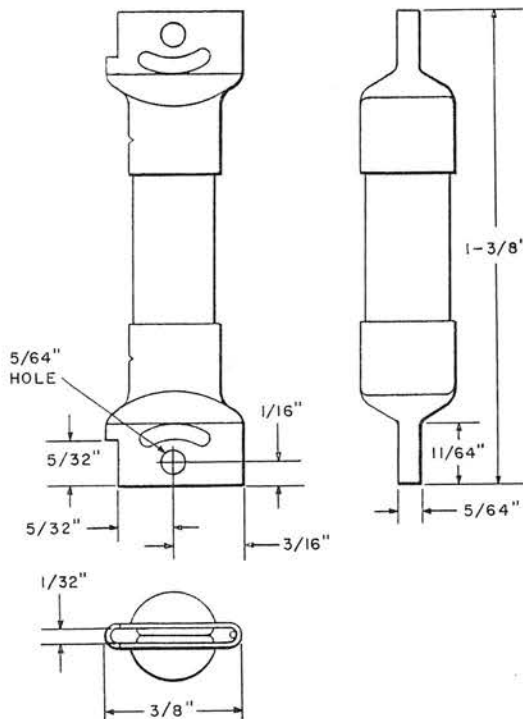
Replaces 104B2-6 Wire Terminal.

Comcode: 101 233 179



## THERMISTORS

1A

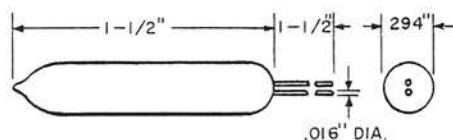


Consists of a circuit element, having a negative temperature coefficient of resistivity, in a glass envelope enclosed in a fiber tube with metal end caps. The thermistor is designed to act as a time delay element in circuits to delay relay operation. With the nominal resistance at 77° F with 60,000 ohms zero current and 450 ohms maximum current, the maximum continuous current is .015 ampere for ac only. Temperature coefficient at 77° F is -1.7 percent per degree F.

Arranged to mount on apparatus terminals, and for use in PBX trunks, wiring plans, and key telephone systems employing a ring-up relay.

Comcode: 100 748 029

21A



Consists of a bead type thermistor mounted in an evacuated glass tube and provided with tinned leads. Has a high negative temperature coefficient of resistance and

is for use as an oscillator amplitude control. Negative temperature coefficient of resistance at 25° C is approximately 4.6 percent per degree C.

Cold resistance:

Ro at 0° C is approximately 18 megohms

Ro at 25° C is approximately 5.3 megohms

Ro at 40° C is approximately 2.7 megohms

Power sensitivity:

To reach Ro/100 at 25° C requires approximately 2 milliwatts

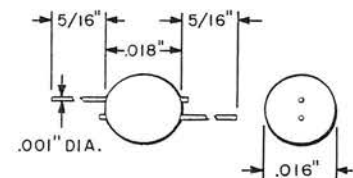
To reach Ro/1000 at 25° C requires approximately 5 milliwatts

Maximum continuous current is 1 milliamperes ac or dc.

For use in the alarm and control circuit of the TD-2 Radio System and for sequence signaling transmitting units in television or radio order wire circuits.

Comcode: 100 748 284

23A



Glass-coated bead type thermistor with platinum iridium leads. Negative temperature coefficient of resistance at 25° C is approximately 3.4 percent per degree C and at 38° C is approximately 3.1 percent per degree C. Maximum safe operating temperature is 150° C.

Cold resistance:

Ro at 0° C is approximately 5000 ohms

Ro at 25° C is approximately 2000 ohms

Ro at 38° C is approximately 1300 ohms

Ro at 50° C is approximately 900 ohms

Ro at 75° C is approximately 460 ohms

Ro at 100° C is approximately 250 ohms

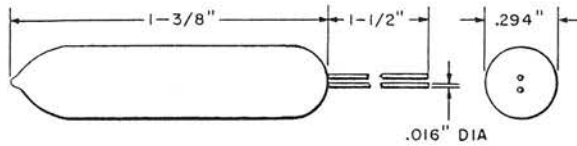
Intended for use in measuring high frequency power in test equipment and for measurement of temperature where an extremely small electric thermistor sensing element is required.

Comcode: 100 748 326



## THERMISTORS

37B



Consists of a bead type thermistor mounted in an evacuated glass tube and provided with tinned leads. When measured at an ambient temperature of  $70^{\circ}\text{C}$  with 60 milliamperes flowing through the thermistor, the resistance is 6,000 ohms minimum and 10,000 ohms maximum. With 10 ma applied the resistance is 84.6 ohms minimum and 95.4 ohms maximum. The ratio of resistance at  $70^{\circ}\text{C}$  to that at  $25^{\circ}\text{C}$  is approximately 5.6.

For use in television terminals.  
Comcode: 100 748 490

## THERMOCOUPLES

## 20, 21, and 22 Type

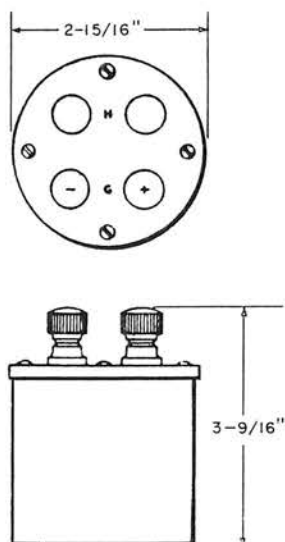


Fig. 1

A thermoelectric couple in which the junction of two dissimilar metals is heated by passing a current through a resistance wire to the midpoint of which the junction is attached. These elements are enclosed in a highly evacuated glass bulb which is packed in cotton and mounted in a container of insulating material. Four terminals are provided at one end, two (marked H) for connection to the heater element and two (marked G) for connection to the couple element.

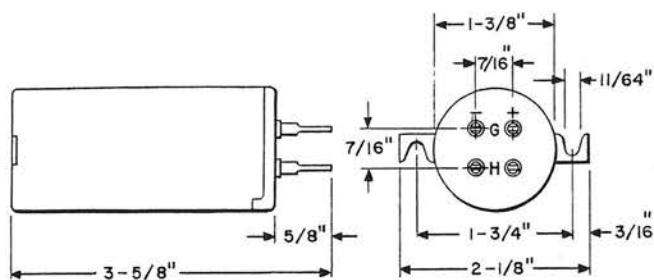


Fig. 2

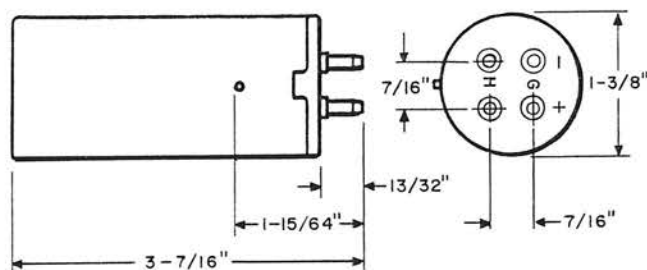


Fig. 3

## THERMOCOUPLES

## 20, 21, and 22 Type (Continued)

Code No.	Comecode	Fig. No.	Resistance (Ohms)		(a) Max Safe		Max Heater Current (Amp.) to Produce in Couple an Open Circuit Voltage of 5 Millivolts
			Heater	Couple	Heater	Couple	
			Rated	Plus or Minus	Rated	Plus or Minus	Current (Amperes)
20A	100 749 357	1	.3	.05	3	.3	1.0
20B	100 749 365	1	.6	.06	3	.3	.470
20C	100 749 373	1	5	.5	3	.3	.075
20D	100 749 381	1	35	3.5	12	1.2	.016
20E	100 749 399	1	43	.2	(b)	(b)	.015
20J	100 749 415	1	600	60	12	1.2	.005
20L	100 749 423	1	1000	100	12	1.2	.004
21C	100 749 464	2	5	.5	3	.3	.075
21N	100 749 506	2	46.5	4.6	12	1.2	.015
21W	100 749 522	2	570	30	12	1.2	.005
22A	100 749 530	3	.3	.05	3	.3	1.0
22C	100 749 548	3	5	.5	3	.3	.075
22D	100 749 555	3	35	3.5	12	1.2	.0160
22E	100 749 563	3	43	.2	(b)	(b)	.0150
22J	100 749 597	3	600	60	12	1.2	.0050
22K	100 749 605	3	750	75	12	1.2	.0050
22L	100 749 613	3	1000	100	12	1.2	.0040
22N	100 749 639	3	46.5	4.6	12	1.2	.0150
22U	100 749 654	3	600	5	(b)	(b)	.0050
22W	100 749 662	3	570	30	12	1.2	.005
22Y	100 749 670	3	600	5	12	1.2	.0050
22AM	100 749 688	3	90	9	12	1.2	.0075
22AN	100 749 696	3	65	1	(b)	(b)	.009
22AP	100 749 704	3	70 Max	—	(b)	(b)	.009

(a) Will produce in the couple an open circuit voltage of approximately 15 millivolts.

(b) Each of the thermocouples listed below has a specially adjusted resistance connected in series with the couple inside the container, so that with the external resistance shown below in column "A" connected across the couple terminals, the heater current shown in column "B" will produce the couple current shown in column "C."

Code No.	A (Ohms)	B (Milliamperes DC)	C (Microamperes)
20E	20	5	84.5
22E	20	5	84.5
22U	15	2	162
22AN	10	4.5	204
22AP	10	3.73	115

TIPS

Cord

29 and 30

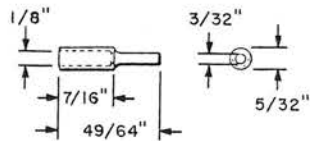


Fig. 1

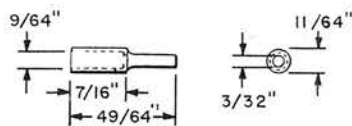
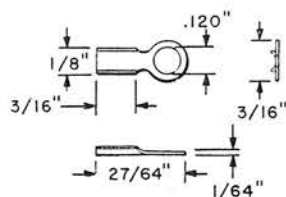


Fig. 2

Each is a nickel plated brass tip for use in connection with drilled binding posts. See Fig. 1 for number 29 and Fig. 2 for number 30.

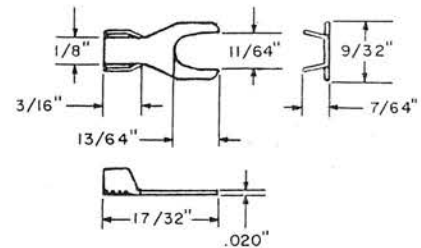
Code	Comcode	Fig. No.
29	100 749 886	1
30	100 749 894	2

38



A tinned brass eyelet type tip for use on the plug end of switchboard cords.  
Comcode: 100 749 928

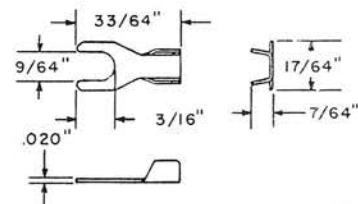
62



A tinned brass spade type tip for fastening under binding posts or screws. Slotted for a number 6 or 8 screw. For use in connection with both station and central office cords.

Comcode: 100 749 977

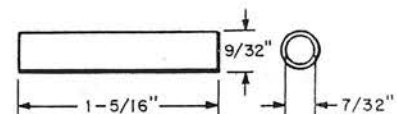
105



A tinned brass spade type tip for fastening under binding posts or screws. Slotted for a number 6 screw. For use on station cords.

Comcode: 100 750 066

110



A flexible insulating tubing for protecting the conductors on the plug end of cords.

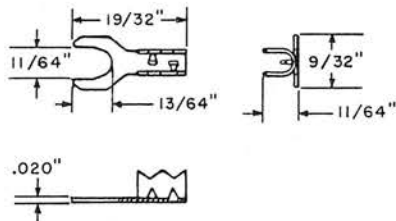
Comcode: 100 750 108



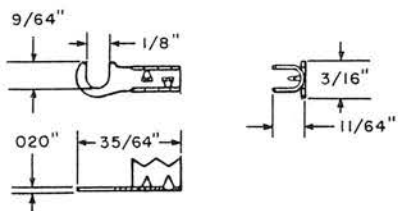
## TIPS

## Cord

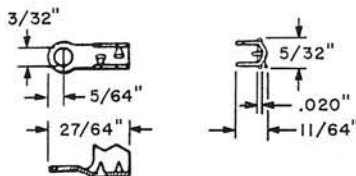
118, 119, 120, 121, 122, 128, 129, 131, 132, 133,  
134, 135, 136, 138 and 144



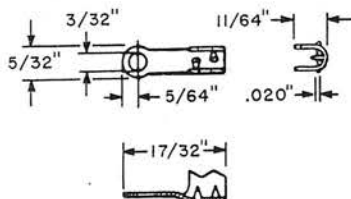
118



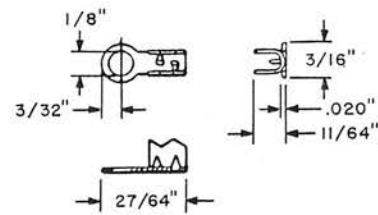
119



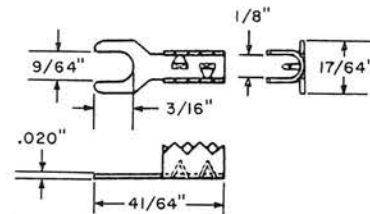
120



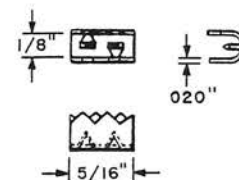
121



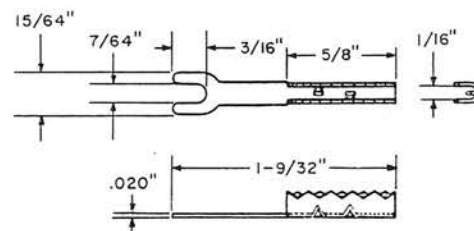
122



128



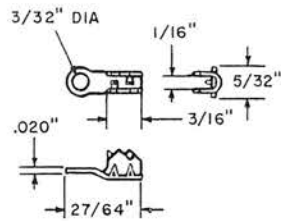
129



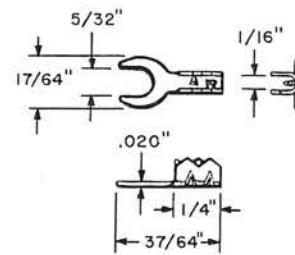
131

## TIPS

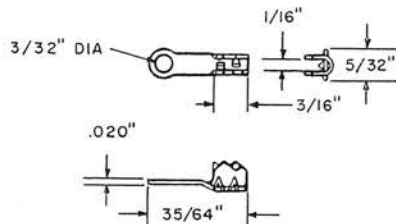
## Cord



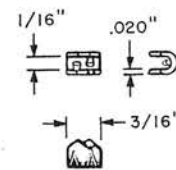
132



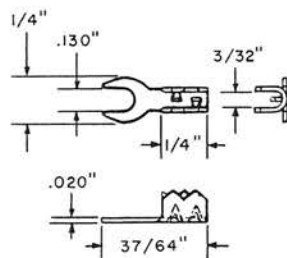
136



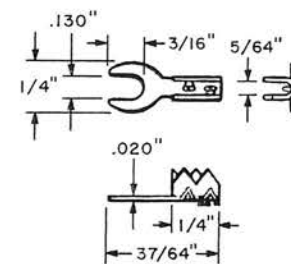
133



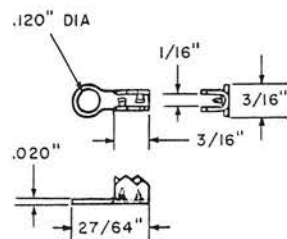
138



134



144



135

Each is a solderless tinned brass spade type tip for fastening under binding posts or screws. Has two tangs for making contact with tinsel conductor. For use on cords having rubber insulated or textile insulated tinsel conductors.

## TIPS

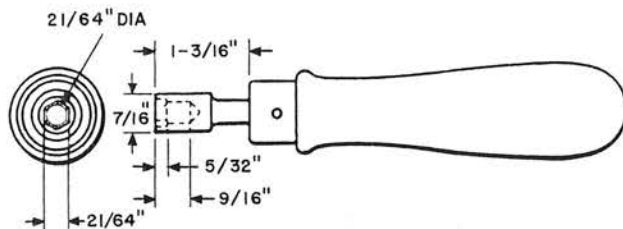
## Cord

118, 119, 120, 121, 128, 129, 131, 132, 133,  
134, 135, 136, 138 and 144 (Continued)

Code No.	Comcode	Slotted for Screw Size No.				
118	100 750 116	—	—	—	6	8
119	100 750 124	—	4	—	—	—
128	100 750 181	—	—	—	6	—
131	100 750 215	—	4	—	—	—
132	100 750 223	2	—	—	—	—
133	100 750 231	2	—	—	—	—
134	100 750 249	—	4	5	6	—
136	100 750 264	—	—	—	6	—
144	100 750 330	—	4	5	6	—

## TOOLS

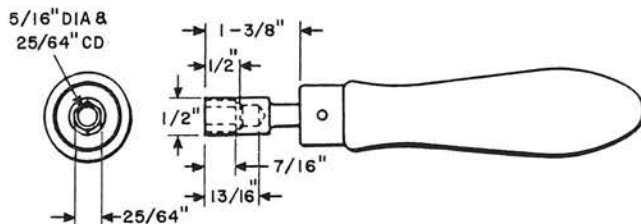
45B



A socket wrench for use on armature adjusting nuts of relays and clamping and mounting nuts of number 114 and similar type relays.

Comcode: 100 750 397

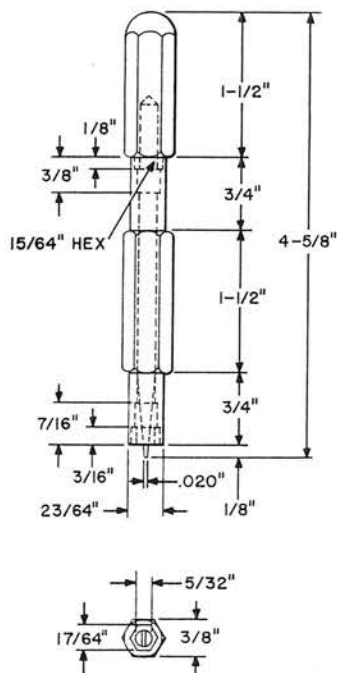
46



A socket wrench for use on hexagon cap nuts of relays.

Comcode: 100 750 405

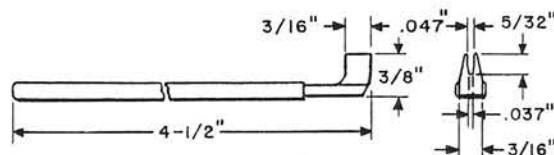
48



A double socket wrench and screwdriver. Used in adjusting armature contact screws of relays.

Comcode: 100 750 421

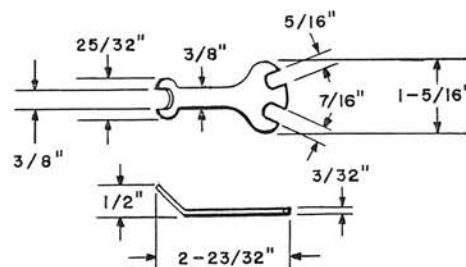
50B



A tool for adjusting relay springs.

Comcode: 100 750 439

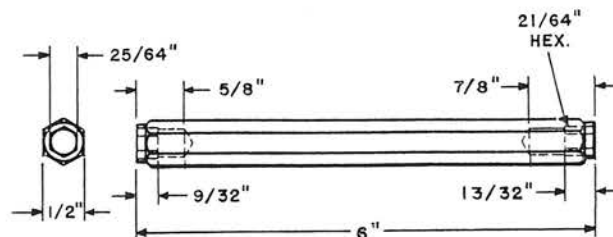
63



A triple wrench for use on nuts of binding posts of receivers and transmitters.

Comcode: 100 750 462

70



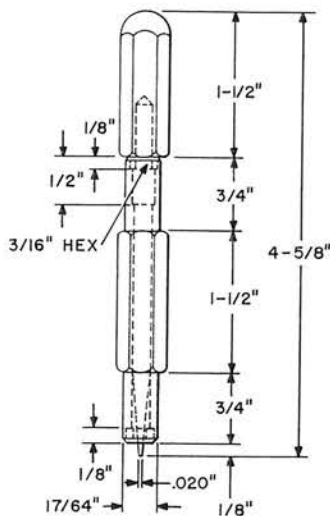
A double socket wrench for use on 21/64 inch and 25/64 inch hexagon nuts on receivers, transmitters, and subscriber set binding posts.

Comcode: 100 750 488



## TOOLS

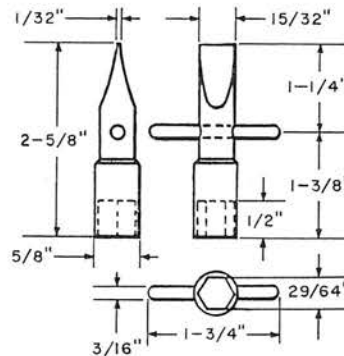
72



A double socket wrench and screwdriver. Used in adjusting armature contact screws of relays. Engages 3/16 inch and 5/32 inch hexagon nuts. Screwdriver part is known as number 147 Tool and socket wrench end is known as 403A Tool. May be ordered separately under these code numbers.

Comcode: 100 750 504

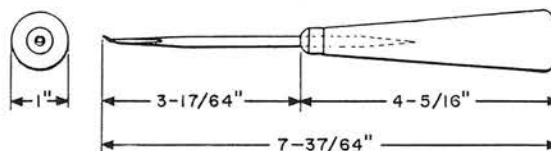
84



A combination socket wrench and screwdriver for use on number 7 type fuses. Socket engages hexagon nut, 7/16 inch across flats.

Comcode: 100 750 546

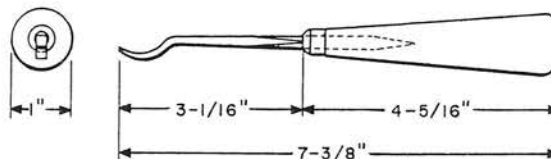
117



A spring adjuster for use in adjusting tip and ring springs of number 49 and number 92 Jacks. Used with number 118 Tool for adjusting abnormally bent ring springs of the number 92 Jack. Has offset end to reach the end of the tip spring without interfering with the ring spring.

Comcode: 100 750 637

118

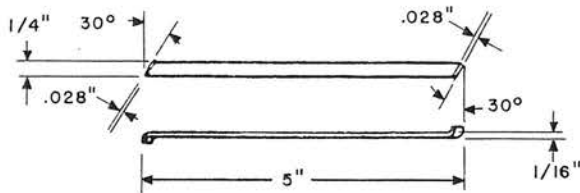


A spring adjuster for use in adjusting abnormally bent ring springs of the number 92 Jack. Used in connection with number 117 Tool.

Comcode: 100 750 645

## TOOLS

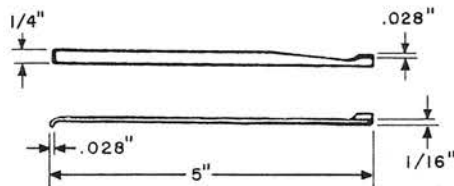
206



An offset screwdriver used with the number 207 Tool for adjusting the screws holding the springs on flat type relays after the relays have been mounted.

Comcode: 100 750 850

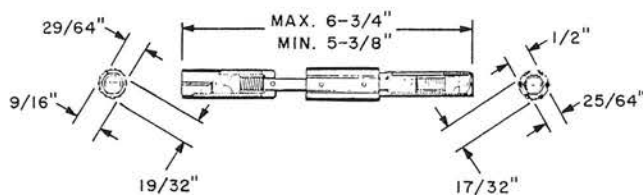
207



An offset screwdriver used with the number 206 Tool for adjusting the screws holding the springs on flat type relays after the relays have been mounted.

Comcode: 100 750 868

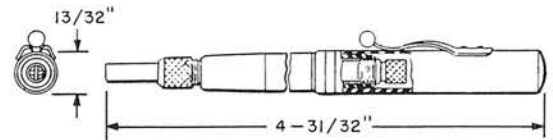
216B



A combination double end screwdriver and double end socket wrench (taking hexagon nuts 3/8 inch and 7/16 inch across the flats) for use in placing fuses in cable terminals and connecting wires to fuses and binding posts. The socket wrenches may be extended beyond the screwdriver ends and locked in position or may be released to turn freely over the screwdriver shanks. Ends are insulated from each other by an insulating coupling.

Comcode: 100 750 926

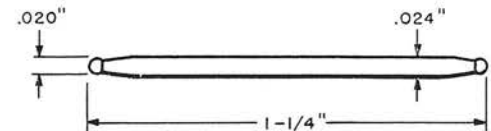
265C



Consists of a chuck having a rubber handle and a magazine. Chuck is arranged to hold any number 266 type tool. Furnished with a 266E Tool in the chuck and six 266C and five 266E Tools in the magazine.

Comcode: 100 751 221

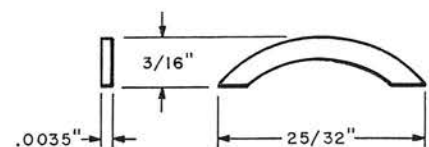
266C



A sand blasted steel music wire. For use in cleaning pits on relay contacts.

Comcode: 100 751 239

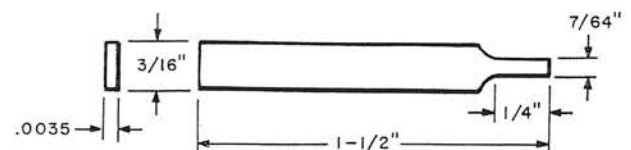
266D



A sand blasted sheet steel blade. For use with the 265C Tool for burnishing contacts on UB type relays.

Comcode: 100 751 247

266E

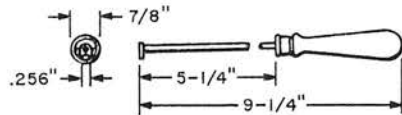


A sand blasted sheet steel blade. For use with the 265C Tool for burnishing relay contacts except those on UB type relays. The wide end is for use on flat spring relays and the narrow end for use on wire spring relays.

Comcode: 100 751 254

## TOOLS

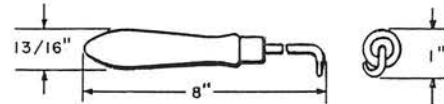
277



An open end offset wrench, intended for use on mounting nuts of number 18 or 19 type resistors which have been wired in position. Arranged for hexagonal nuts 1/4 inch across flats.

Comcode: 100 751 353

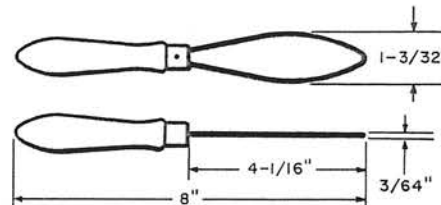
289



Metal hook with a wooden handle intended for dressing skimmers to relays and resistors.

Comcode: 100 751 395

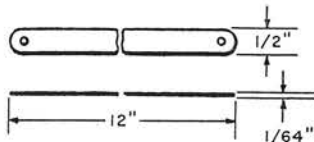
291



A straight metal needle intended for use as a cable sewing needle.

Comcode: 100 751 361

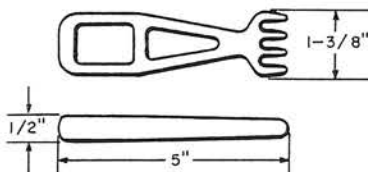
284



A straight metal needle intended for use as a cable sewing needle.

Comcode: 100 751 361

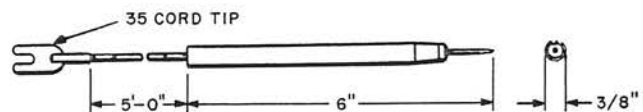
286



A metal comb intended for dressing skimmers to jacks.

Comcode: 100 751 379

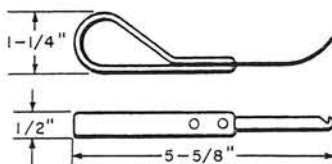
298



A test pick having a handle of insulating material and equipped with a connecting cord.

Comcode: 100 751 452

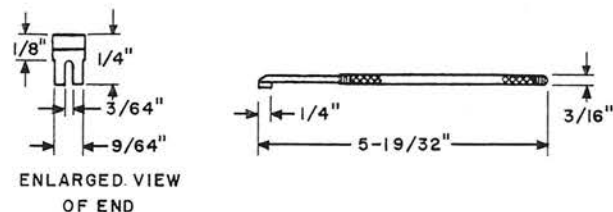
287



A curved metal needle with a metal handle. Used as cable sewing needle.

Comcode: 100 751 387

300

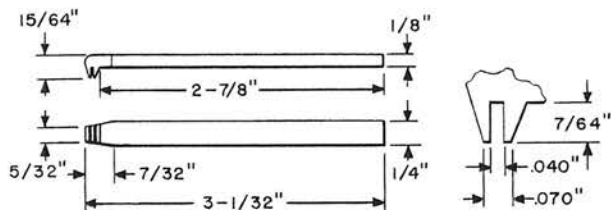


Used in adjusting relay springs. Handle covered with cotton sleeving.

Comcode: 100 751 460

## TOOLS

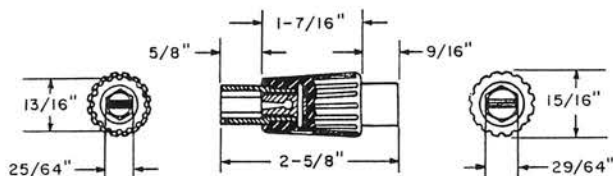
303



Used to adjust interrupter spring and retaining pawl on number 200 type selectors; also used to adjust springs on vertical type key.

Comcode: 100 751 478

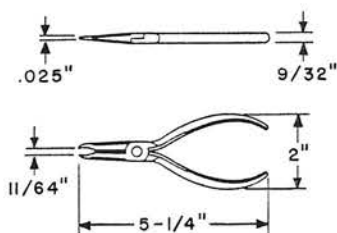
311



A double ended socket wrench for use on substation apparatus. The sockets are molded into a fluted handle of insulating material. A slot is provided at the bottom of each socket so that a screwdriver can be inserted for use as an extension handle. Engages hexagon nuts 3/8 inch and 7/16 inch across flats.

Comcode: 100 751 510

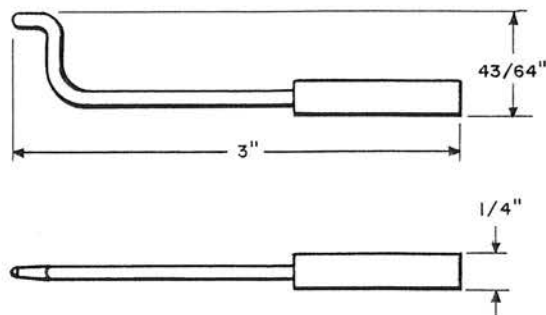
319B



For use in removing number 2, 4, and 8 type lamp caps and number 59, 60, and similar type number plates.

Comcode: 100 751 585

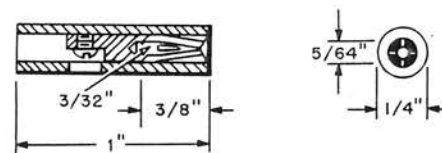
340



Used in adjusting armature and contact air gaps on polarized relays of number 206 and 215 types.

Comcode: 100 751 742

360A, B, and C



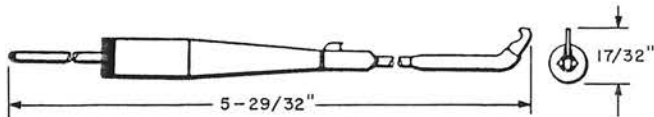
Spring chucks. Used in conjunction with number 361, 361B, 364, 365, or 419A Tools; arranged to attach to number 893, W1C, W1H, W1J, W1K, W1L, W1M, or similar cords.

Code	Comcode	Shell Color
360A	100 751 940	Red
360B	100 751 957	Black
360C	100 751 965	White



## TOOLS

361B



Used in conjunction with number 360 type tools to make connection with winding terminals of A, E, R, and similar type relays from contact end of relay.

Comcode: 100 751 973

364 and 365

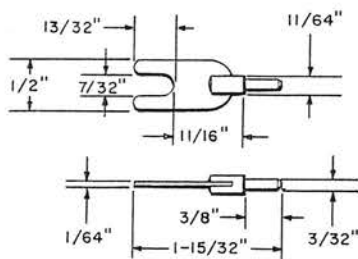


Fig. 1

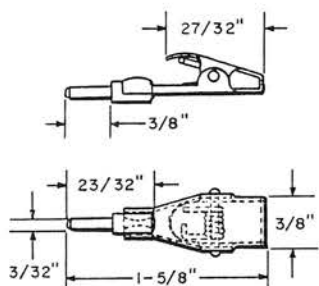
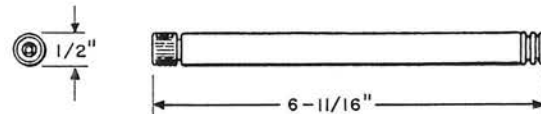


Fig. 2

Used in conjunction with 360 type tools in connection with portable testing equipment.

Code	Comcode	Fig. No.
364	100 751 999	1
365	100 752 005	2

373D



For holding and storing number 374 type tools. Consists of a tube of insulating material equipped with a chuck at one end for holding the tools when in use, and equipped with a plug at the other end to protect the tools when they are stored inside the tubing. Arranged to hold a wire-coil brush for cleaning sequence switches and to hold a crossbar selecting finger.

Comcode: 100 752 096

374A, B, and C

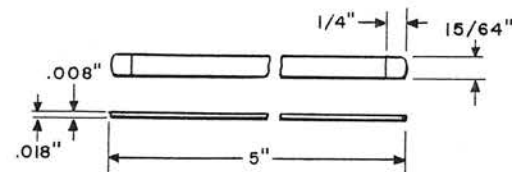


Fig. 1

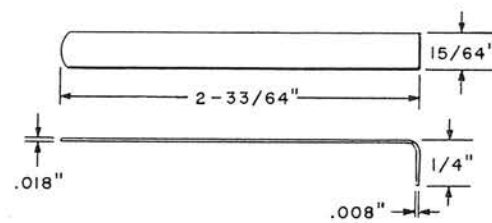


Fig. 2

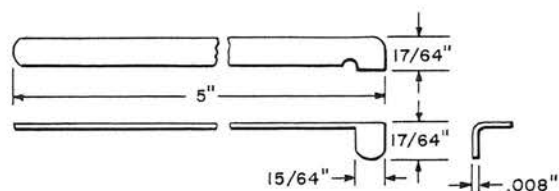


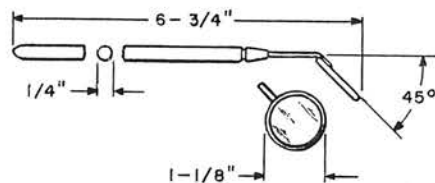
Fig. 3

## TOOLS

Each is a metal burnisher blade. Used in cleaning contact points. For use with 373D Tool.

Code	Comcode	Fig. No.
374A	100 752 104	1
374B	100 752 112	2
374C	100 752 120	3

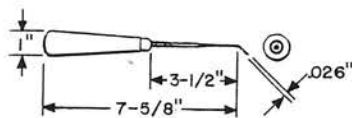
376A



A magnifying mirror for use as visual aid in adjusting relays, selectors, etc. Metal surfaces are insulated.

Comcode: 100 752 146

394A



Intended for use in cleaning the contacts of number 141 or similar type jacks.

Comcode: 100 752 302

410A and B

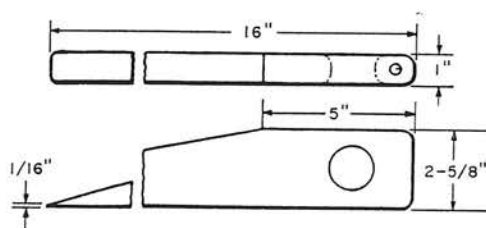


Fig. 1

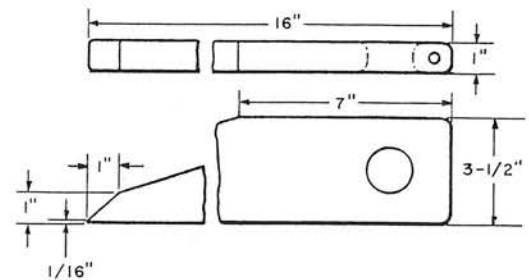
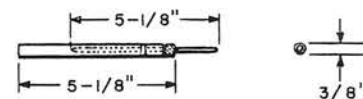


Fig. 2

Wooden wedges for use as multiple cable lifters.

Code	Comcode	Fig. No.
410A	100 752 468	1
410B	100 752 476	2

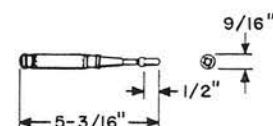
411C



An adjustable test pick with handle of insulating material. Used in conjunction with 360A Tool.

Comcode: 101 204 485

414B

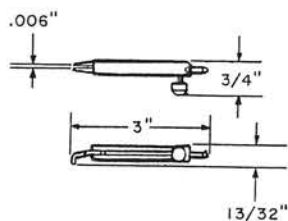


Used in driving number 49 and 141 type jack sleeves into position when replacing worn sleeves in jack mountings.

Comcode: 100 752 518

## TOOLS

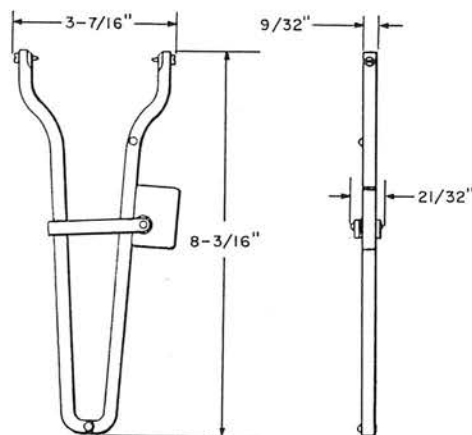
419A



Used in conjunction with number 360 type tools to make test connections to the springs and terminals of relays and other telephone apparatus.

Comcode: 100 752 567

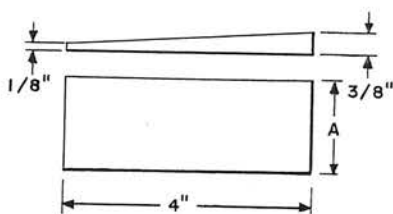
438A



Intended for use in removing and replacing transmitters, receivers, and various parts on E1B type hand sets.

Comcode: 100 752 690

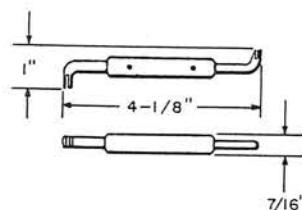
429A and B



Wooden wedges intended to support universal type key above key shelf when inspecting and adjusting keys.

Code No.	Comcode	Dimension A (Inches)
429A	100 752 633	1-1/2
429B	100 752 641	2-1/4

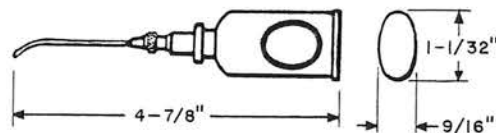
466A



Intended for use in adjusting contact springs on hand set mountings, desk stands, station keys, and other station apparatus. Also used for adjusting contact springs.

Comcode: 100 752 948

486A

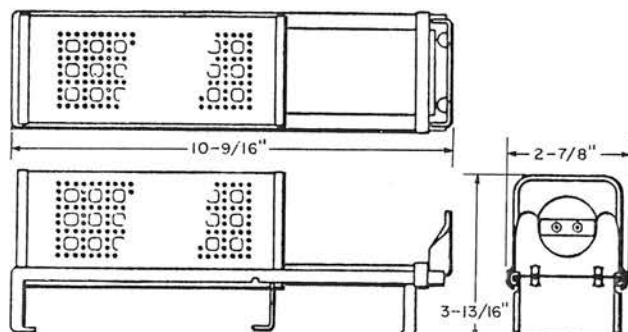


Oil can with special nozzle. Intended for use in lubricating fulcrum pins of universal type keys.

Comcode: 100 753 151

## TOOLS

504A

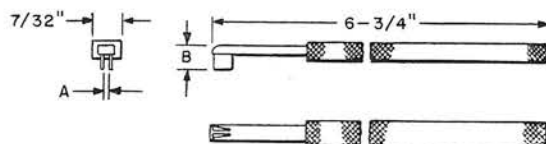


A rectangular cage; inner shield mounted on a base which may be used on a flat surface or fastened to a ladder step. Base extends beyond the cage and is formed to fit the handle of a soldering iron.

Used as a holder for a soldering iron.

Comcode: 100 753 342

505A, 506A and B, and 507A

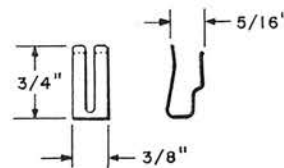


Contact spring adjusting tools. Have insulating covers on handles.

505A, 506A, and 507A: Intended for use in adjusting U- and Y-type relays.

506B: Intended for use in adjusting number 444 type jacks.

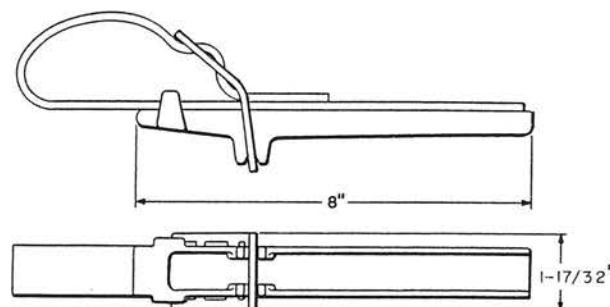
508A



An armature blocking tool consisting of a U-shaped metal clip intended for blocking the armatures of U- and Y-type relays in either the operated or unoperated positions.

Comcode: 100 753 391

514C



An adjustable strap wrench with a metal handle. Used for tightening and loosening the transmitter and receiver caps of hand sets and for other applications where an adjustable strap wrench can be used.

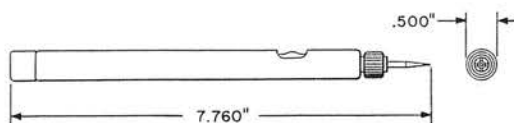
Comcode: 100 753 474

Code No.	Comcode	Dimensions (Inches)	
		A	B
505A	100 753 359	.015	1/4
506A	100 753 367	.025	1/4
506B	100 753 375	.024	3/16
507A	100 753 383	.032	15/64



## TOOLS

## 518C



An adjustable test pick having a handle of insulating material containing a 51,000 ohm  $\pm 5\%$  resistor which is connected in series with the test pick. A clip switch is provided for short-circuiting the resistor.

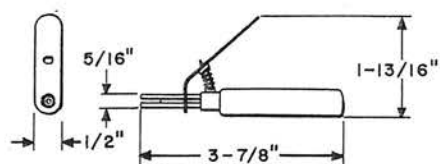
Arranged for mounting a 360 type tool at one end; this end is equipped with a threaded cap to prevent release of the tool which is connected to a test cord. The other end is equipped with a chuck, mounting a test pick which can be adjusted to extend approximately 3-3/4 inches.

Used initially for circuit testing.

Replaces 518B Tool.

Comcode: 101 470 268.

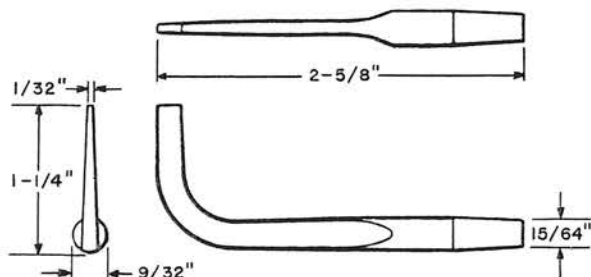
## 553A



Used in removing switchboard lamps.

Comcode: 100 753 904

## 562B



Used in checking the stud gaps of U, Y, and UA type relays.

Comcode: 100 754 019

## 563A, 564A, 565A, and 566A

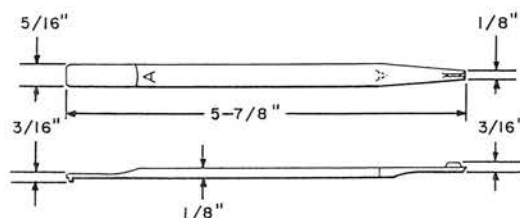


Fig. 1

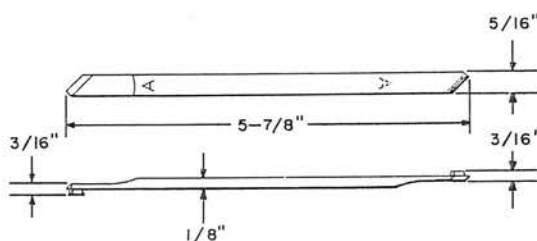


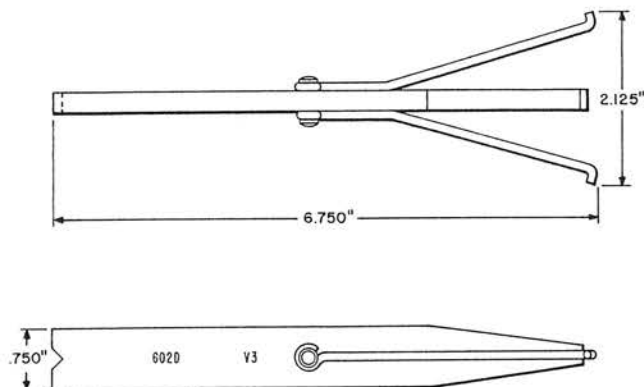
Fig. 2

Offset screwdrivers for number 6 and 8 screws, respectively. For general use.

Code	Comcode	Fig. No.
563A	100 754 027	1
564A	100 754 035	1
565A	100 754 043	2
566A	100 754 050	2

## TOOLS

602D

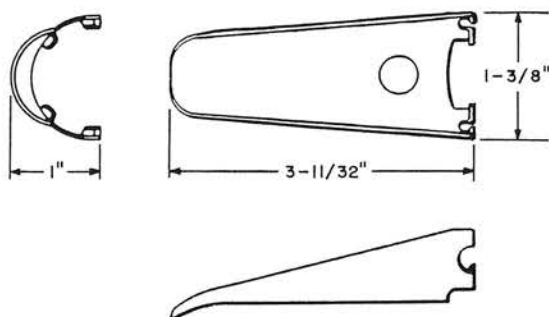


Consists of a bar having two swivel hooks which are intended for insertion in the holes provided in the lugs of the amplifier. The ends of the bar are notched so as to provide a brace against the repeater shelf when removing the amplifier.

Used to remove plug-in amplifiers associated with V3 and V4 Repeaters from their shelf mountings.

Comcode: 100 754 456

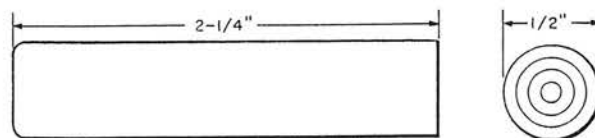
603A



For use as a lever in removing number 275 and 276 type relays from their sockets. Has wedge projections at one end which are intended to be inserted between the base of the relay and the socket.

Comcode: 100 754 464

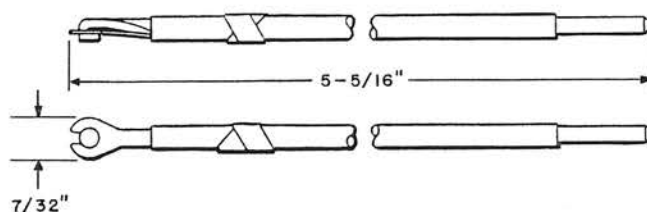
605A



Consists of a metal rod, one end of which is recessed. For use in maintaining concentricity between the center contact and the body of a number 337 type plug while soldering the plug to the center conductor of a coaxial cable.

Comcode: 100 754 514

607A

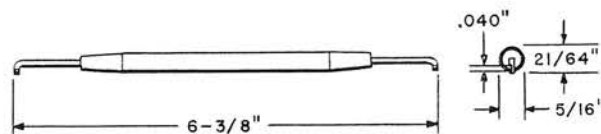


Consists of a metal rod, the center portion of which is covered with an insulating sleeve. One end is hook-shaped. The other end is arranged to fit a number 360 type tool.

For use as a connector in observing the electrical performance of U, Y, and UA type relays.

Comcode: 100 754 530

628A



Consists of a molded handle of insulating material with an offset metal blade containing a slot at each end.

Used for disengaging the balance spring on the AF, AG, and AJ type relays.

Comcode: 100 754 720

## TOOLS

629A and B

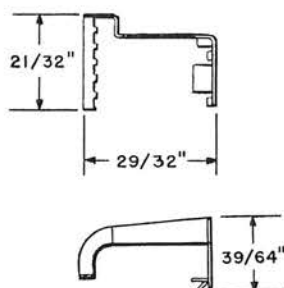


Fig. 1

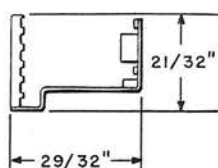


Fig. 2

Metal spring holders arranged to clamp onto the core plate of the relays and slotted to engage the movable springs on the right-hand side of the fixed springs. See Fig. 1 for 629A and Fig. 2 for 629B.

For use with AF, AG, and AJ type relays in conjunction with the 630A Tool in guiding the movable springs during the removal of cards from the relays.

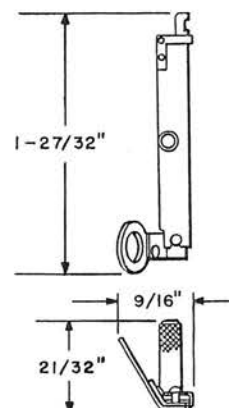
629A: Engages springs in positions 7 through 12.

Comcode: 100 754 738

629B: Engages springs in positions 1 through 6.

Comcode: 100 754 746

630A

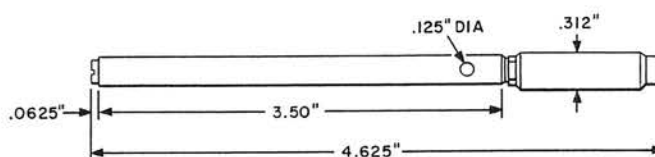


A metal spring holder slotted to engage the 12 movable springs on the left-hand side of the fixed springs. Equipped with a clamp plate of insulating material.

For use with the AF, AG, and AJ type relays in conjunction with the 629A and B Tools in guiding the movable springs during removal of cards from the relays.

Comcode: 100 754 753

635B



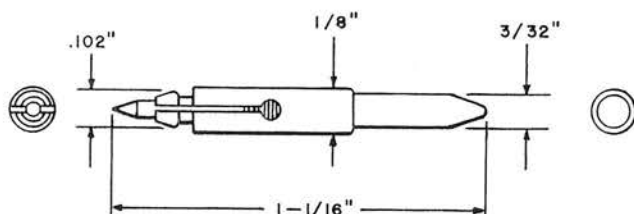
A wire wrapping tool having a handle and shell, each covered with a sleeve of insulating material. It has a .073 inch diameter hole 1/2 inch deep to accommodate a terminal and will wrap 3 wires up to 22 AWG. Has a hole near handle to facilitate removal of broken wires.

Used on terminals of wire spring relays, Number 5 Crossbar wire spring number group, and other components having similar terminals.

Comcode: 100 754 779

## TOOLS

## 639A

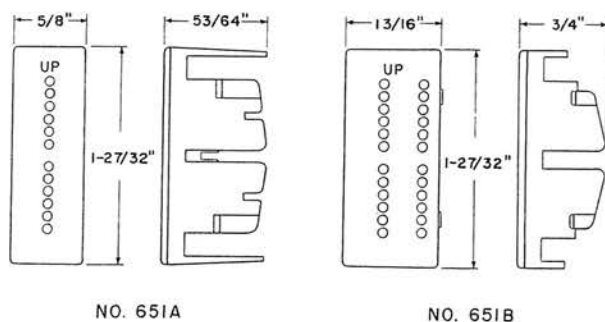


Consists of a round metal body having a metal pin-pointed spring-actuated plunger at one end and a metal plug at the other.

For use in making connections to the stationary contacts on the AF, AG, AJ, and AK type relays. The split sleeve at the pointed end is arranged to enter holes in the number 651 type tools when these tools are mounted on the relays during tests after the relay covers are removed. The plug at the other end is arranged to plug into a number 360 type tool.

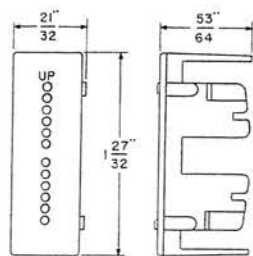
Comcode: 100 754 811

## 651 Type



NO. 651A

NO. 651B



NO. 651D

The 651 type tools are molded plastic covers for use in conjunction with the 639A and number 360 type tools for making test connections to stationary contacts on wire spring type relays.

651B: Used on 24 position AJ type relays.

Comcode: 100 754 944

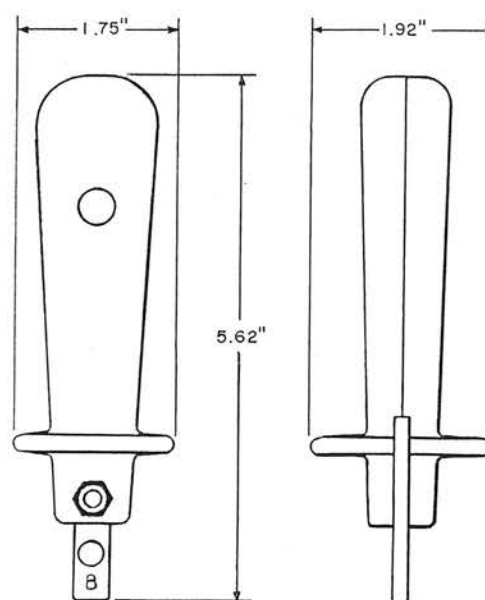
651C: Used on AF, AG, and 12 position AJ type relays which are not equipped with a wire clip for retaining the relay contact cover.

Comcode: 100 754 951

651D: Used on AF, AG, twelve position AJ, and AK type relays equipped with a wire clip for retaining the relay contact cover.

Comcode: 100 754 969

## 714B



A hand tool having a plastic handle, containing a metal blade. The blunt end is for connecting a looped conductor, and the sharp end for terminating and cutting off a plastic insulated wire on a quick-connect terminal. One half of the handle is yellow to indicate the cutting side of the blade and the other half is green.

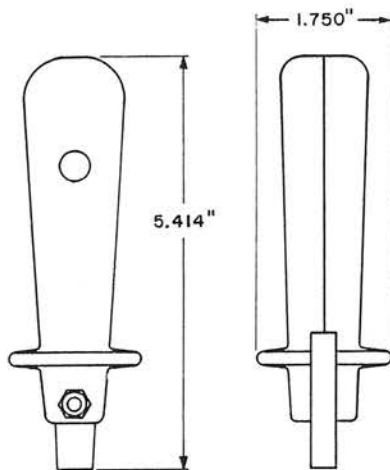
The blade is reversible and can be used in either of two positions. Changing positions of the blade requires the use of a screwdriver. Replacement blade can be obtained as P-46L211 Blade.

Intended for use with number 66 type connecting blocks.

Comcode: 100 755 511



## TOOLS

**714E2**

A hand tool having a green plastic handle, containing a metal blade.

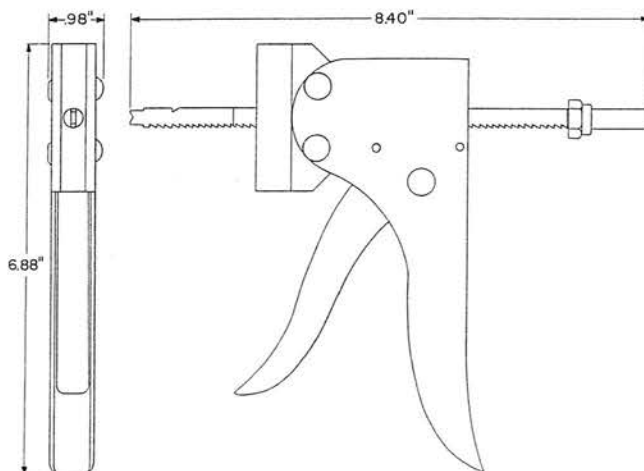
The blade is reversible and can be used in either of two positions. Changing position of the blade requires use of a screwdriver. One end of the blade is intended to seat wire in twin clip quick-connect terminal, and the other end is intended to seat wire in single clip quick-connect terminal. The blade is insulated with plastic to prevent electrical shorts during installation.

The blade has holes in the tool face to provide a means for holding the end of the wire during termination procedure.

Intended for use on Main Frames for ESS.

Replaces 714E Tool.

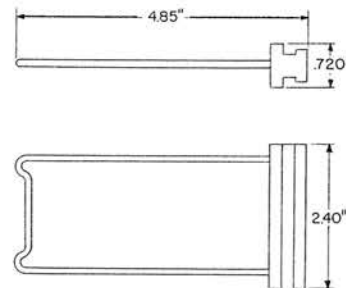
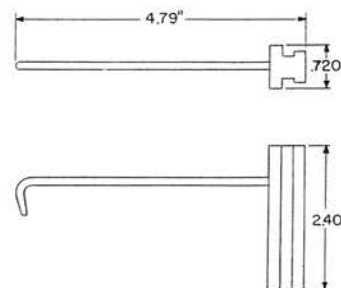
Comcode: 101 285 344

**715A**

Consists of a metal housing having a hand-grip operating lever that actuates a ratchet rod. Arranged to accommodate a 716A or 716B Tool.

Forms a part of the 104B Tool Kit.

Comcode: 100 755 545

**716A and 716B****Fig. 1****Fig. 2**

Metal blocks each equipped with a formed metal rod.

716A: Used in conjunction with the 715A Tool, in replacing coils of AF, AG, and AJ type relays. See Fig. 1.

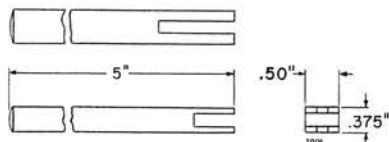
Comcode: 100 755 552

716B: Used in conjunction with the 715A Tool, in replacing coils of AK type relays. See Fig. 2.

Comcode: 100 755 560

## TOOLS

## 717B

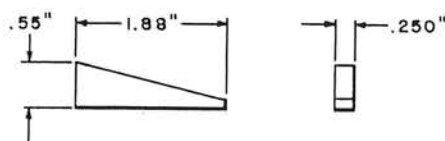


A metal bar with a double slotted end.

Intended for use in positioning the coil when replacing faulty coils on AF, AG, AJ, AK, 286, 287, and 288 type relays.

Comcode: 100 755 578

## 718A

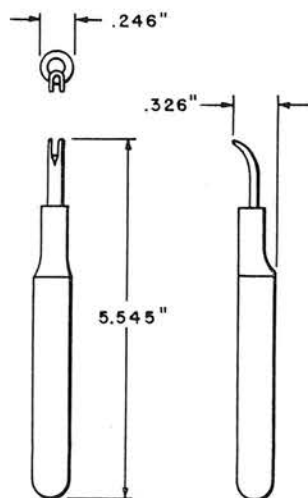


Wedge shaped block of insulating material.

Intended for use in supporting the armature and armature hinge springs, when displacing these parts to provide clearance for removal of the coils of AF, AG, AJ, and AK type relays.

Comcode: 100 755 586

## 724A

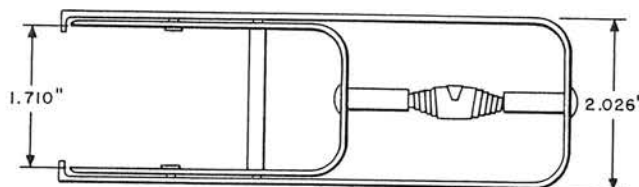
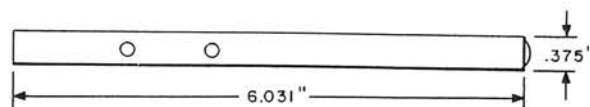


A metal tool having an insulated handle.

Intended for use to remove wire out of quick-connect clip type terminals in number 66 and 72 type connecting blocks.

Comcode: 100 755 636

## 752A



Consists of two nesting "U" shaped metal brackets connected with a spring and arranged to slide one within the other in opposite directions.

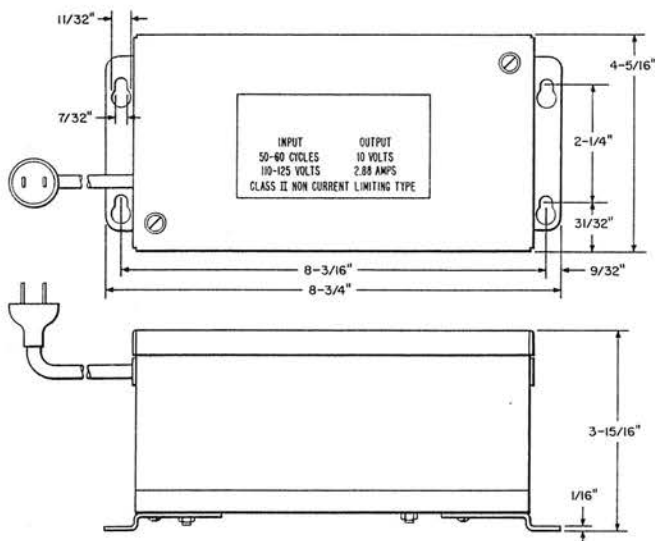
Used in extracting D-type circuit packs from 910A Connector.

Comcode: 101 170 355



## TRANSFORMERS

## 393B



Consists of windings on a silicon steel core, potted in a housing and contained in a metal case which has a light olive gray enamel finish.

Provided with a power supply cord, approximately 6 feet long, equipped with a parallel blade plug for the primary connection. Unused length of cord can be stored in the case. Secondary connections are intended to be brought in through a bushing on the side opposite the power cord. Top cover can be removed for access to secondary terminals. Contains two 24C Fuses in parallel, which are internally wired in series with the secondary winding.

With 101-135 volts, 50-60 Hz, applied to the primary, transformer delivers 10 volts  $\pm$  1 volt at any load from 0-2.88 amps when connected as follows:

Primary Volts	Secondary Winding
110 $\pm$ 8%	A-D
115 $\pm$ 8%	A-C
120 $\pm$ 8%	B-D
125 $\pm$ 8%	B-C

Terminals B and C are taps on winding A-D. Closest recommended mounting centers are 4-7/16 inches by 8-15/16 inches.

Approximate dc resistance of windings:

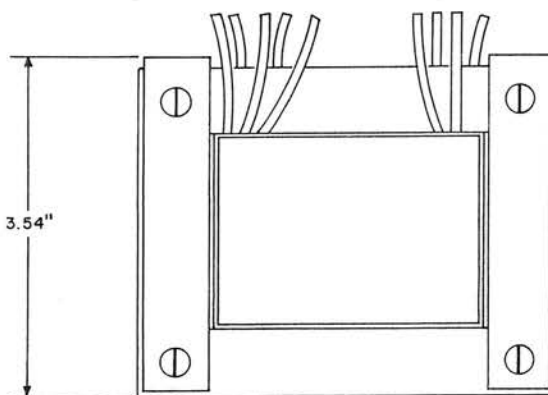
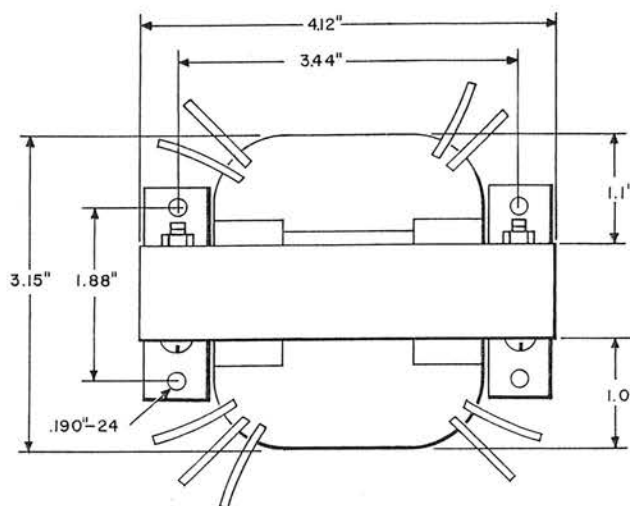
Winding	Ohms
Primary	7.0
A-C	0.070(a)
A-D	0.070(a)
B-D	0.068(a)

(a) Resistance with one 24C Fuse replaced by a dummy fuse or other suitable shorting devices having a resistance less than .001 ohm.

Used as a power supply for lighting lamps in the 1A1 Key Telephone System.

Comcode: 100 761 055

## 410B



Shell type transformer having a silicon steel core clamped between metal brackets which provide a means for mounting.

Provided with flexible terminal leads. The red, blue, and blue-white leads are approximately 3 inches long; the green, brown, and orange leads are approximately 3.5 inches long; and the red-white, green-white, and brown-white leads are approximately 4.5, 5.5, and 6.0 inches long, respectively.

With 111, 117, or 123 volts, 60 Hz, applied to winding (red, red-white), (red, blue), or (red, blue-white), respectively, winding (green, green-white) delivers 2.9 amps at approximately 18 volts, and winding (brown, orange) delivers 1.3 amps at approximately 18 volts, or winding (brown, brown-white) delivers 4.5 amps at approximately 9.5 volts. All windings are intended to operate at ground potential.



## TRANSFORMERS

## 410B (Continued)

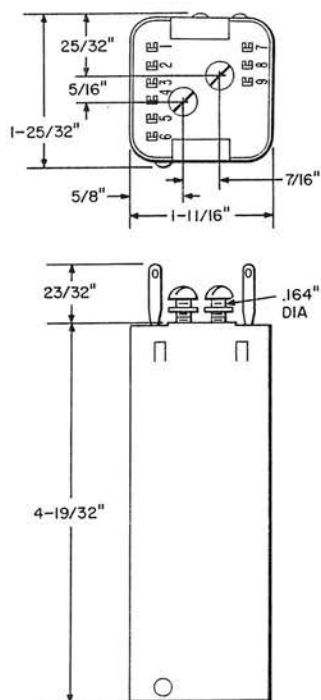
Approximate dc resistance:

Winding	Taps	Ohms
Red, Blue-White	Red-White, Blue	2.9
Green, Green-White	—	0.15
Brown, Orange	Brown-White	0.16

Closest recommended mounting centers are 3.625 inches by 4.500 inches.

Used with the 19A and 20A Power Units.  
Comcode: 100 839 406

## 2008B



Consists of windings on a silicon steel core, two thermistors, and a resistor potted in a metal can.

With 115 volts, 60 Hz applied to windings (1-4), (2-4), or (3-4), the other windings deliver the individual loads specified below.

Winding	Winding (1-4) delivers		Winding (2-4) delivers		Winding (3-4) delivers	
	Volts	Amps	Volts	Amps	Volts	Amps
(5-7)	5.7	0.590	6.0	0.590	6.1	0.590
(5-8)	5.7	0.880	6.0	0.880	6.1	0.880
(5-9)	5.7	1.180	6.0	1.180	6.1	1.180
(5-6)	5.7	1.330	6.0	1.330	6.1	1.330

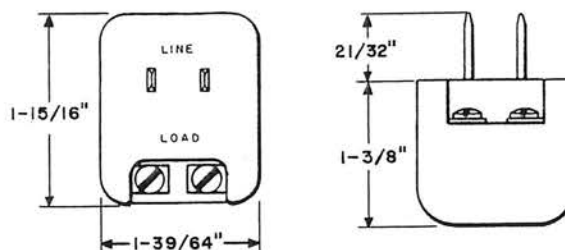
This transformer is temperature compensated so that the load voltages are maintained within  $\pm 1\%$  over an ambient temperature range of 30°C to 65°C when operated under the above load conditions. Winding (5-6) is intended to be operated at not more than 50 volts peak to ground. Provided with an electrostatic shield between winding (1-4) and the other windings. The shield is connected internally to the core and can. Approximate dc resistances of windings (1-4) and (5-6) are 167 ohms and 0.512 ohm, respectively.

Closest recommended mounting centers are 1-13/16 inches by 1-13/16 inches.

Used in J44105 and J44106 Amplifiers in the A2A and A2B Video Systems, respectively.

Comcode: 100 763 754

## 2012A and 2012B Type



Consists of windings on a silicon steel core, encapsulated in a cast resin case. Available in light olive gray (-49) and ivory (-50).

Transformers are self-protected against burnout core to overloading or short-circuiting of the load terminals.

Two prong type terminals are arranged to plug into a standard convenience outlet and serve as the mounting device. Two recessed screw type terminals are provided for load connections.

A 2A type clamp (ordered separately) is required to provided a clamping arrangement.

2012A: With 115 volts, 60 Hz applied to the line winding, the load winding delivers approximately 6.7 volts at 250 ma. Approximate dc resistances of the line and load windings are 710 ohms and 15 ohms, respectively.

Used to supply dial light power to the 702BW type telephone set and the 51AW Control Unit.

## TRANSFORMERS

**2012B:** With 115 volts, 60 Hz applied to the line winding the load winding delivers approximately 16.2 volts at 132 ma. Approximate dc resistances of the line and load windings are 710 ohms and 46 ohms, respectively.

Used to supply power to the 55AW-49 Control Unit in the 3B Speakerphone System.

Code No.	Comcode	Color
2012A-49	100 763 770	Light olive gray
2012A-50	100 763 788	Ivory
2012B-49	100 763 796	Light olive gray
2012B-50	100 763 804	Ivory

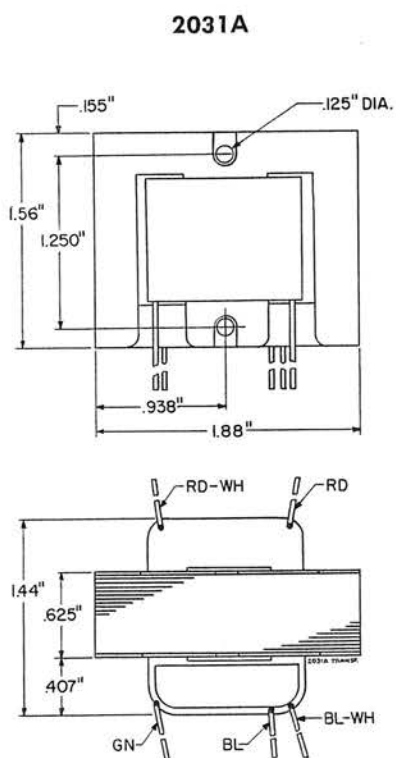
Approximate dc resistance:

Winding	Ohms
Red, Red-White	98.5
Blue, Green	7.2

Closest recommended mounting centers are 1-11/16 inches by 2 inches.

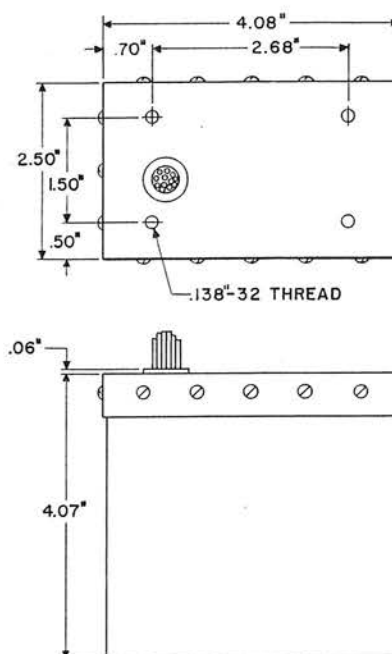
Used in the J87202A Rectifier.

Comcode: 100 764 067

**2055B**

Consists of windings on a silicon steel core. Equipped with flexible terminal leads approximately 6 inches long.

With 117 volts, 60 Hz, applied to winding (red, red-white), winding (blue, green) delivers 0.16 amp at approximately 21.0 volts to both a bridge-type rectifier with a capacitive input filter and a full wave rectifier with a capacitive load. Terminal lead (blue-white) is a center tap on winding (blue, green). Winding (blue, green) is intended to be operated at ground potential.



Consists of windings on a silicon steel core having magnetic shunts potted and assembled in a metal can which provides magnetic shielding.

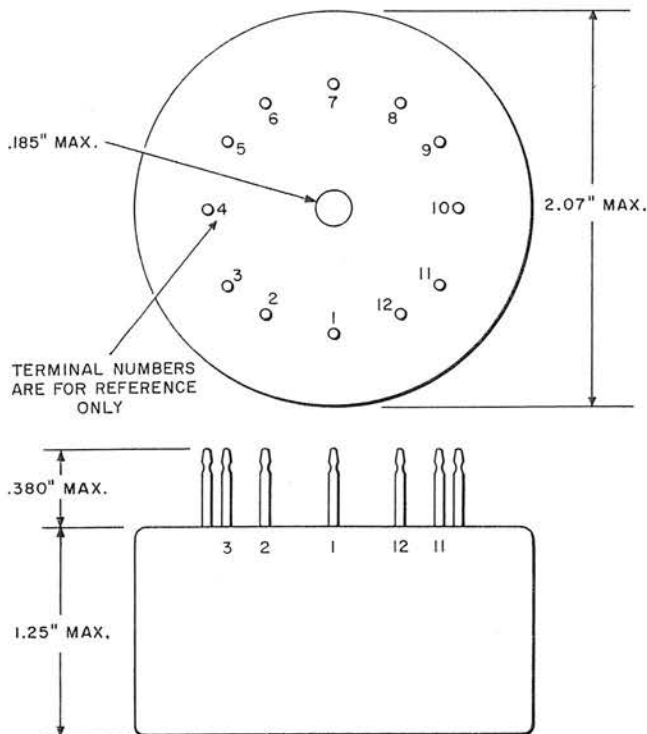
Provided with flexible terminal leads approximately 9 inches long.

This transformer has special characteristics which restrict it for use only with the J87212 Rectifier, 201AW Data Set, and 804AW Data Auxiliary Set.

Comcode: 100 764 398

## TRANSFORMERS

2151A



A toroidal transformer with a tape wound, oriented, 50 percent nickel-iron core cast in a cylindrical case of thermosetting resin.

With 40 volts dc applied alternately across windings (2-3) and (4-3) at a frequency of 8000 Hz, windings (1-2) and (4-5) each deliver 0.023 amp at approximately 3.3 volts into half-wave rectifiers terminated by resistive loads. Winding (6-7) delivers 0.075 amp at approximately 212 volts into a capacitively terminated full-wave bridge rectifier. Winding (8-9) delivers 0.040 amp at approximately 20 volts into a capacitively terminated full-wave bridge rectifier. Winding (10-12) delivers 0.025 at approximately 117 volts into a capacitively terminated full-wave rectifier with terminal (11) the center tap.

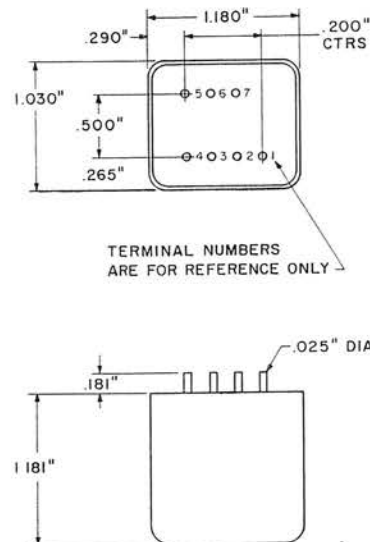
Windings (1-2), (4-5), and (2-3), (3-4) are wound as parallel pairs.

Comcode: 101 406 452

The maximum dc resistance of the windings at 20° C is as follows:

Windings	Resistance (Ohms)	Windings	Resistance (Ohms)
(1-2)	0.390	(6-7)	5.80
(2-3)	0.165	(8-9)	1.55
(3-4)	0.165	(10-11)	7.00
(4-5)	0.390	(11-12)	7.00

2543F



Consists of windings on a permalloy core, potted in a metal can and arranged to mount on printed wiring boards.

Has an impedance ratio of 300 to 28 ohms between windings (5-7) to (1-4). There are no electrical connections to terminals 2, 3, and 6.

The approximate dc resistance of windings is as follows:

Windings	Ohms
1-4	2.1
5-7	31

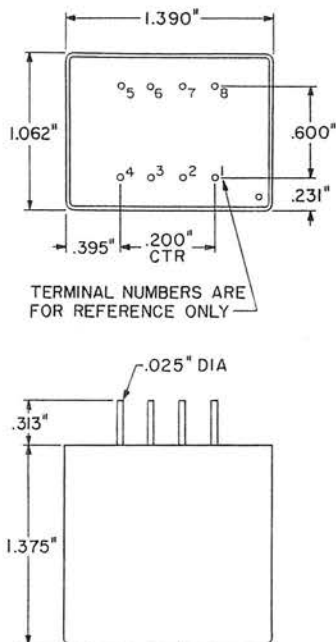
Used in the receiver amplifier of the 3B Speakerphone System.

Comcode: 100 767 524



## TRANSFORMERS

## 2568B



Consists of windings on a permalloy core, potted in a metal can and arranged to mount on printed wiring boards. Intended to operate over the voice frequency range.

The transformer has an impedance ratio of 1200 ohms or 600 ohms to 900  $\pm$  90 ohms between windings (1-5) or (2-4) to (6-7) and (7-8). Terminal 7 is a tap on winding (6-8). Terminals 2, 3, and 4 are taps on winding (1-5). Windings (2-3), (3-4) and (1-3), (3-5) are balanced to provide longitudinal suppression.

Approximate dc resistance:

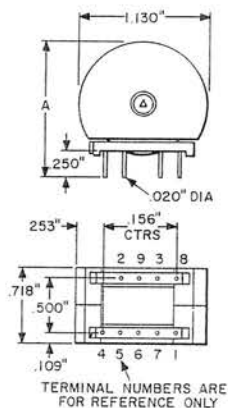
Windings	Ohms
1-5	90
2-4	70
6-7	105
7-8	10

Closest recommended mounting centers are 1.875 inches by 1.531 inches.

Used with 227A and B Amplifiers.

Comcode: 100 769 868

## 2576 Type



Each consists of windings partially enclosed in a ferrite core having an adjustable tuning slug.

Arranged to mount on a printed wiring board. Closest recommended mounting centers are 0.938 inch by 1.250 inches.

Adjustable over a range of  $\pm 5\%$  from the nominal value.

Has a nominal inductance and dc resistance as indicated in the table at 3 volts ac, 1000 Hz. Has a ratio of 1:1 between windings (1-5) and (6-10). There are no electrical connections to terminals 2, 3, 4, 7, 8, and 9.

Code No.	Comcode	Nominal Inductance (h)	DC Resistance		Operating Frequencies (Hz)
			(1-5)	(6-10)	
2576W	101 188 613	.0518	15	18	2025 and 2225
2576Y	101 188 621	.0700	19	22	2025 and 2225
2576AA	101 188 639	.01660	4	6	1070 and 1270
2576AB	101 188 647	.01961	5	6	1070 and 1270

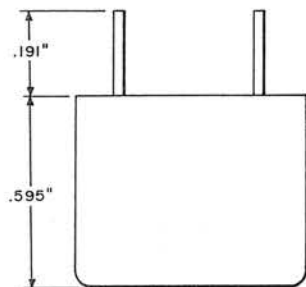
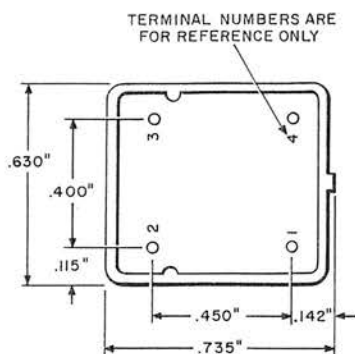
The 2576W and Y were used initially in Data Set 108A Demodulator—Linear Detector Circuit. The 2576AA and

AB were initially used in Data Sets 108B and C Demodulator—Linear Detector Circuit.



## TRANSFORMERS

## 2579B



Consists of a spool winding with a shell-type, laminated permalloy core, potted with epoxy resin in a rectangular plastic case. Designed for single-side mounting by means of the terminals which are suitable for printed wiring boards.

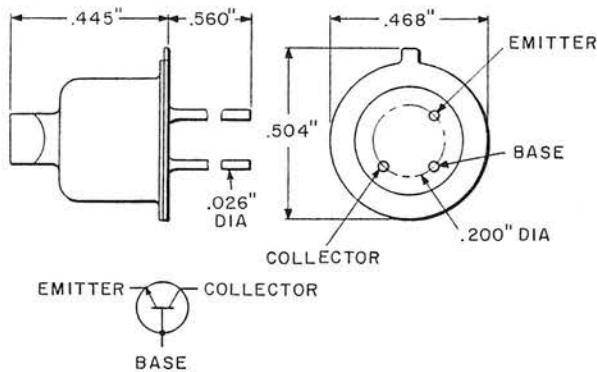
Has an impedance ratio of 150 to 1000 ohms between windings (1-2) and (3-4). Approximate dc resistance of windings (1-2) and (3-4) is 20.5 and 67 ohms, respectively. Operates over the voice frequency range.

Used initially in 151A Amplifier—In telephone station apparatus for coupling a transistor to the receiver.

Comcode: 101 170 660

## TRANSISTORS

8B



An N-P-N germanium alloy junction transistor assembled in a hermetically sealed metal can.

Used with number 151 and 153 type amplifiers.

Comcode: 100 787 712

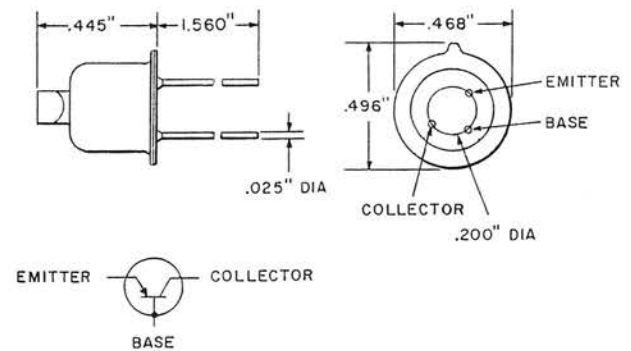
## Maximum Ratings Absolute Values

Voltage	
Collector to base	30 Vdc
Collector to emitter	30 Vdc
Emitter to base	30 Vdc
Current (any electrode)	500 mAdc
Temperature range	-65 to +100°C
Thermal resistance (junction to ambient)	0.3°C/mW

## Electrical Characteristics at 25° C

Minimum breakdown voltage	
Collector to base ( $I_C = -50 \text{ uA}$ dc, $I_E = 0$ )	30 Vdc
Emitter to base ( $I_E = -50 \text{ uA}$ dc, $I_C = 0$ )	30 Vdc
Maximum cutoff current	
Collector ( $V_{CB} = 25 \text{ Vdc}$ , $I_E = 0$ )	15 uA
Emitter ( $V_{EB} = 25 \text{ Vdc}$ , $I_C = 0$ )	15 uA
Minimum dc common base current gain ( $I_E = 25 \text{ mA}$ dc, $V_{CB} = 1 \text{ Vdc}$ )	.980
Maximum saturation voltage ( $I_C = 150 \text{ mA}$ dc, $I_B = 9 \text{ mA}$ dc)	0.5 Vdc
Maximum forward emitter voltage ( $I_E = -15 \text{ mA}$ dc, $I_C = 0$ )	3 Vdc
Maximum output capacitance ( $V_{CB} = 5 \text{ Vdc}$ , $I_E = 0$ )	45 uuf
Minimum reach-through ( $V_{EB} = 1 \text{ Vdc}$ , $I_C = 20 \text{ uA}$ dc)	30 Vdc

12E and K



Each is a P-N-P germanium alloy junction transistor assembled in a hermetically sealed metal can. Storage temperature is 100° C maximum. Thermal resistance from collector junction to free air is 300° C/W maximum.

12E: Used in the 756A PBX and 82B1 Teletype System.

Comcode: 100 787 787

12K: Used initially in the transmission measuring test sets.

Comcode: 100 787 837

Maximum Ratings Absolute Values	12E	12K
Current, continuous (base to emitter or collector)	500	500 mA
Voltages		
Collector to base	-40	-40 Vdc
Emitter to base	-20	-20 Vdc
Collector to emitter	-35	-10 Vdc
Power dissipation (*)	—	240 mW

## Minimum Value

Large-signal forward current transfer ratio.	.95	—
--	-----	---

## Electrical Characteristics at 25° C

Minimum reach-through voltage		
( $V_{EB} = 1.0 \text{ Vdc}$ , $I_C = -20 \text{ uA}$ dc)	-35	-10 Vdc
Minimum breakdown voltage		
Collector to base ( $I_C = -50 \text{ uA}$ dc)	-40	-40 Vdc
Emitter to base ( $I_E = -50 \text{ uA}$ dc)	-20	-20 Vdc
Maximum collector cutoff current ( $V_{CB} = -30 \text{ Vdc}$ )	-10	-10 uA
Maximum emitter voltage ( $I_E = 15 \text{ mA}$ dc)	0.7	0.7 Vdc
Small-signal short circuit forward current transfer ratio		
( $I_C = 1.0 \text{ mA}$ dc, $V_{CE} = -5 \text{ Vdc}$ , $f = 270 \pm 30 \text{ cps}$ )	0 to 200	50 to 200

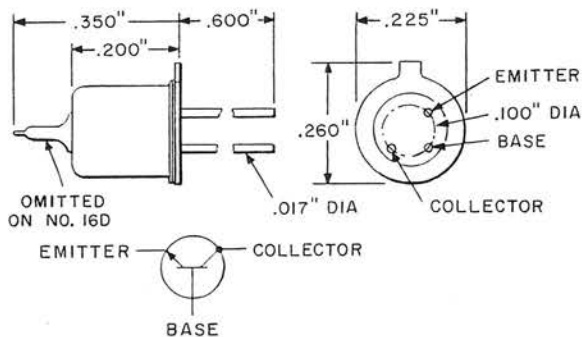
## TRANSISTORS

## 12E and K (Continued)

	12E	12K
Minimum common emitter cutoff frequency ( $I_C = 1.0$ mAde, $V_{CE} = 5.0$ Vdc)	—	25 kc
Maximum small-signal short circuit input impedance ( $I_E = 1.0$ mAde, $V_{CB} = -5.0$ Vdc, $f = 270 \pm 30$ cps)	—	40 ohms
Maximum collector capacitance ( $I_E = 0$ , $V_{CB} = -5.0$ Vdc, $f = 1$ mc, 0.5 volts rms signal)	50	50 uuf
Maximum noise figure ( $I_E = 1.0$ mAde, $V_{CE} = -5.0$ Vdc, $r_g = 1000$ ohms, $f = 1$ kc)	—	20 db

(\*) Derate at 4mW/°C.

## 16D and E



Each is an N-P-N silicon junction transistor assembled in a hermetically sealed metal can.

16D: Used initially with D202 type data set.

Comcode: 100 787 944

16E: Used initially with 301BW type data set.

Comcode: 100 787 951

Maximum Ratings Absolute Values	16D	16E
Voltage		
Collector to base	60	60 Vdc
Emitter to base	7	7 Vdc
Collector to emitter	22 Vdc	—
Current continuous		
Collector and emitter	50	50 mAde
Base	50	50 mAde
Junction temperature	150	150° C
Thermal resistance, junction to ambient	0.45	0.50C/mW

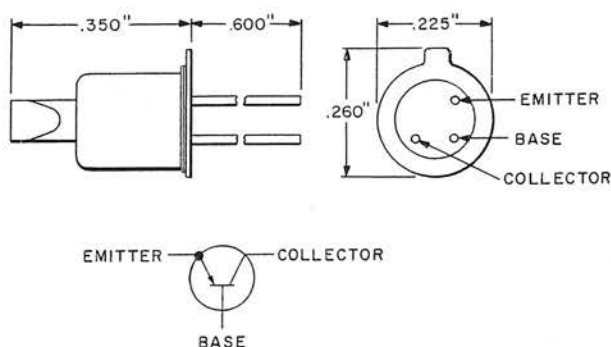
## Electrical Characteristics at 25° C

	16D	16E
Minimum breakdown voltage		
Collector to base ( $I_C = 10$ uAde)	60	60 Vdc
Emitter to base ( $I_E = 10$ uAde)	7	7 Vdc
Minimum sustained voltage		
( $I_C = 5$ mAde, $I_B = 0$ mAde)	28 Vdc	—
Maximum output capacitance ( $I_E = 0$ , $V_{CB} = 5$ Vdc)	5	6 uuf
Maximum saturation voltage		
( $I_C = 35$ mAde, $I_B = 1.5$ mAde)	0.4 Vdc	—
Maximum saturation voltage (collector to emitter)		
( $I_C = 35$ mAde, $I_B = 1.5$ mAde)	—	0.85 Vdc
(base to emitter) ( $I_C = 35$ mAde, $I_B = 1.5$ mAde)	—	1.45 Vdc
Maximum collector cutoff current ( $V_{CB} = 20$ Vdc)	0.1	0.1 uAde
Maximum emitter cutoff current ( $V_{EB} = 5$ Vdc)	0.1	0.1 uAde
Small-signal short circuit forward current transfer ratio ( $I_E = 10$ mAde, $V_{CB} = 10$ Vdc)	.980 to .998	—
Minimum static forward current transfer ratio ( $I_E = -100$ uAde, $V_{CB} = 10$ Vdc)	.960	—
Maximum input impedance ( $I_E = -10$ mAde, $V_{CB} = 10$ Vdc)	10 ohms	—
Minimum common emitter current gain ( $I_C = 10$ mAde, $V_{CE} = 10$ Vdc, $f = 30$ mc)	17 db	—
Maximum ohmic base resistance ( $I_C = 10$ mAde, $V_{CE} = 10$ Vdc, $f = 250$ mc)	150 ohms	—

## TRANSISTORS

	16D	16E
Maximum dc, common-base current gain ( $I_E = -1$ mA dc, $V_{CB} = 5$ V dc)	—	.95
( $I_E = -5$ mA dc, $V_{CB} = 5$ V dc)	—	.97
( $I_E = -30$ mA dc, $V_{CB} = 5$ V dc)	—	.97
Maximum input capacitance ( $I_C = 0$ , $V_{EB} = 1.5$ V dc)	—	10 uuf
Maximum switching time	—	100 nanosec
Maximum delay and rise time ( $I_{C1} = 30$ mA dc, $I_{B1} = 2.5$ mA dc)	—	20 nanosec
Maximum storage and fall time ( $I_{C1} = 7$ mA dc, $I_{B1} = 2.5$ mA dc)	—	80 nanosec
Minimum emitter current ( $V_{BE} = 0.85$ $\pm 0.05$ V dc)	—	1.0 mA dc

17A and B



Each is a P-N-P germanium alloy junction transistor assembled in a hermetically sealed metal can.

17A: Used initially in the 901 Data Test Set (J79901).

Comcode: 100 788 025

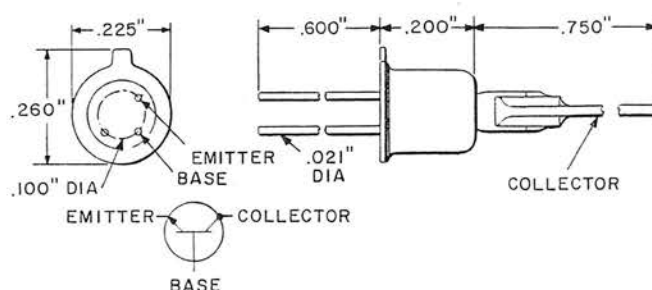
17B: Used in the 238A Amplifier.

Comcode: 100 788 033

Maximum Ratings Absolute Values	17A	17B
Voltage		
Collector to base	-20	-20 V dc
Emitter to base	-10	-20 V dc
Collector to emitter	-20	-20 V dc

	17A	17B
Junction temperature	85	85 °C
Storage temperature	-65 to +95	-65 to +95 °C
Thermal resistance, Junction to ambient	0.40	0.40 °C/mW
<b>Electrical Characteristics at 25° C</b>	<b>Min.</b>	<b>Max.</b>
Breakdown voltage Emitter to base, open collector ( $I_E = -50$ uA dc)	—	20 V dc
Collector to base ( $I_C = -50$ uA dc)	—	20 V dc
Collector cutoff current ( $V_{CB} = -5$ V dc, $T = 25^\circ$ C)	—	1.3 uA dc
( $V_{CB} = -5$ V dc, $T = 55^\circ$ C)	—	20 uA dc
Small-signal short circuit forward current transfer ratio ( $I_C = -1.0$ mA dc, $V_{CE} = -5.0$ V dc, $f = 270$ cps)	50	200
Common emitter cutoff frequency ( $I_C = -1.0$ mA dc, $V_{CE} = -5.0$ V dc)	25	25 kc
Reach through voltage ( $I_C = -50$ uA dc, $V_{EB} = -1.0$ V dc)	—	15 V dc
Noise figure ( $I_E = .2$ mA dc, $V_{CB} = -3.0$ , $r_g = 1000$ ohms, $f = 1$ kc)	—	12 db

18A and 19A



18A: Consists of a pair of N-P-N silicon nonepitaxial mesa transistors, one of which is shown in the illustration. The pair is matched so that the product of the common emitter current gains is in the range of 3,200 to 14,000.



## TRANSISTORS

## 18A and 19A (Continued)

Each transistor is assembled in a hermetically sealed metal case.

On end with base and emitter leads, third lead extends only .040 inch beyond mounting surface and is for mounting purposes only.

Used initially in the 228A, D, H, and 229A Amplifiers.

Comcode: 100 788 041

#### Maximum Ratings Absolute Values of Each Transistor of the Pair

Voltage	
Collector to base	60 Vdc
Emitter to base	7 Vdc
Collector to emitter	22 Vdc
Current, continuous	
Collector and emitter	50 mAdc
Base	50 mAdc
Junction temperature	150°C
Thermal resistance, junction to ambient	0.50°C/mW

#### Electrical Characteristics of Each Transistor of the Pair at 25°C

Minimum breakdown voltage	
Collector to base ( $I_C = 10 \mu\text{Adc}$ )	60 Vdc
Emitter to base ( $I_E = 10 \mu\text{Adc}$ )	7 Vdc
Minimum sustain voltage ( $I_B = 0$ , $I_C = 5 \text{ mAdc}$ )	
	22 Vdc
Small-signal short circuit forward current transfer ratio ( $I_E = -10 \text{ mAdc}$ , $V_{CB} = 10 \text{ Vdc}$ )	
	.970 to .995
Maximum junction capacitance ( $I_E = 0$ , $V_{CB} = 5 \text{ Vdc}$ )	
	6.0 uuf
Minimum common emitter current gain ( $I_C = 10 \text{ mAdc}$ , $V_{CE} = 10 \text{ Vdc}$ , $f = 30 \text{ mc}$ )	
	14.5 db

19A: Consists of three N-P-N silicon nonepitaxial mesa transistors, one of which is shown in the illustration. The transistors are matched so that the product of the three common emitter current gains is in the range of  $10^4$  to  $10^5$ . Each transistor is assembled in a hermetically sealed metal case.

On end with base and emitter leads, third lead extends only .040 inch beyond mounting surface and is for mounting purposes only.

Used in the 228B and C Amplifiers.

Comcode: 100 788 074

#### Maximum Ratings Absolute Values of Each of the Three Transistors

Voltage	
Collector to base	60 Vdc
Emitter to base	7 Vdc
Collector to emitter	22 Vdc

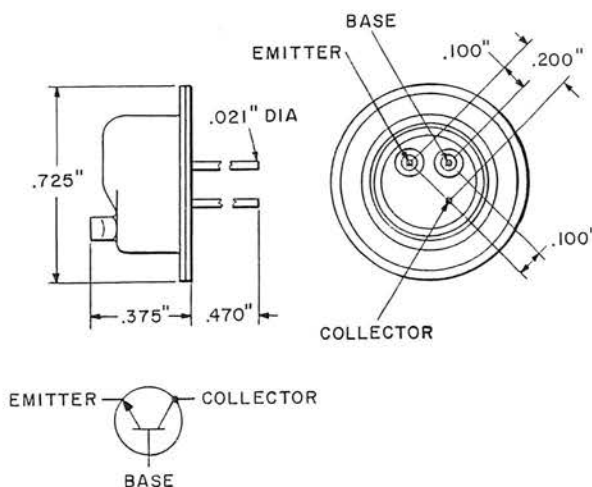
Current, continuous

Collector and emitter	50 mAdc
Base	50 mAdc
Junction temperature	150°C
Thermal resistance, junction to ambient	0.50°C/mW

#### Electrical Characteristics of Each of the Three Transistors at 25°C

Minimum breakdown voltage	
Collector to base ( $I_C = 10 \mu\text{Adc}$ )	60 Vdc
Emitter to base ( $I_E = 10 \mu\text{Adc}$ )	7 Vdc
Minimum sustain voltage ( $I_B = 0$ , $I_C = 5 \text{ mAdc}$ )	
	22 Vdc
Small-signal short circuit forward current transfer ratio ( $I_E = -10 \text{ mAdc}$ , $V_{CB} = 10 \text{ Vdc}$ )	
	.970 to .995
Maximum junction capacitance ( $I_E = 0$ , $V_{CB} = 5 \text{ Vdc}$ )	
	6.0 uuf
Minimum common emitter current gain ( $I_C = 10 \text{ mAdc}$ , $V_{CE} = 10 \text{ Vdc}$ , $f = 30 \text{ mc}$ )	
	14.5 db

## 20E



An N-P-N silicon nonepitaxial mesa transistor assembled in a hermetically sealed metal can.

Provided with a P-49B628 Clamp for mounting the transistor when an external heat sink is used.

Used in 103AW and BW Data Sets.

Comcode: 100 788 116

## TRANSISTORS

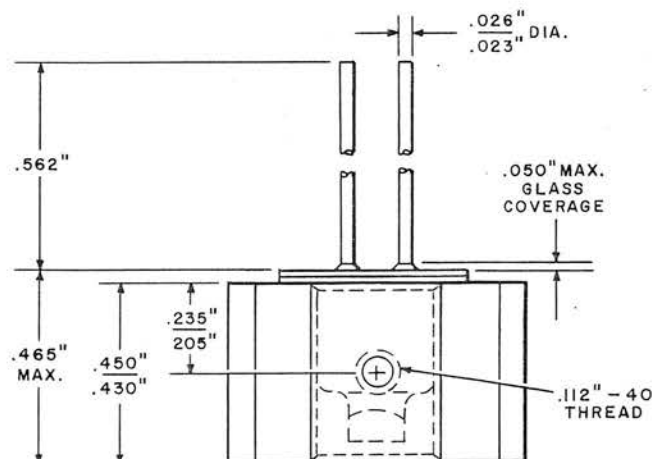
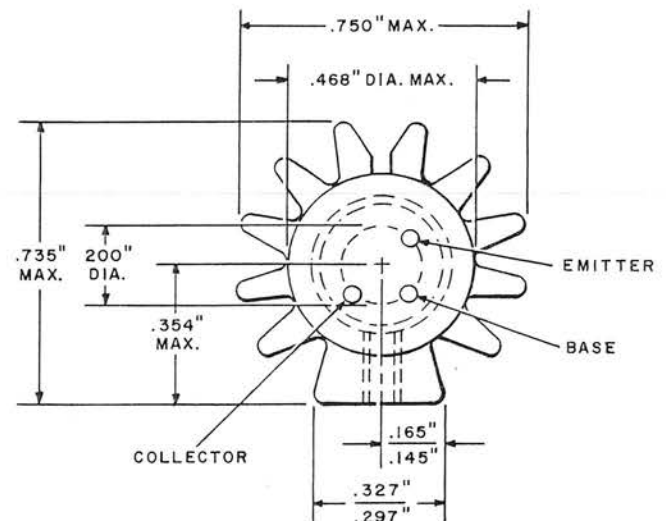
## Maximum Ratings Absolute Values

Current, continuous	400 mAdc
Voltage	
Collector to base	85 Vdc
Emitter to base	6.0 Vdc
Collector to emitter	20 Vdc
Thermal resistance, junction to ambient	.090°C/mW

## Electrical Characteristics at 25°C

	Min.	Max.
Sustain voltage		
( $I_C = 50$ mAdc, $I_B = 0.2$ mAdc)	20	— Vdc
Breakdown voltage		
Collector to emitter		
( $I_C = 1.0$ mAdc) ( $R_{BE} = 0$ )	85	— Vdc
Emitter to base, open collector		
( $I_E = 100$ uAdc)	6.0	— Vdc
Small-signal short circuit forward current transfer ratio		
( $I_C = 25$ mAdc, $V_{CE} = 5$ Vdc, $f = 30$ mc)	4.4	— db
Forward current transfer ratio		
( $I_C = 60$ mAdc, $V_{CE} = 10$ Vdc)	18	—
Saturation voltage		
Collector to emitter		
( $I_C = 60$ mAdc, $I_B = 4$ mAdc)	—	1.1 Vdc
Base to emitter		
( $I_C = 60$ mAdc, $I_B = 4$ mAdc)	—	1.1 Vdc
Collector cutoff current ( $V_{CB} = 20$ Vdc)	—	10.0 uAdc
Emitter cutoff current ( $V_{EB} = 2$ Vdc)	—	10.0 uAdc
Output capacitance		
( $V_{CB} = 5$ Vdc, $I_E = 0$ )	—	38 uuf

43A



A P-N-P germanium alloy junction transistor assembled in a hermetically sealed metal can. A heat sink is attached to the transistor.

Used initially in the number 227 type amplifiers.

Comcode: 100 788 579

## Maximum Ratings Absolute Values

Current, continuous (base to emitter or collector)	500 mAdc
Voltages	
Collector to base	—40 Vdc
Emitter to base	—20 Vdc
Collector to emitter	—40 Vdc

## TRANSISTORS

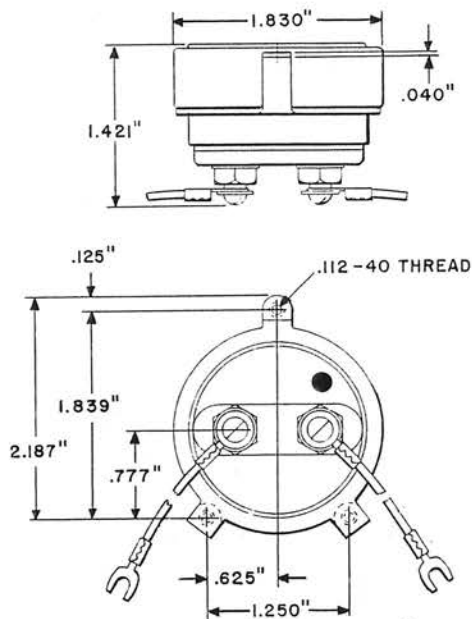
## 43A (Continued)

## Electrical Characteristics at 25°C

Power dissipation (*)	240 mW	Minimum breakdown voltage	
Minimum Value		Collector to base ( $I_C = -50 \text{ uAdc}$ )	-40 Vdc
Large-signal forward current		Emitter to base ( $I_E = -50 \text{ uAdc}$ )	-20 Vdc
transfer ratio	.97	Maximum collector cutoff current	
(*) Derate at 4mW/°C.		( $V_{CB} = -30 \text{ Vdc}$ )	-10 uAdc
		Maximum emitter voltage ( $I_E = 15 \text{ mAdc}$ )	0.7 Vdc

## TRANSMITTERS

662B

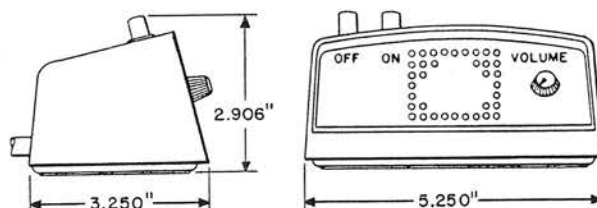


Consists of an AC1 Transmitter Unit equipped with 18-inch long leads and a clamp ring. Mounting screws are furnished. The cord tips are arranged for number 4, 5, or 6 screws.

For use in customized installations of the 3B Speakerphone System.

Comcode: 100 790 195

666BW Type

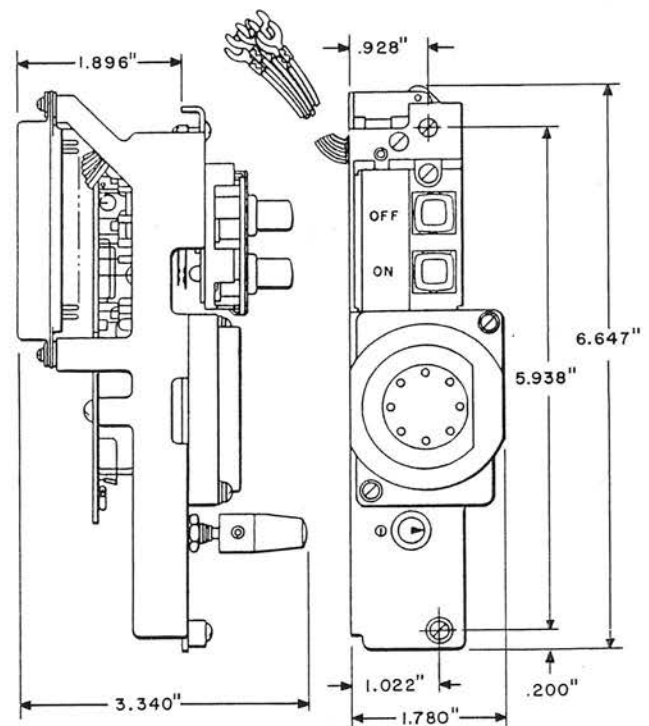


Each consists of a transistorized amplifier assembled on a printed wiring board, an AC1 Transmitter Unit, a volume control, a terminal strip, and an ON and OFF key assembly with a lamp strip and 51A Lamp mounted on a metal base and enclosed in a plastic housing. The ON push button is illuminated by means of the 51A Lamp. Furnished with a cord having the same color as the housing as referenced in the table.

Code No.	Comcode	Color of Housing	Cord No.
666BW-3	100 790 369	Black	T7A-3
666BW-51	100 790 385	Green	T7A-51
666BW-58	100 790 419	White	T7A-58
666BW-60	100 790 435	Light Beige	T7A-60
666BW-61	100 790 443	Light Gray	T7A-61

For use in the 3B Speakerphone System.

667B



Consists of an AB2 Transmitter Unit, a three-transistor feedback amplifier, a volume control, two push button operated spring combinations, and an assorted lamp block assembled on a metal mounting. Terminated in a KS-16672L1 Connector and seven terminal leads approximately 11 inches long. Leads are equipped with cord tips which are arranged for number 4, 5, or 6 screws for connection to an associated dial and network. The ON push button operates two sets of make contacts and the OFF button operates a set of break contacts.

The lamp block is equipped with a light shield, and the ON push button is illuminated by means of a 51A Lamp. The connector is provided with a nonreturnable dust cover.

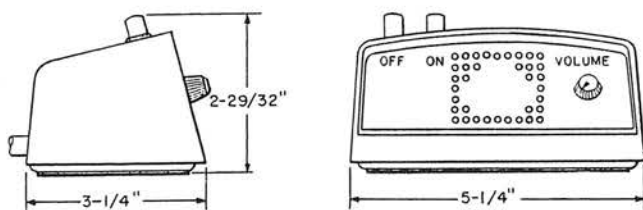
For use as part of number 630, 631, 632, 634, and 635 type telephone sets.

Comcode: 100 790 476



## TRANSMITTERS

## 670AW Type

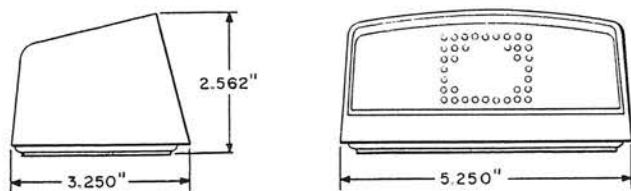


Each consists of a transistorized amplifier assembled on a printed wiring board, an AC1 Transmitter Unit, a volume control, a terminal strip, and an ON and OFF key assembly with a lamp strip and 51A Lamp mounted on a metal base and enclosed in a plastic housing. The ON push button is illuminated by means of the 51A Lamp. Furnished with a cord having the same color as the housing as referenced in the table.

Code No.	Comcode	Color of Housing	Cord No.
670AW-3	100 790 609	Black	T9A-3
670AW-51	100 790 625	Green	T9A-51
670AW-58	100 790 658	White	T9A-58
670AW-60	100 790 674	Light Beige	T9A-60
670AW-61	100 790 682	Light Gray	T9A-61

For use as a master transmitter in conjunction with one or more number 671AW type auxiliary transmitters in conference room arrangements of the 3B Speakerphone System.

## 671AW Type

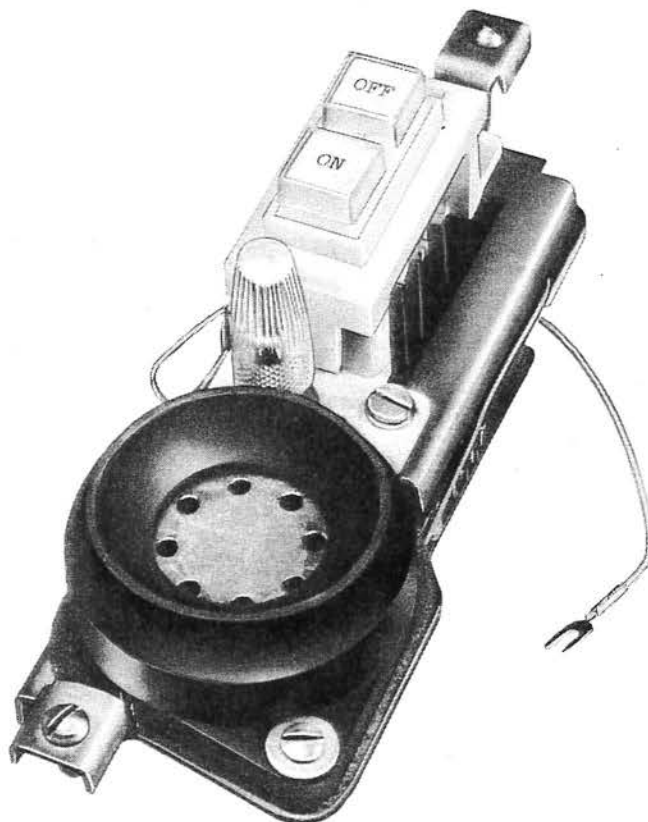


Each consists of an AC1 Transmitter Unit, an RC network, and a terminal strip mounted on a metal base and enclosed in a plastic housing. Available in the following colors.

Code No.	Comcode	Color of Housing
671AW-3	100 790 831	Black
671AW-51	100 790 856	Green
671AW-58	100 790 880	White
671AW-60	100 790 906	Light Beige
671AW-61	100 790 914	Light Gray

For use as an auxiliary transmitter in conjunction with a 670AW type master transmitter in conference room arrangements having a maximum of five auxiliary transmitters in the 3B Speakerphone System.

## 672A



Consists of an AC3 Transmitter Unit, a three transistor feedback amplifier, a volume control, two push button spring contacts, and an associated lamp block assembled on a metal mounting. Overall dimensions are 6 inches long by 1.920 inches wide by 2.730 inches high.

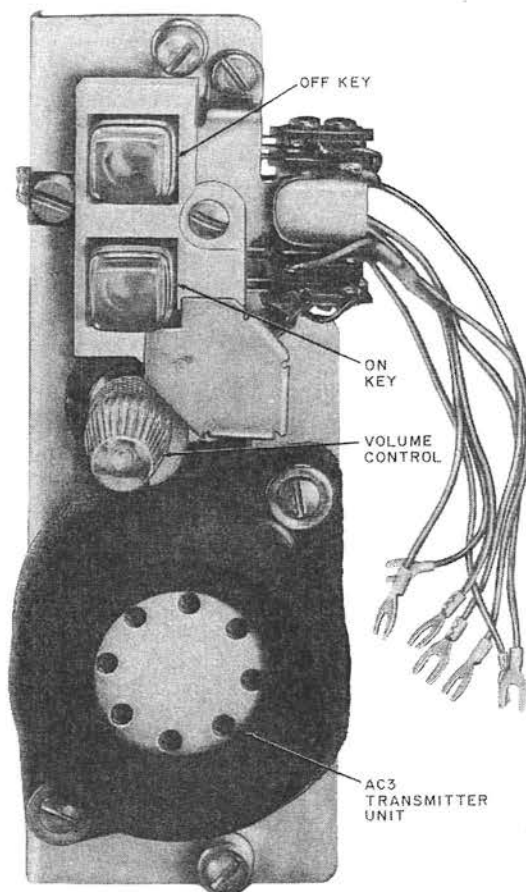
The transmitter is terminated with seven spade-tipped leads for connection to an associated circuitry. The ON push button operates two sets of make contacts and the OFF button operates a set of break contacts. The ON button is illuminated by a 51A Lamp.

Used with 3B Speakerphone service in the 3640AW and 3641AW type telephone sets.

Comcode: 100 790 948

## TRANSMITTERS

673A



Consists of an AC3 Transmitter Unit, a three transistor feedback amplifier, a volume control, two push button operated spring contacts, and an associated lamp block assembled on a metal mounting. Terminated with seven leads equipped with cord tips for connection to associated circuitry.

The ON push button operates three sets of make contacts and the OFF button operates a set of break and a set of make contacts.

The lamp block is equipped with a light shield and the ON key button is illuminated by means of a 51A Lamp.

Overall dimensions are 5.108 inches long by 2.040 inches wide by 2.831 inches high.

Used initially in the 3B Speakerphone System in 1671A7 Telephone Sets.

Comcode: 100 790 955



## UNITS

## Apparatus

## 8 Type



Each consists of a switchhook assembly, a G1FR-3 Hand Set, a 425E Network, a terminal block, and the apparatus listed below, assembled and wired in a case having a removable cover.

Arranged for but not equipped with a 123A1A Protector.

Arranged to mount in a number 111 type Apparatus Box.

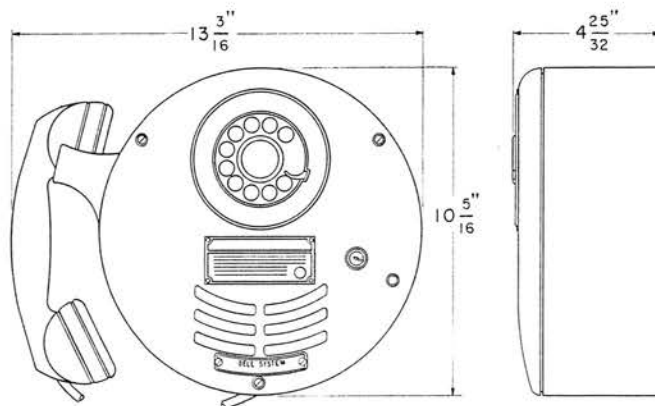
Provided with three machine screws for mounting.

Used in number 570 type Telephone Set.

Code No.	Comcode	Diode	Ringer	Switch	Resistor
8JW	100 795 046	—	J1A	—	KS-14603L2A (7300 ohms)
8KW	100 795 053	—	J1A	(a)	KS-14603L2A (7300 ohms)
8LW	100 795 061	2-420B	—	—	—
8MW	100 795 079	400E & 2-420B	—	(a)	107A (46,400 ohms)
8NW	100 795 087	—	—	—	KS-14603L2A (7300 ohms)
8PW	100 795 095	—	—	(a)	KS-14603L2A (7300 ohms)

(a) Single pole, double throw microswitch. May be obtained with a lock type switch when specified.

## 9AW and 9BW



NO. 9B ALSO GENERAL DESIGN  
AND DIMENSIONS OF NO. 9A

9AW: Consists of a 85A Apparatus Blank, a 195A Capacitor, a special 101A Induction Coil, a B1AB Ringer, two 29C Gongs, a F6ARW-3 Hand Set, and a 37B Varistor, contained in an aluminum housing, except the hand set which is external. The unit is equipped with a 23A Lock.

Comcode: 100 795 129

9BW: This unit is the same as the 9AW except it also is equipped with a special 6A Dial, a 56B Dial Adapter, a special 147B Number Plate and a 61D Filter.

Comcode: 100 795 137

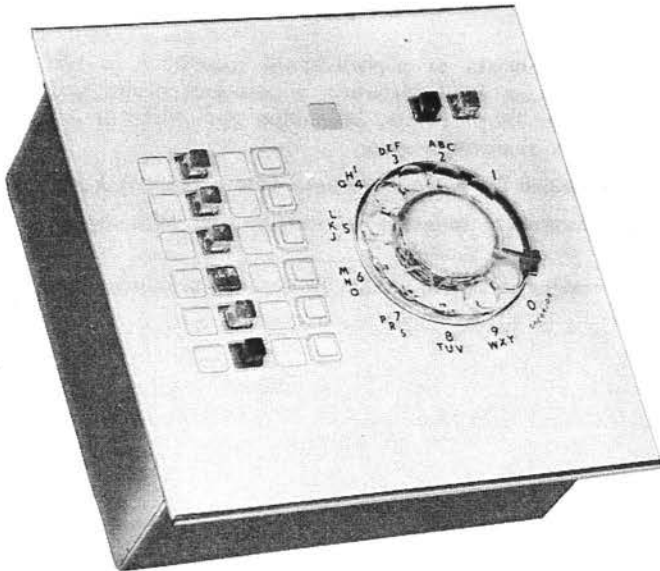
Each is furnished wired for bridged ringing lines. They may be arranged for grounded ringing by changing the termination of one ringer lead.

Forms a part of the 320ERW and 320FRW Telephone Sets, respectively.



## UNITS Apparatus

10A



Designed for flush mounting in a desk top. The unit contains a 599A Key, a 105B Apparatus Blank, and a 6N-3 Dial. Above the dial are mounted a white CALLS WAITING window illuminated by means of a 2Y Lamp, an amber buttoned FLASH key, and a clear buttoned supervisor's CALL key. The unit is furnished with a clear plastic 35A Face Plate together with five face mats colored silver, gold, blue, green, and cream white for use under the face plate to provide a choice of color contrasts, and a snap-on bezel for retaining the face plate and a mat.

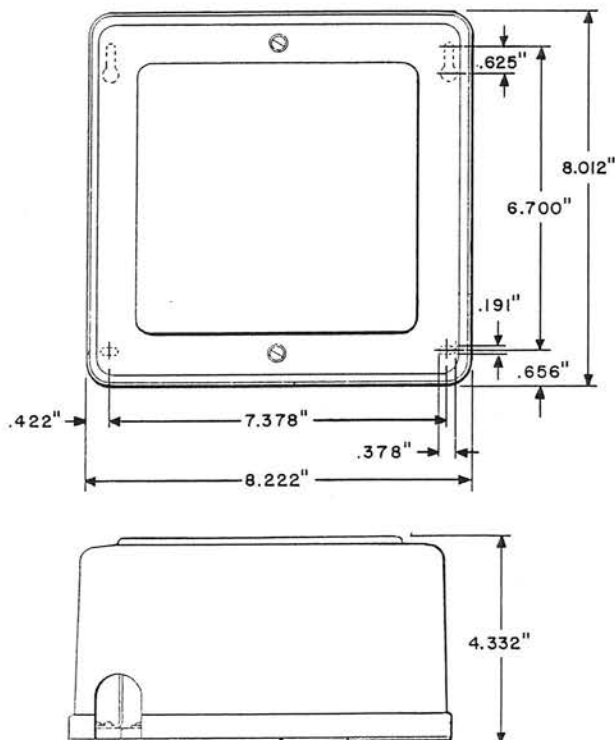
Terminal connections require an A25A type connector cable for the 599A Key. **Length and endings for the connector cables must be specified.** The overall dimensions are 8.463 inches wide by 4.148 inches deep by 8.992 inches high.

For use with call distributing systems at an attendant's position for answering and transferring incoming calls.

Comcode: 100 795 145

## Control

55BW-49



This unit consists of a line hybrid coil, a line holding coil, and four printed wiring boards with their associated components. Mounted on a metal base plate with a removable light olive gray plastic cover.

Two of the printed wiring boards provide gain in the transmit and receive paths of the control unit. The amount of gain is automatically adjusted by the remaining two printed wiring boards which comprise the noise and switchguard circuits. The unit must be connected to a 2012B type transformer for power.

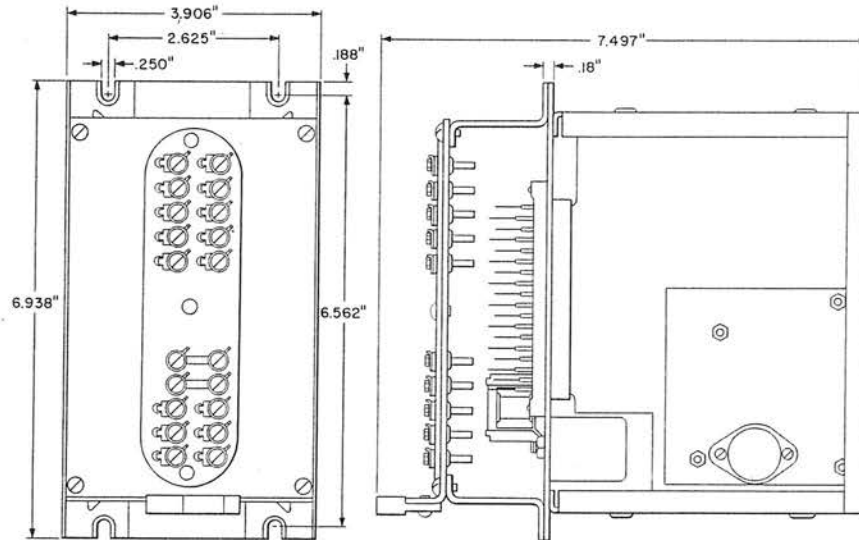
For use with the 3B Speakerphone System using rotary or TOUCH-TONE dials.

Comcode: 100 795 624

## UNITS

## Control

57B



Consists of three plug-in printed wiring board assemblies incorporating transistorized amplifiers and associated transmission transformers. Two of the printed wiring board assemblies, each of which incorporates a current controlled attenuator in the form of a resistor-semiconductor network called a variolossor, are employed to provide gain in the transmit and receive paths of the control unit. The amount of gain provided in each path is automatically adjusted by the action of speech-activated switchguard and control circuits comprising the remaining printed wiring board assembly. The unit is powered entirely from the system in which it is used. One required transmission transformer and the jacks for receiving the printed wiring board assemblies are mounted to a front plate arranged for standard mounting in key service units.

All required connections to the control unit are made to a 20-terminal terminal strip mounted on a terminal plate parallel to and approximately 1-1/2 inch behind the front mounting plate. A two-hole fanning strip is also mounted at one end of the terminal plate perpendicular to the surface of the plate. When assembled in the key equipment in which it is used, the printed wiring boards will be accessible from the front of the equipment.

The overall front dimensions are 3.906 inches wide by 6.938 inches high. The terminal plate and fanning strip extend approximately 2-5/8 inches behind the mounting plate and the printed wiring boards extend approximately 5 inches in front of the mounting plate. The approximate weight of the unit is 5 pounds.

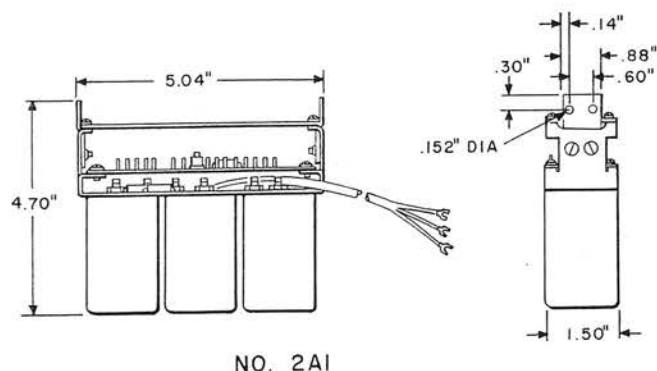
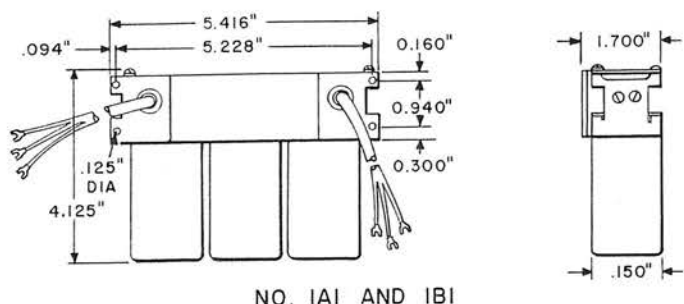
Used in the 2A Communication System. May also be used in the 3A Communication System — hospital interphone.

Comcode: 100 795 640

## UNITS

## Data

## 1A1, 1B1, and 2A1



1B1: Consists of a receiver circuit on a printed wiring board. The input signal is a single frequency signal of 387 Hz transmitted in the reverse direction relative to forward data transmission. The receiver detects this signal and gives an output indication of its presence.

The unit mounts on the chassis of the 402C2 Data Set. Overall dimensions are 5.416 inches by 4.125 inches by 1.700 inches.

For use with data sets in DATA-PHONE service over the switched telephone network as the receiving portion of a simultaneous reverse signaling system.

Comcode: 100 818 111

2A1: Consists of a transmitter circuit on a printed wiring board. A single frequency signal of 387 Hz, which can be on-off keyed, is transmitted in the reverse direction relative to forward data transmission.

The unit is arranged to mount between the slider grid of the 402D2 Data Set.

Overall dimensions are 5.040 inches by 4.700 inches by 1.500 inches.

For use with data sets in DATA-PHONE service over the switched telephone network as the transmitting portion of a simultaneous reverse signaling system.

Comcode: 100 818 129

These are reverse channel units used as circuit assurance, line break, or low speed serial reverse information channels.

1A1: Consists of a transmitting and receiving circuit on a printed wiring board. A single frequency of 387 Hz, which can be on-off keyed, is transmitted in the reverse direction relative to forward data transmission. The receiver detects this signal and gives an output indication of its presence.

The unit mounts on the chassis of 202C2 and 202D2 Data Sets.

Overall dimensions are 5.416 inches by 4.125 inches by 1.700 inches.

For use with data sets in DATA-PHONE service over the switched telephone network as the transmitting and receiving portion of a simultaneous reverse signaling system.

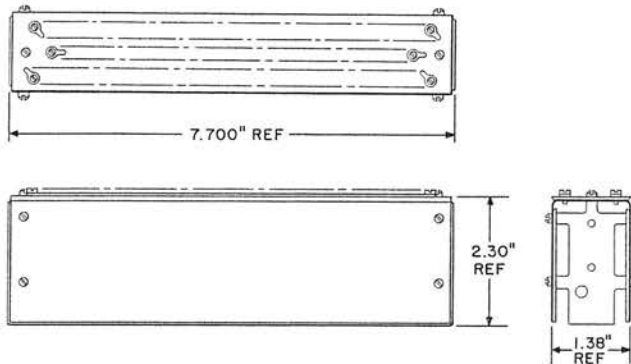
Comcode: 100 818 103



## UNITS

## Data

3A1



Consists of apparatus such as transistors, resistors, capacitors, inductors, transformers, and relays mounted on a flexible and rigid printed wiring board which is mounted on a frame with a common terminal strip forming a rectangular package.

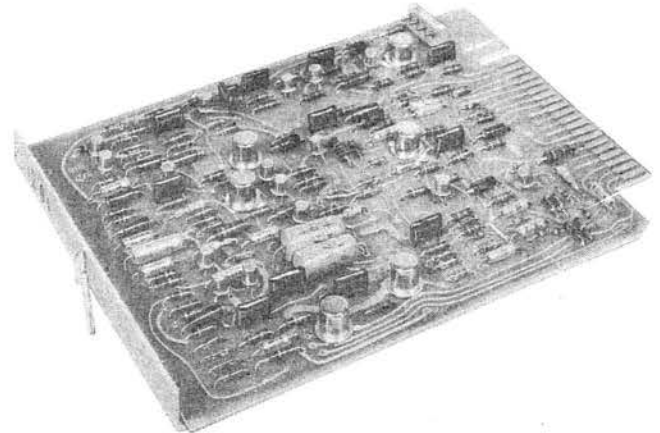
The unit provides unattended call answering and disconnect for data terminals as well as provision for normal voice telephone service with an associated telephone set and also provides standardized connect-disconnect features, customer contact and voltage controls, and data-to-talk and talk-to-data transfer controls for data sets used in the DATA-PHONE service.

Power is obtained from an associated data set either +18 volts or -18 volts or both.

For use with Data Sets 202CW and 402CW type and Data Auxiliary Set 804AW.

Comcode: 100 818 137

12B1



Consists of component apparatus mounted on a printed wiring board terminated in printed wiring terminals. Arranged to be inserted into a 927A Connector.

Overall dimensions are 7.300 inches long by 5.500 inches wide. Recommended mounting center is 5.80 inches.

Provides control functions for M37 type teletypewriter stations for direct access service in conjunction with the AR15 Circuit Pack.

Used initially in Data Auxiliary Set 820C1.

Comcode: 101 370 443





## UNITS

## Key Service

## 311A Type

Each 311A type key service unit is factory prewired which eliminates costly and time consuming installation expenses such as wire skinning, twisting of terminals, and soldering. Units are arranged to utilize quick-connect clip on terminals which are easily accessible on the back of the gate. The units are shipped complete with backboard, apparatus mounting, and cover and are designed for system growth.

Each consists of a 16C Apparatus Mounting, equipped with key telephone units as indicated in table, a KS-15900L1 Interrupter, and a 117A Cover. Also provided with a rectifier and connecting blocks as indicated in table. Overall dimensions are approximately 16.688 inches high by 26.062 inches wide by 9.656 inches deep.

Provides lamp flashing, winking, ringing, time out, manual intercom (except as noted) transfer and line signaling features, common equipment for central office or PBX lines, and either a 9-station or 18-station dial selective intercom unit as indicated by footnotes.

**311A11 and 311A12 Types:** Intended to connect to nine central office or PBX lines. Do not provide manual intercom.

**311A13 Type and 311A14:** Intended to connect to 13 central office or PBX lines. Do not provide manual intercom.

**311A16D:** Performs switching and signaling functions for 6 to 18 intercom stations in the 2A Communication System.

311A11 to 311A14 types are used in the 1A1 Key Telephone Systems. 311A16D is used in the 2A Communication System.

Provisions are made for plugging in two each 216B and 253B Key Telephone Units when expansion to full capacity is desired. Additional 216B and 253B Key Telephone Units if required must be ordered separately.

Code No.	Comcode	Contains
		Key Telephone Units
311A11	100 825 868	238A
311A11D (a) (c)	100 825 876	207C, 216B, 238A
311A12 (b) (c)	100 825 884	238A
311A12D (a) (b) (c)	100 825 892	207C, 216B, 238A
311A13 (c)	100 825 900	230B, 238A
311A13D (a) (c)	100 825 918	230B, 207C, 216B, 238A
311A14 (b) (c)	100 825 926	230B, 238A
311A16D (d) (e) (f)	101 171 072	207C, 252B, 253B

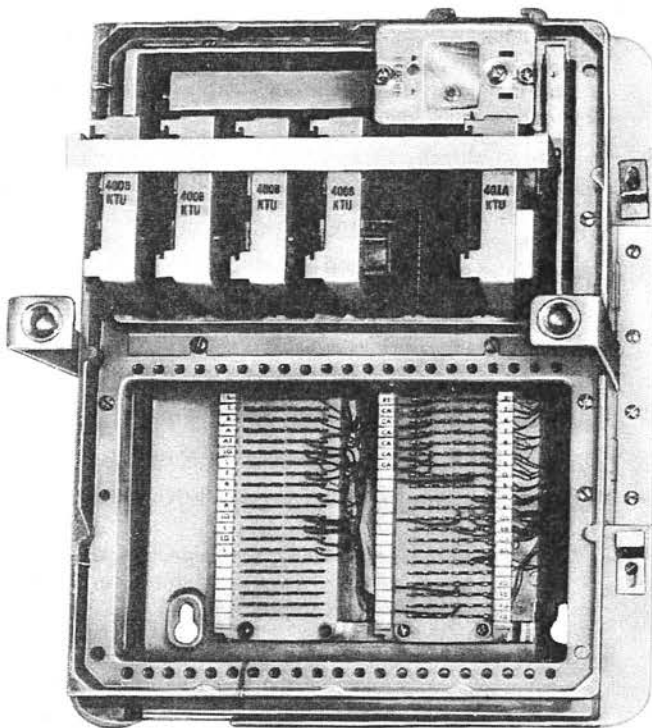
- (a) Provides an 18-station dial selective intercom unit.
- (b) Equipped with a J86731D-3 L1 Power Plant. Does not include 20 Hz ringing supply.
- (c) Equipped with four 66B1-25 Connecting Blocks.
- (d) Equipped with a 57B Control Unit.
- (e) Does not contain a KS-15900L1 Interrupter.
- (f) Equipped with four 66B3-50 Connecting Blocks.

311A16D replaces 311A15 Key Service Unit.

## UNITS

## Key Service

## 501AW and 502AW Type



(COVER REMOVED)

The factory prewired capacity of these units is a total of six circuits. This may be a combination of lines (central office or PBX) and manual intercom. An additional two lines may be added by inserting a 259A Key Telephone Unit, which if required must be ordered separately.

The 400 type key telephone units are required and must be ordered separately.

Each consists of a 31B Apparatus Mounting on a 177A Backboard. The apparatus as shown in table is assembled on the mounting in addition to one KS-19175L1 Interrupter and one each 66B1-25 and 66B3-50 Connecting Blocks. Each unit includes a receptacle assembly consisting of six 906A Connectors, one 907B Connector, and one 299A Terminal Strip. Approximate overall dimensions are 14.125 inches by 28 inches by 9.5 inches deep.

The unused lower half of the unit will accept number 259 type or 400 series KTUs.

For use in the 1A2 Key Telephone System.

Package Designation	Comcode	9-Station Dial Intercom 207C KTU	J86731D-3 List 1 Power Plant	116A Cover	ED-69462-50 G1 Floor Stand (with cover)	A75A Connector-Cable (6 Ft.)
501A1	100 825 942	—	—	—	(a)	—
501A1D	100 825 983	1	—	—	(a)	—
501A2	100 825 959	—	—	1	(a)	—
501A2D	100 825 991	1	—	1	(a)	—
501A3	100 825 967	—	—	—	1	—
501A3D	100 826 007	1	—	—	1	—
501A4W	101 171 080	—	1	—	1	—
501A4DW	101 171 098	1	1	—	1	—
502A3D	100 826 023	1	—	—	1	1
502A4DW	101 171 106	1	1	—	1	1

(a) Wall mounted.

## UNITS

## Key Service

## 503B2

Consists of a mounting plate and two mounting bars equipped with the following apparatus:

- 1 263A Key Telephone Unit
- 1 585A Panel
- 1 66B4-25 Connecting Block
- 1 19 Type Power Supply
- 3 KS-16671L2 Plugs

Provides lamp flashing to external circuits, manual intercom and line signaling features, visual and audible signals or both on incoming calls, and common equipment for control office or PBX lines.

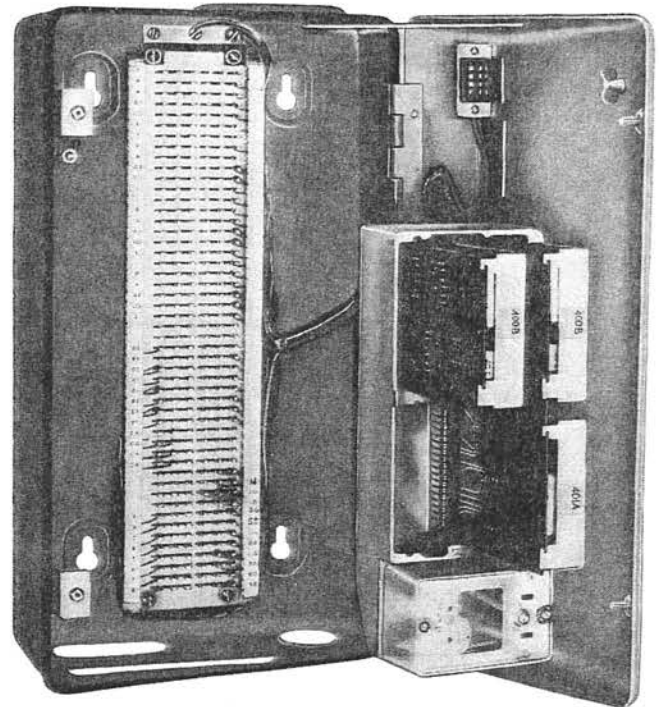
Arranged for wall or rack mounting and for connections through an A75A Connector Cable which is not furnished and must be ordered separately.

Used in 1A2 Key Telephone Systems.

Replaces the 503B1 Key Service Unit.

Comcode: 101 207 603

## 550B and 551BW



The prewired capacity of these wall mounted units is a total of four circuits. This may be any combination of lines (central office or PBX) and manual intercom.

**550B:** Consists of a KS-19175L1 Interrupter and four 906C Connectors wired to a 66B5-37 Connecting Block and assembled in a metal case having a hinged cover. Overall dimensions are 15.19 inches by 7.94 inches by 5.60 inches.

Arranged to mount four number 400 or 401 type key telephone units, which must be ordered separately.

Comcode: 101 602 332

**551BW:** Same as 550B except equipped with a 28A1 power supply.

Comcode: 101 551 349

A power cord is required and must be ordered separately as follows:

Part Number	Comcode	Length
P40J326	824 013 262	1-1/2 feet long
P40J327	824 013 270	2 feet long
P40J328	824 013 288	4 feet long
P40J329	824 013 296	6 feet long
P40J099	824 010 995	12 feet long

These units have no space available for optional 400 series KTUs.

For use in 1A2 Key Telephone System..

Replace 550A and 551AW Key Service Units, respectively.

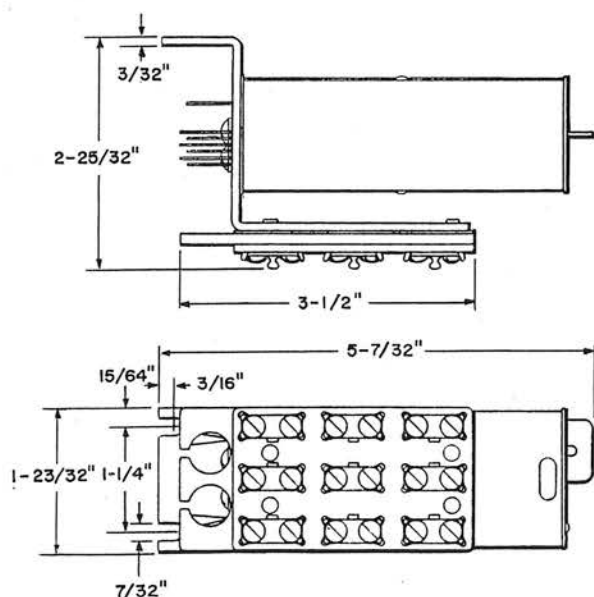


## UNITS

## Key Telephone

The key telephone units consist of apparatus such as relays, capacitors, coils, resistors, etc. assembled on a metal panel and surface wired to a terminal panel. Mounting screws are furnished with each unit. Each unit serves a specific requirement in the 1A1, 1A2, and 6A Key Telephone Systems.

3A



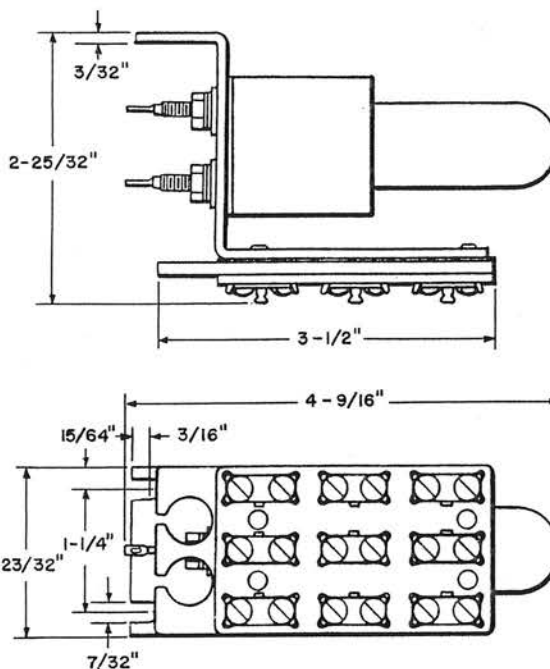
Arranged to mount in a number 105BW Apparatus Box. Requires angle type P-37B204 Bracket for installation on 16C Apparatus Mounting or when unit is relay rack mounted.

For use in the intercommunicating signaling circuit of the 1A and 1A1 Key Telephone Systems.

One required for each intercom circuit.

Comcode: 100 826 288

11A



Arranged to mount in a number 105BW Apparatus Box. Requires angle type P-37B204 Bracket for installation on 16C Apparatus Mounting or when unit is relay rack mounted.

For use in the ringing feed lamp circuit of the 1A and 1A1 Key Telephone Systems.

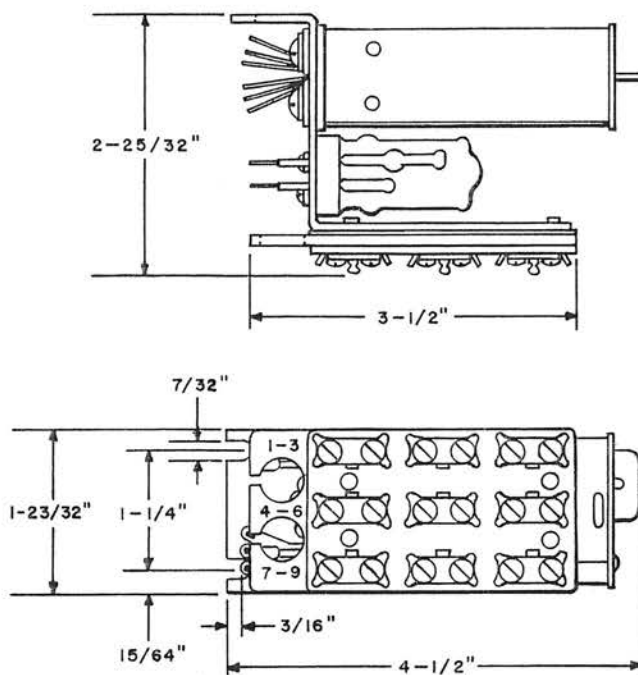
One required for each central office generator feed.

Comcode: 100 826 361

## UNITS

## Key Telephone

16A



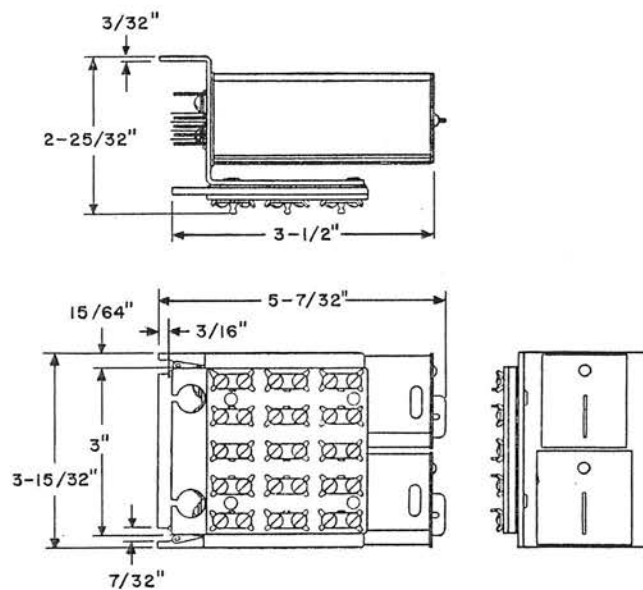
Arranged to mount in a number 105BW Apparatus Box. Requires angle type P-37B204 Bracket for installation on 16C Apparatus Mounting or when unit is relay rack mounted.

For use in the common audible signal control circuit of dial offices in the 1A and 1A1 Key Telephone Systems.

One required for each group of common audible signal circuits.

Comcode: 100 826 411

19B



Arranged to mount in a number 105BW Apparatus Box. Requires angle type P-37B204 Bracket for installation on 16C Apparatus Mounting or when unit is relay rack mounted.

For use in the flashing circuit of the 1A, 1A1, and 6A Key Telephone Systems.

One required for each group of six central office or PBX lines.

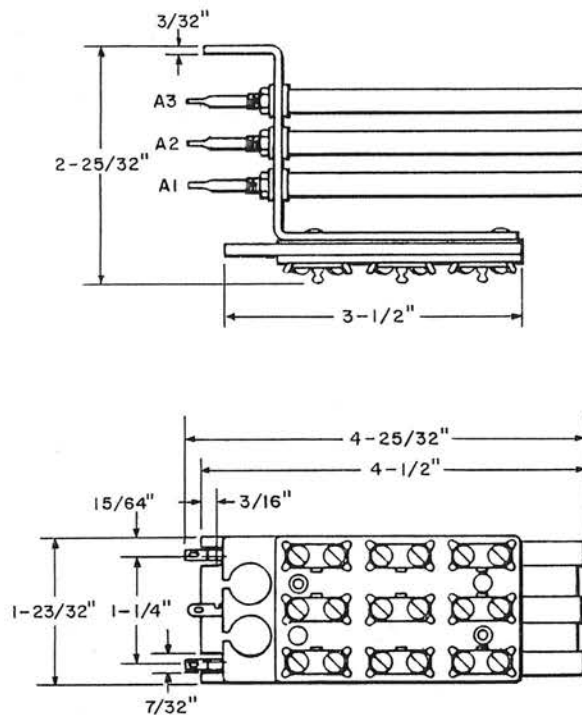
Comcode: 100 826 452



## UNITS

## Key Telephone

22 Type



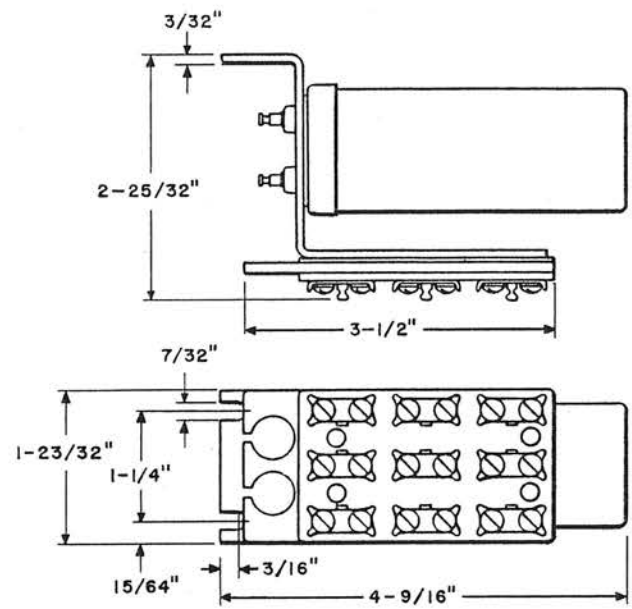
These are resistor units for dc lamp supply.

Arranged to mount in a number 105BW Apparatus Box. Requires angle type P-37B204 Bracket for installation on 16C Apparatus Mounting or when unit is relay rack mounted.

For use in the 1A and 1A1 Key Telephone Systems.

Code No.	Comcode	Battery Supply	
		Cells	Volts
22F	100 826 486	8	15 to 19
22G	100 826 494	9	17 to 21
22H	100 826 502	10	19 to 24
22J	100 826 510	11, 12, or 13	21 to 26
22K	100 826 528	23	47.5 to 50

23A



Arranged to mount in a number 105BW Apparatus Box. Requires angle type P-37B204 Bracket for installation on 16C Apparatus Mounting or when unit is relay rack mounted.

For use in the noise suppression circuit of the 1A and 1A1 Key Telephone Systems.

One required for each system.

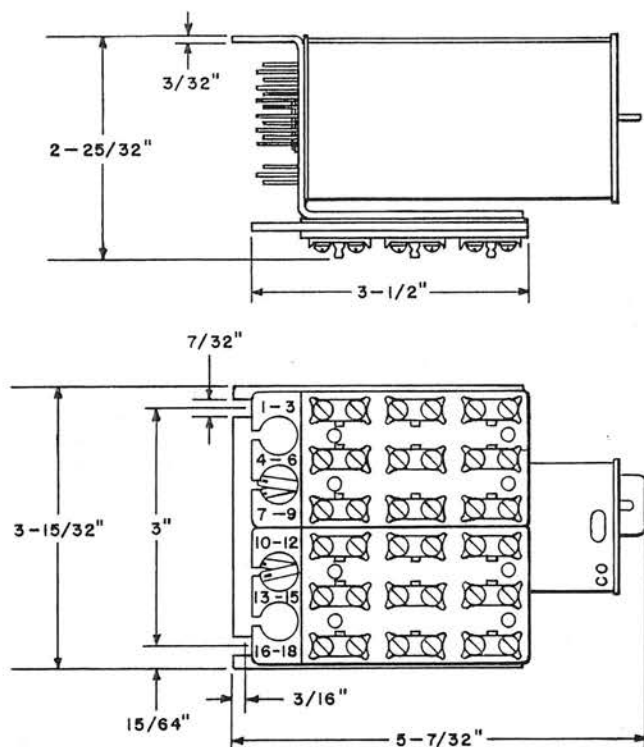
Comcode: 100 826 536



## UNITS

## Key Telephone

26B



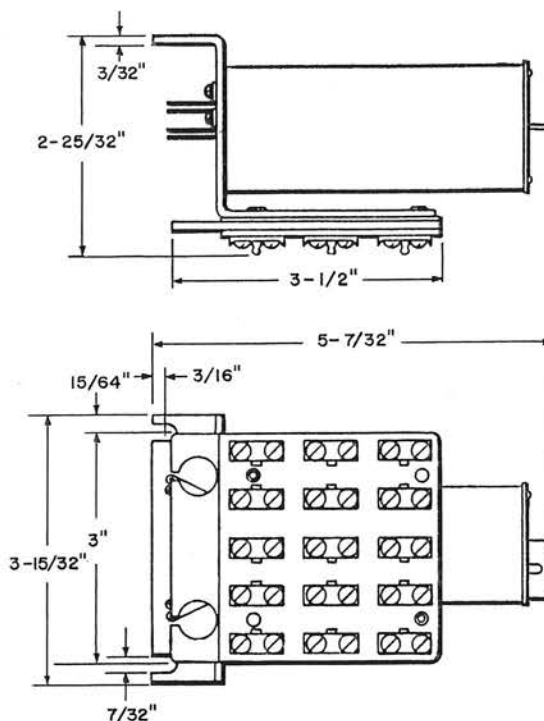
Arranged to mount in a number 105BW Apparatus Box. Requires angle type P-37B204 Bracket for installation on 16C Apparatus Mounting or when unit is relay rack mounted.

For use in the automatic cutoff circuit of the 1A and 1A1 Key Telephone Systems.

One required for each central office or PBX line.

Comcode: 100 826 569

29A



Arranged to mount in a number 105BW Apparatus Box. Requires angle type P-37B204 Bracket for installation on 16C Apparatus Mounting or when unit is relay rack mounted.

For use as a cut through and control unit in the 1A and 1A1 Key Telephone Systems.

One required for each station line.

Comcode: 100 826 593





## UNITS

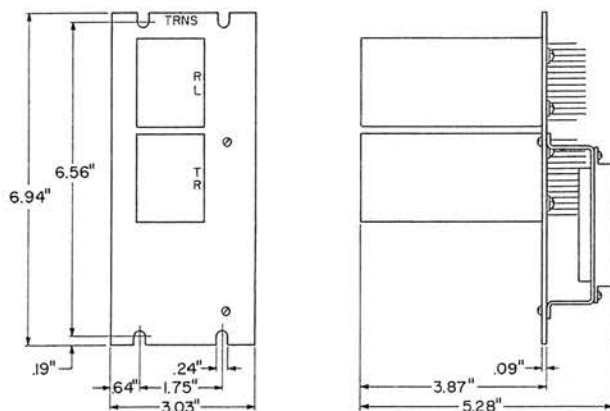
## Key Telephone

For use as an additional transfer circuit unit in the 6A Key Telephone System.

One required for each additional nine stations.

Comcode: 100 826 858

216B

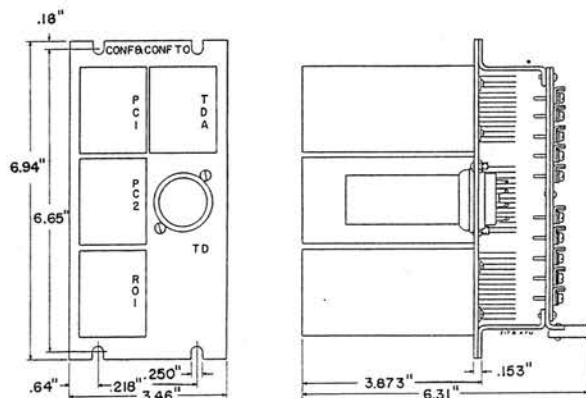


This unit is designed to mount on a 16C Apparatus Mounting. A KS-16672L1 Connector which has 50 contacts arranged in two rows of 25 provides plug-in connections when assembled in a key service unit.

The unit provides transfer facilities between the basic station selector circuit and an added station selector circuit in a 2A Communication System. One required for each additional six stations added.

Comcode: 100 826 866

217B



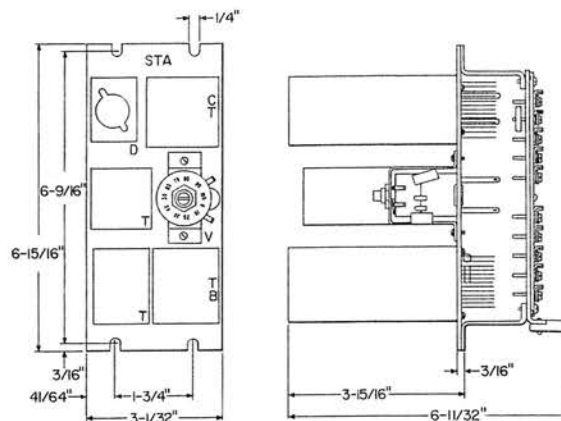
Terminal panel has 40 terminals, arranged in 4 rows of 10 each, numbered 1 to 40.

For use as preset conference control circuit unit in the 6A Key Telephone System.

One required for each two conference arrangements.

Comcode: 100 826 882

218A



Terminal panel has 40 terminals, arranged in 4 rows of 10 each, numbered 1 to 40.

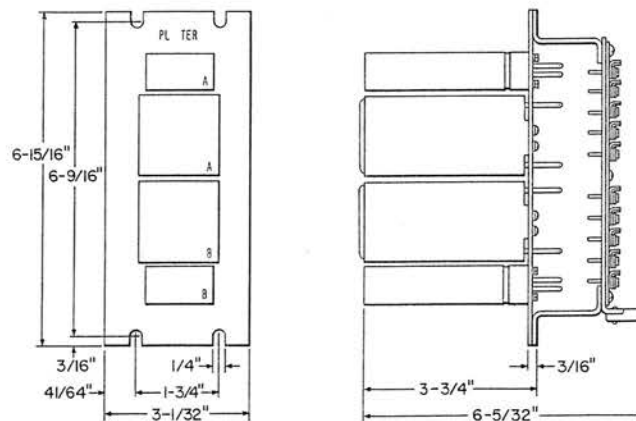
Mounting screws are furnished.

For use as station terminations on two- and four-wire private service lines.

One required for each private service line.

Comcode: 100 826 890

219A



Terminal panel has 40 terminals, arranged in 4 rows of 10 each, numbered 1 to 40.

Mounting screws are furnished.

For use as station terminations on two- and four-wire private service lines.

One required for each private service line.

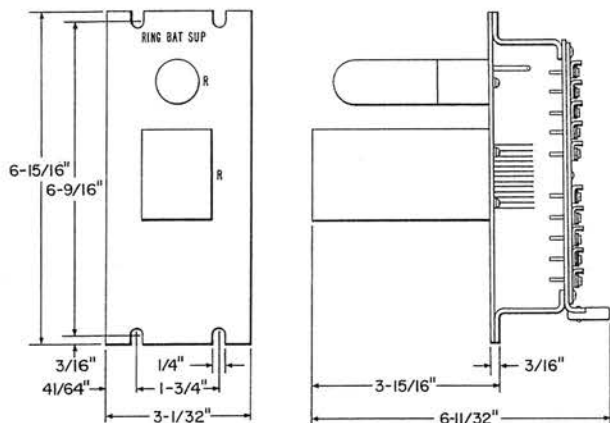
Comcode: 100 826 908



## UNITS

## Key Telephone

## 220A



Terminal panel has 40 terminals arranged in 4 rows of 10 each, numbered 1 to 40.

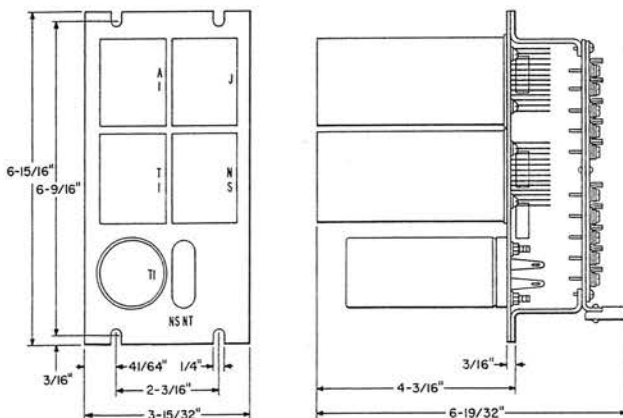
Mounting screws are furnished.

Used to provide a ring relay or power supply circuit associated with two- or four-wire lines terminating in two- or four-wire key telephone systems.

One required for each private service line.

Comcode: 100 826 916

## 221A



Terminal panel has 20 terminals arranged in 2 rows of 10 each, numbered 1 to 20.

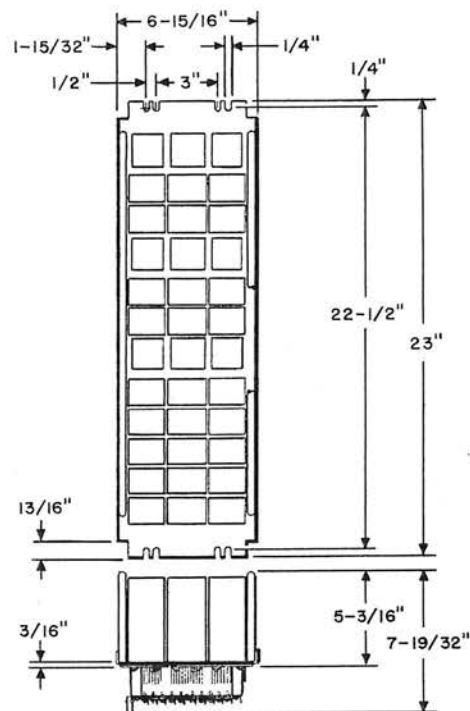
Mounting screws are furnished.

Used as an executive calling and flashing control circuit and no such number tone circuit unit in the 6A Key Telephone System.

One required for each executive line.

Comcode: 100 826 924

## 222A



Terminal panel consists of four groups of terminals. Each group has 40 terminals, arranged in 4 rows of 10 each, numbered 1 to 40.

For use as a battery supply and nine-station signaling circuit unit for link operation in the 6A Key Telephone System.

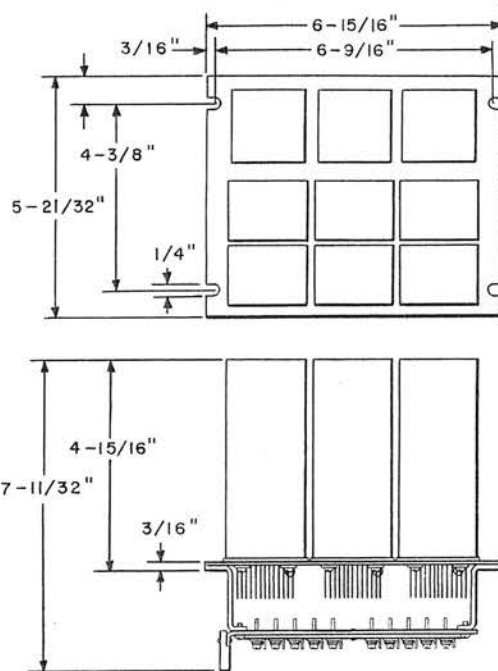
One required for each system.

Comcode: 100 826 932

## UNITS

## Key Telephone

## 223A



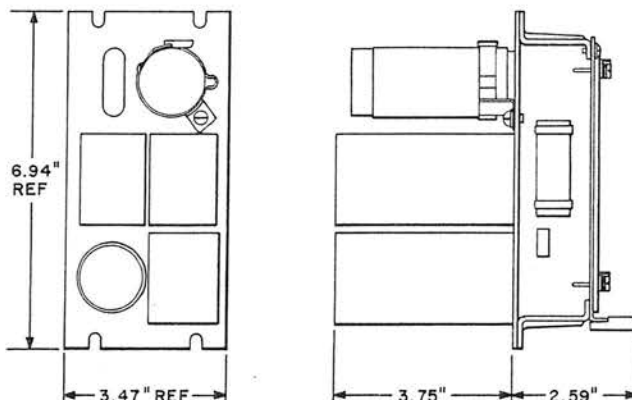
Terminal panel consists of two groups of terminals. One group has 40 terminals, arranged in 4 rows of 10 each, numbered 1 to 40; the other group has 20 terminals, arranged in 2 rows of 10 each, numbered 1 to 20.

For use as a three-station signaling circuit unit for two-link operation in the 6A Key Telephone System.

One required for each three additional stations.

Comcode: 100 826 940

## 224B



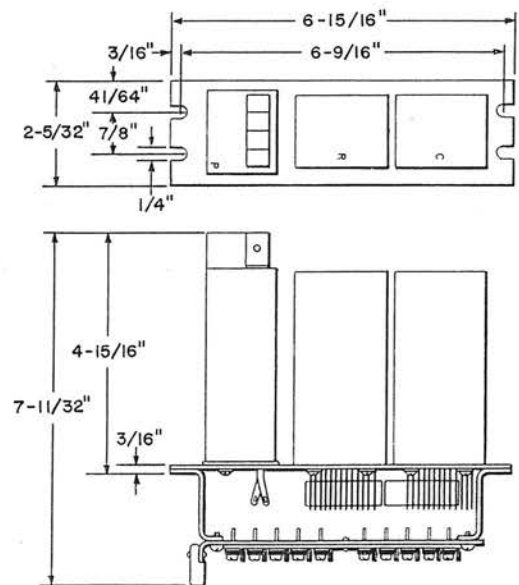
Terminal panel consists of a group of 40 terminals, arranged in 4 rows of 10 each, numbered 1 to 40.

For use as a busy signal and camp-on control circuit unit in the 6A Key Telephone System.

One required for each system.

Comcode: 100 826 965

## 225A



Terminal panel consists of a group of 20 terminals, arranged in 2 rows of 10 each, numbered 1 to 20.

For use as a long line circuit unit in the 6A Key Telephone System.

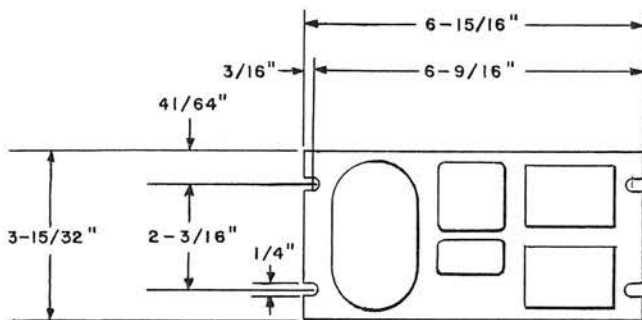
One required for each off-premise station.

Comcode: 100 826 973

## UNITS

## Key Telephone

226B

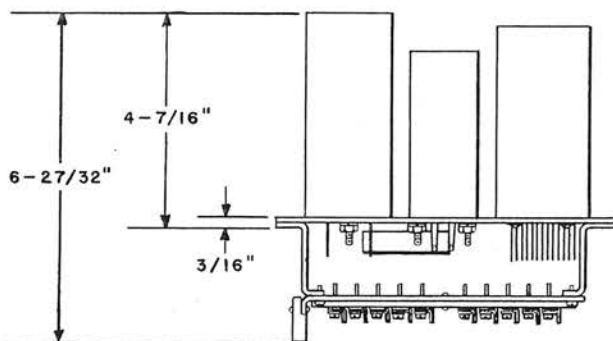


Terminal panel consists of a group of 20 terminals, arranged in 2 rows of 10 each, numbered 1 to 20.

For use as an incoming conference control circuit unit in the 6A Key Telephone System.

One required for each central office or PBX line to be conferenced.

Comcode: 100 826 981





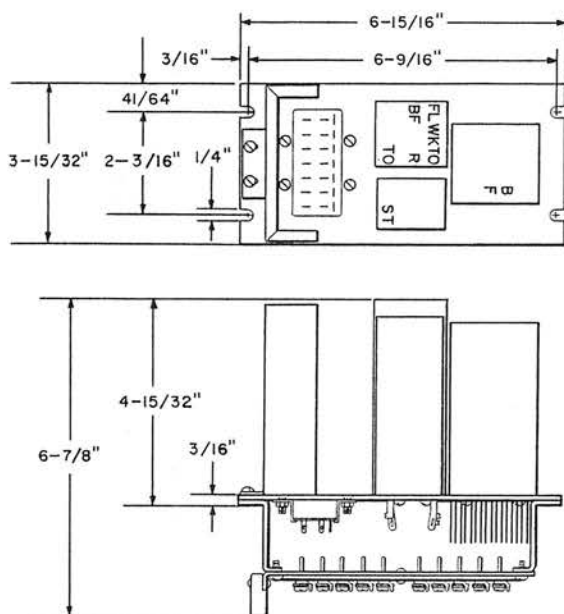




## UNITS

## Key Telephone

232B

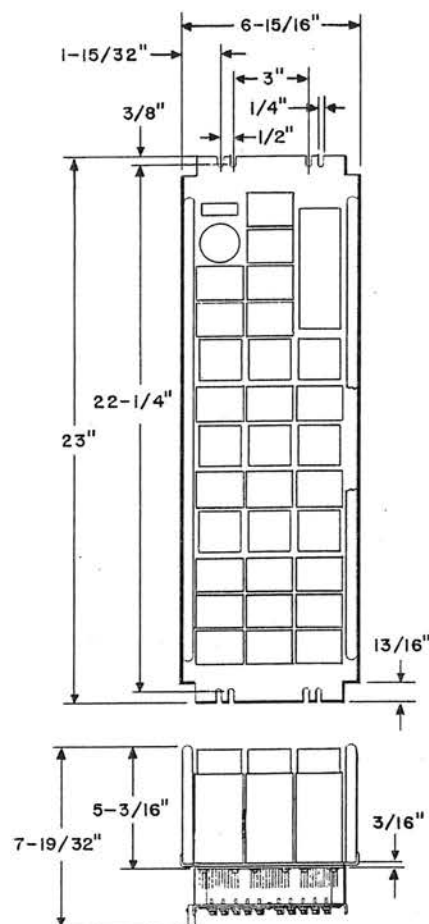


Terminal panel consists of a group of 40 terminals, arranged in 4 rows of 10 each, numbered 1 to 40.

For use as a time out and manual intercom circuit unit in the 1A1 and 6A Key Telephone Systems. When equipped with a plug in KS-15900L1 Interrupter, the unit will also provide flash and wink signals as well as busy tone and ringing circuit interruptions. The KS-15900L1 Interrupter is not furnished and must be ordered separately.

Comcode: 100 827 039

234A



Terminal panel has 200 terminals, arranged in 5 groups of 40 terminals each. Each group is arranged in 4 rows of 10 each, numbered 1 to 40.

For use as a battery feed nine-station signaling, selector and transfer circuit unit for single link operation in the 6A Key Telephone System.

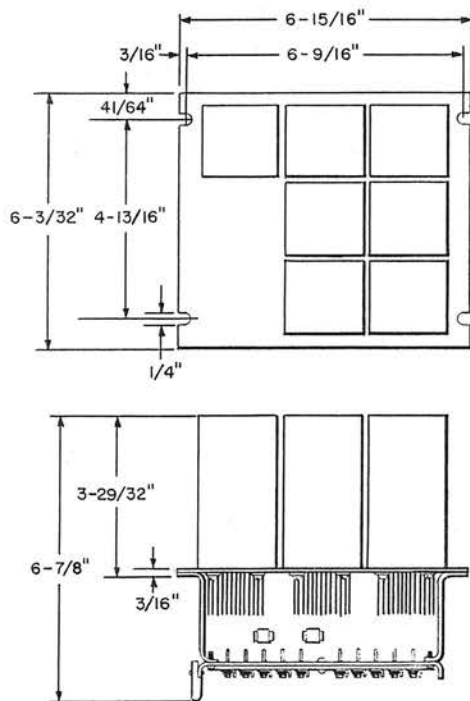
One required for each system.

Comcode: 100 827 047

## UNITS

## Key Telephone

235B



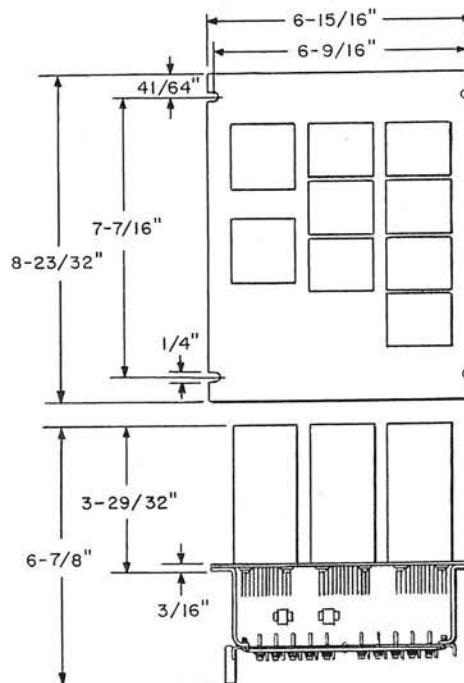
Terminal panel consists of two groups of terminals. Each group has 40 terminals, arranged in 4 rows of 10 each, numbered 1 to 40.

Provided with a circuit to protect relays in the event of a power failure.

For use with the number 630 type (CALL DIRECTOR) telephone set as a station line concentrator in the 1A1 Key Telephone System.

Comcode: 101 203 412

236B



Terminal panel consists of three groups of terminals. Each group has 40 terminals, arranged in 4 rows of 10 each, numbered 1 to 40.

Provided with a circuit to protect the relays in the event of a power failure.

For use with number 631 type CALL DIRECTOR telephone set as a station line concentrator in the 1A1 Key Telephone System.

Comcode: 101 203 420



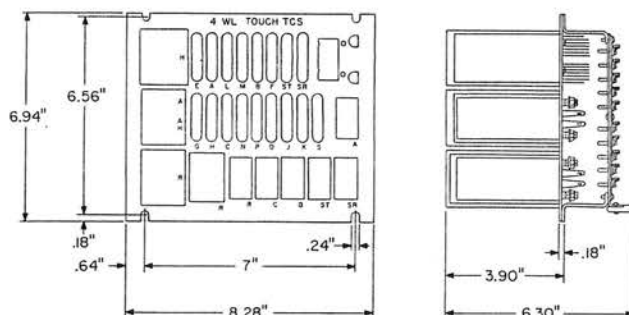




## UNITS

## Key Telephone

242A



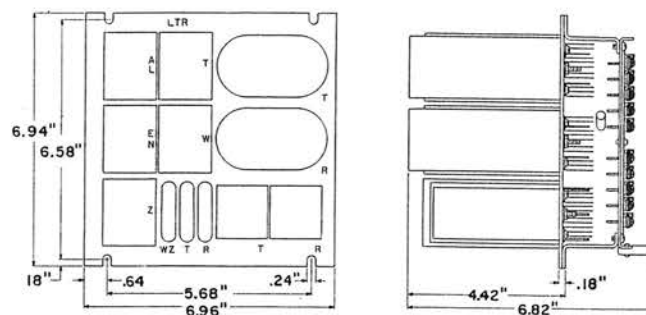
Terminal panel has 80 terminals, arranged in two groups of 40 terminals each. Each group is arranged in 4 rows of 10 terminals each, numbered 1 to 40.

Mounting screws are furnished.

Intended for use as a subscriber line circuit for terminating four-wire common battery lines in two- and four-wire key telephone sets arranged for TOUCH-TONE calling.

Comcode: 100 827 120

244A



Terminal panel consists of two groups of terminals. Each group has 40 terminals, arranged in 4 rows of 10 terminals each, numbered 1 to 40.

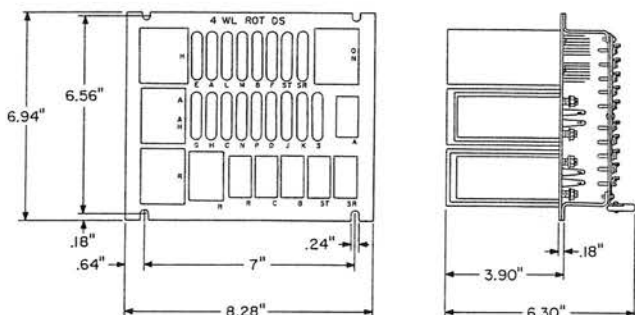
Mounting screws are furnished.

Used in a line transfer circuit to provide step-up or step-down impedance transformance in conjunction with two- and four-wire key telephone sets when used with four-wire lines.

One required for each line.

Comcode: 100 827 153

243C



Terminal panel consists of two groups of terminals. Each group has 40 terminals arranged in 4 rows of 10 terminals each, numbered 1 to 40.

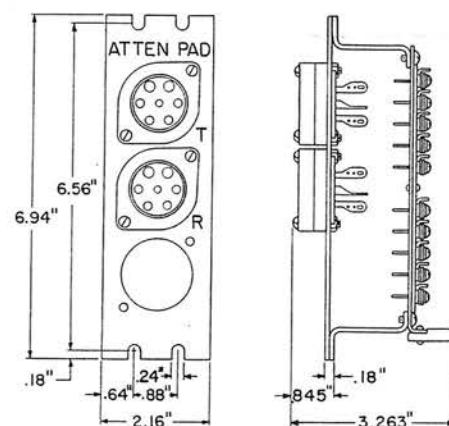
Mounting screws are furnished.

Used as a subscriber line circuit for terminating four-wire common battery lines in two- and four-wire key telephone sets arranged for conventional rotary dialing.

Replaces the 243B Key Telephone Unit.

Comcode: 101 207 629

245A



Terminal panel has 20 terminals arranged in 2 rows of 10 terminals each, numbered 1 to 20.

Mounting screws are furnished.

Two number 89 type resistors are required for each 245A Key Telephone Unit. These resistors are not furnished and must be ordered separately.

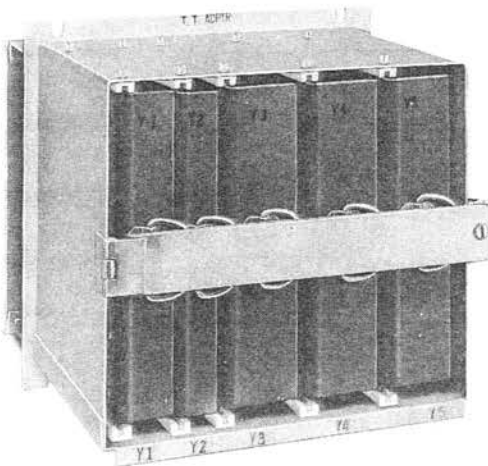
Used to provide attenuator pads in transmitting and receiving pairs in conjunction with two- and four-wire key telephone sets when used with four-wire sets.

Comcode: 100 827 161

## UNITS

## Key Telephone

## 247B



Consists of a metal casing equipped with two 906E and three 908C connectors, a terminal panel, and five circuit packs.

The terminal panel has two groups of terminals. Each group has 20 terminals arranged in two rows of 10 each numbered 1 to 20.

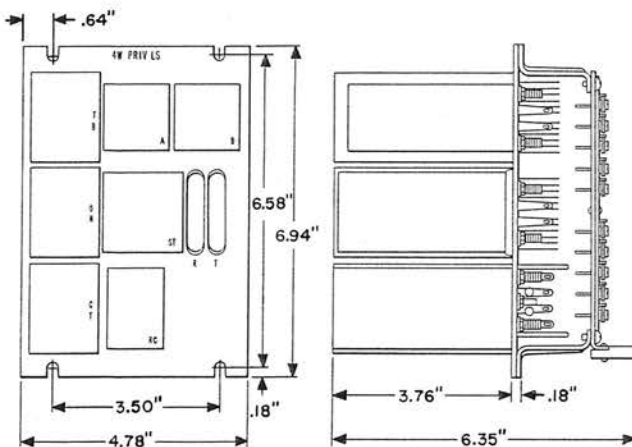
Used to permit TOUCH-TONE dialing on 2A Communication Systems (business interphone) and all arrangements of the 6A Key Telephone System. Converts multi-frequency tones, generated by a TOUCH-TONE dial, into relay operation.

Approximate overall dimensions are 6.96 inches by 7.50 inches by 6.86 inches.

Replaces the 247A Key Telephone Unit.

Comcode: 100 827 187

## 248B



Terminal panel consists of two groups of terminals. One group has 40 terminals arranged in 4 rows of 10 terminals each.

minerals each, numbered 1 to 40. A second group has 20 terminals arranged in 2 rows of 10 terminals each, numbered 1 to 20.

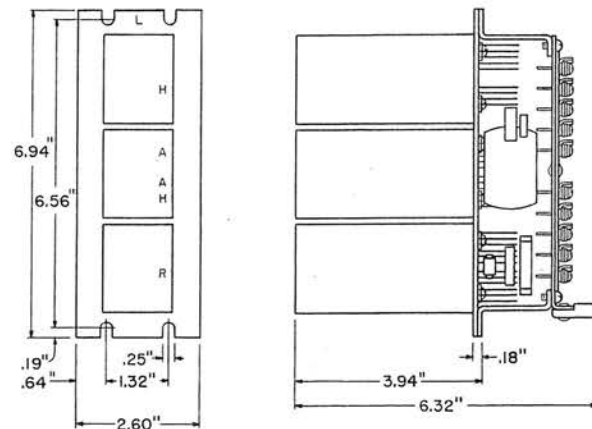
Mounting screws are furnished.

Used as a four-wire private line station circuit.

One required for each station group.

Comcode: 100 827 203

## 249A



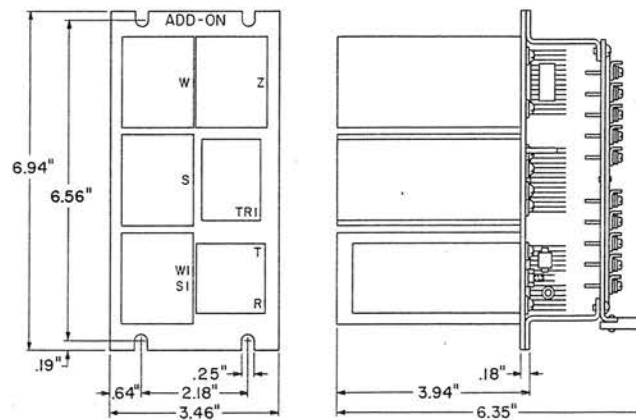
Terminal panel has 30 terminals, arranged in 3 rows of 10 terminals each, numbered 1 to 30.

Mounting screws are furnished.

Used as a line and signal circuit in the number 400 Switching System.

Comcode: 100 827 211

## 250A



Terminal panel has 20 terminals, arranged in 2 rows of 10 terminals each, numbered 1 to 20.

Mounting screws are furnished.

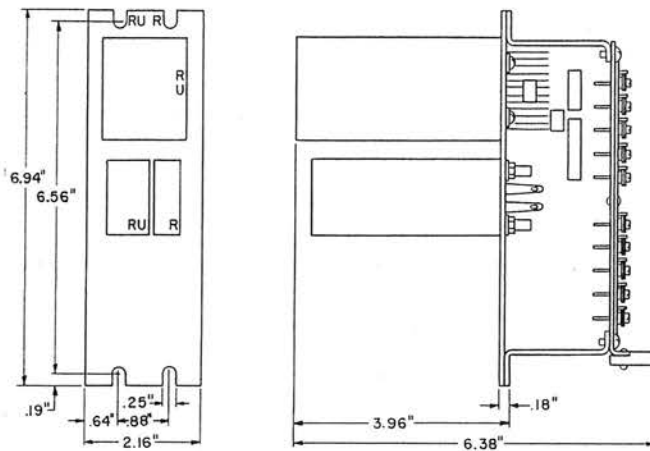
Used as add-on circuit in number 400 Switching System.

Comcode: 100 827 229

## UNITS

## Key Telephone

251A



Terminal panel has 20 terminals, arranged in 2 rows of 10 each, numbered 1 to 20.

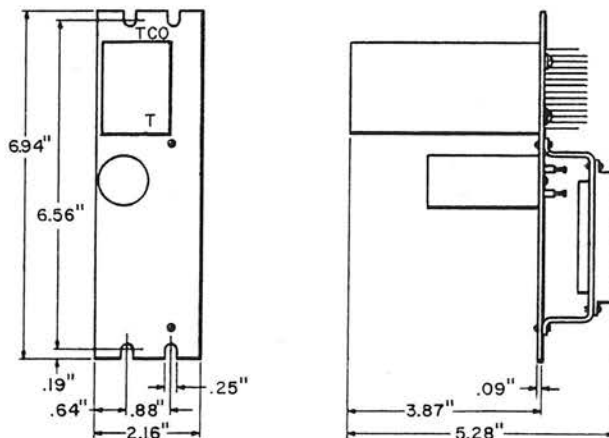
Mounting screws are furnished.

Used as a ring-up relay for 20 Hz incoming signal in four-wire private line circuits.

One required for each private line.

Comcode: 100 827 237

252A



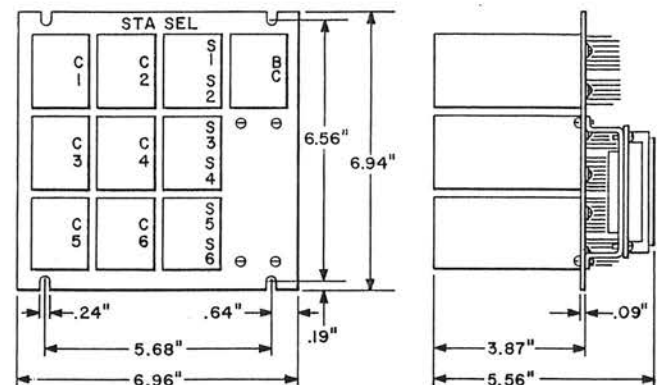
Apparatus mounted on plate is wired to a KS-16672L1 Connector which has 50 contacts arranged in 2 rows of 25 each, numbered 1 to 50.

Used as a tone and cutoff circuit unit in the 2A Communication Systems.

One required for each system.

Comcode: 100 827 245

253B



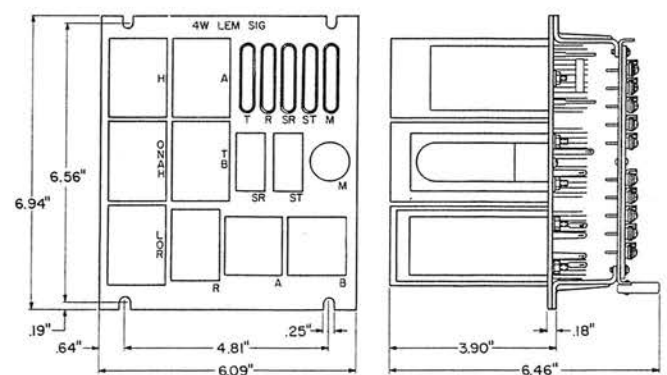
Apparatus mounted on plate is wired to two KS-16672L1 Connectors, each of which has 50 contacts arranged in 2 rows of 25 each, numbered 1 to 50.

Used for station selection circuit unit of six stations in the 2A Communication System.

One required for each six stations.

Comcode: 101 171 197

255A



Terminal panel has 80 terminals, arranged in 2 groups of 40 terminals each. Each group is arranged in 4 rows of 10 terminals each, numbered 1 to 40.

Mounting screws are furnished.

Used with NORAD switched network as a four-wire line circuit with E and M Signaling.

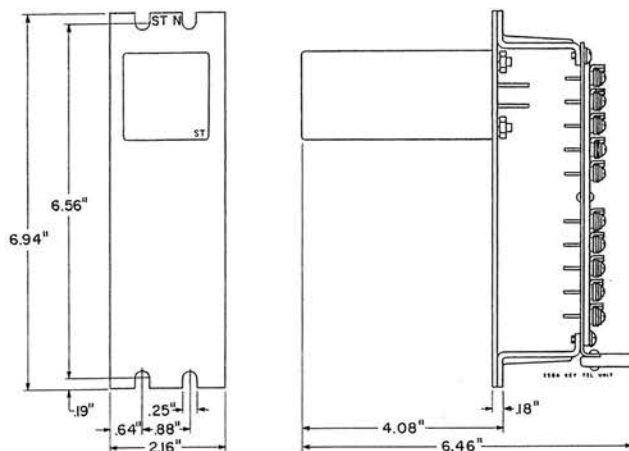
Comcode: 100 827 278



## UNITS

## Key Telephone

## 256A



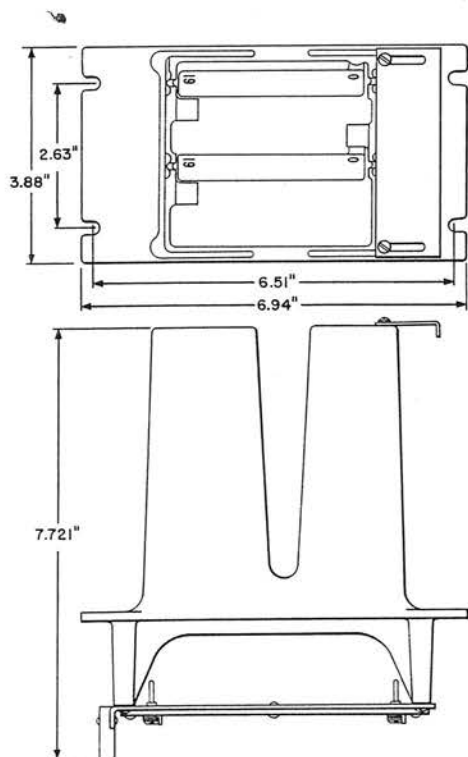
Terminal panel has 20 terminals arranged in 10 rows of 2 terminals each, numbered 1 to 20.

Mounting screws are furnished.

Used with NORAD Switched Network as a sidetone network for four-wire lines.

Comcode: 100 827 286

## 259B



Consists of a die cast metal panel equipped with two 913A Connectors on one side and a terminal panel and two fanning strips on the other side.

Terminal panel has two groups of terminals. One group has 20 terminals arranged in two rows of 10 each numbered from 1 to 20 and another group has 30 terminals arranged in three rows of 10 each numbered 1 to 30.

Connectors are wired to the terminal panel.

Arranged to mount two number 400 and similar type key telephone units.

Used initially in 1A1 and 1A2 Key Telephone Systems.

Replaces the 259A Key Telephone Unit.

Comcode: 100 827 310

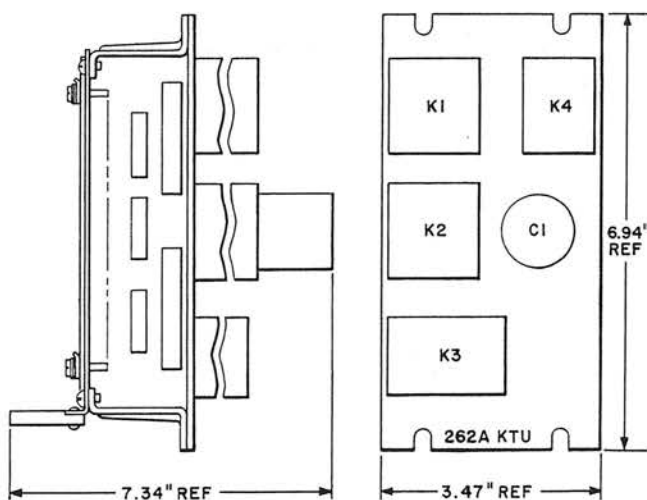
## 260A

Terminal panel consists of two terminal strips. Each strip has two fanning strips and 30 terminals, arranged in 3 rows of 10 each, numbered 1 to 30. Overall dimensions are 6.94 inches by 4.78 inches by 7.43 inches.

For use as a multiline exclusion circuit unit in 1A1 and 1A2 Key Telephone Systems.

Comcode: 100 827 336

## 262A



Apparatus assembled and wired on 228 Key Telephone Unit.

For use as intercept service for common battery lines when the line is not answered in 25 to 30 seconds in the 1A1 Key Telephone System.

Comcode: 100 827 351





## UNITS

## Key Telephone

## 413A

Consists of component apparatus mounted on a printed wiring board. Overall dimensions are 5.30 inches long by 3.50 inches wide by 1.26 inches high including the components mounted on the board.

Functions as an auxiliary ring-up circuit. Provides a nonlocking ring detector for use on central office or PBX lines supplying either 20 Hz or 30 Hz ringing.

Relay contacts can be used for controlling external signaling functions.

Arranged for insertion into a number 906 type connector.

Used initially in the 1A2 Key Telephone System.

Comcode: 101 618 130

## 428A

Consists of apparatus such as diodes, transistors, resistors, relays, and varistors mounted on a printed wiring board. Overall dimensions are 5.30 inches long by 3.50 inches wide by 1.26 inches high including the components mounted on the board.

Functions as a multiline exclusion circuit, providing a means to exclude a station from central office or PBX lines.

Arranged for insertion into a number 908 or 914 Type Connectors.

Used initially in the 1A2 Key Telephone System.

Replaces number 405A Key Telephone Unit.

Comcode: 101 608 818

## 429A

Consists of component apparatus such as resistors, capacitors, transistors, and diodes mounted on a printed wiring board.

Functions as a supplementary hold circuit providing a lamp flutter "SPECIAL HOLD" indication in addition to the normal lamp wink.

Arranged for insertion into a number 908 Type or 914A Connector.

Overall dimensions are 5.30 inches long by 3.50 inches high by 1.26 inches wide.

Used initially in the 1A2 Key Telephone System.

Replaces number 406A Key Telephone Unit.

Comcode: 101 608 826

## 430A

Consists of resistors, capacitors, transistors, a diode, a relay, and a potentiometer mounted on a printed wiring board.

Functions as a flutter generator and current limiter. Interrupts the lamp circuit to provide a lamp flutter signal and limits the current in the 24 volt lead to the supplementary hold key.

Arranged for insertion into a number 906, 908, or 913 Type Connector.

Overall dimensions are 5.30 inches long by 3.50 inches high by 1.262 inches wide.

Used initially in the 1A2 Key Telephone System.

Replaces number 408A Key Telephone Unit.

Comcode: 101 608 834





## UNITS

## Loading

## MF and MFA Type

**MF Type:** Consists of one phantom coil and two side circuits mounted in a sheet metal container approximately 2.250 inches by 2.750 inches by 3.750 inches. The coils have toroidal cores of permalloy powder.

Designed to mount in number 209, 210, 260, 261, and 262 type coil cases.

**MFA Type:** Electrically the same as MF type. The three coils are mounted on a fiber strip approximately 2 inches by 8 inches for use in splice-loading installations. Equipped with leads 19 inches long.

Designed to mount in 166A Coil Cases.

Code No.	Comcode	Loading System	Nominal Inductance (Henry)		Average DC Resistance (Ohms) per Line Winding
			Each Side Circuit	Phantom Circuit	
MF1	100 827 708	H-172-63	0.172	0.064	6.9
(a)MF2	100 827 716	H- 44-25	0.044	0.025	2.2
(b)MF3	100 827 724	H- 44-25	0.044	0.025	2.2
MF4	100 827 732	H- 31-18	0.031	0.018	1.5
(c)MF5	100 827 740	H- 31-18	0.011	0.006	0.8
(d)MF6	100 827 757	H- 31-18	0.027	0.015	1.4
MF7	100 827 765	H-245-155	0.251	0.156	13.2
(e)MF8	100 827 773	H-245-155	0.125	0.078	6.1
MF9	100 827 781	B- 88-50	0.089	0.050	4.0
MF10	100 827 799	B- 88-50	0.044	0.025	2.2
MF11	100 827 807	H- 88-50	0.089	0.050	4.0
MF12	100 827 815	H-174-106	0.171	0.107	9.0
MF13	100 827 823	K-200-130	0.191	0.133	10.0
MFA1	100 827 831	H-172-63	0.172	0.064	6.9
(a)MFA2	100 827 849	H- 44-25	0.044	0.025	2.2
(b)MFA3	100 827 856	H- 44-25	0.044	0.025	2.2
MFA4	100 827 864	H- 31-18	0.031	0.018	1.5
(c)MFA5	100 827 872	H- 31-18	0.011	0.006	0.8
(d)MFA6	100 827 880	H- 31-18	0.027	0.015	1.4
MFA7	100 994 862	H-245-155	0.251	0.156	13.2
(e)MFA8	100 827 898	H-245-155	0.125	0.078	6.1
MFA9	100 827 906	B- 88-50	0.089	0.050	4.0
MFA10	100 827 914	B- 88-50	0.044	0.025	2.2
MFA11	100 994 870	H- 88-50	0.089	0.050	4.0
MFA12	100 827 922	H-174-106	0.171	0.107	9.0
MFA13	100 827 930	K-200-130	0.191	0.133	10.0

(a) 19 AWG, 4-wire operation, coils adjusted for minimum far end crosstalk.

(b) 16 AWG, 2-wire operation, coils adjusted for minimum near end crosstalk.

(c) 0.33 fractional weight loading unit.

(d) 0.86 fractional weight loading unit.

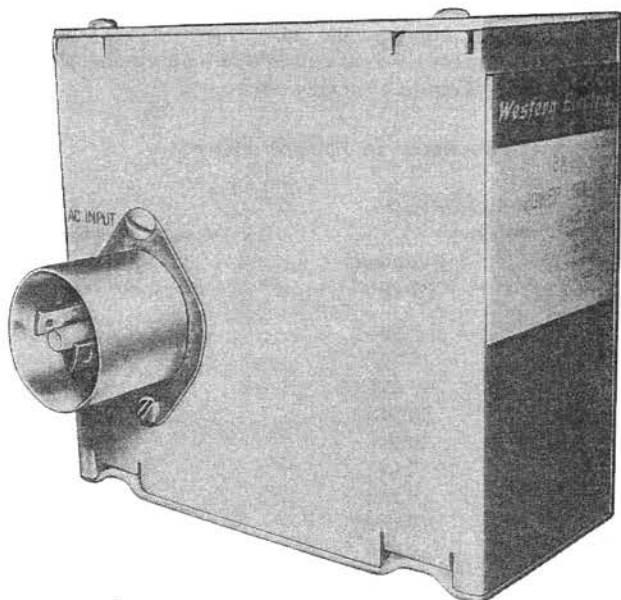
(e) 0.5 fractional weight loading unit.

Used in voice frequency loading systems for quadded toll and toll entrance cables.

## UNITS

## Power

## 18A and B1



18A: Consists of a ferroresonant transformer, a diode, bridge, an ac capacitor, filter, capacitors, and resistors. The chassis and cover are aluminum.

Arranged to mount from the terminal end by four clinch nuts spaced on 3.4 inch by 1.52 inch centers located 0.830 inch and 0.380 inch from edges of the unit. The third clinch nut is centrally located and spaced 1.440 inches from the center line of the other clinch nuts.

Electrical input connections are made through a twist lock receptacle. Output connections are made through solder terminals.

With an input of 117 volts ac, 60 Hz input, the unit provides a positive and a negative output of 24 volts, 80 milliamperes dc and 21 volts ac rms, 40 milliamperes ac.

Overall dimensions are 4.92 inches long by 4.18 inches wide by 2.20 inches high.

Used initially in Data Sets number 108 and 109 and Data Auxiliary Set 816BW1.

Comcode: 101 171 213

18B1: Same as 18A except input connector is omitted and input connections are made through the leads of the primary winding which extend approximately 9 inches through the connector hole in the frame.

Comcode: 101 218 634

UNITS

Power

19BW2, 19CW2, 20BW2, and 20CW2

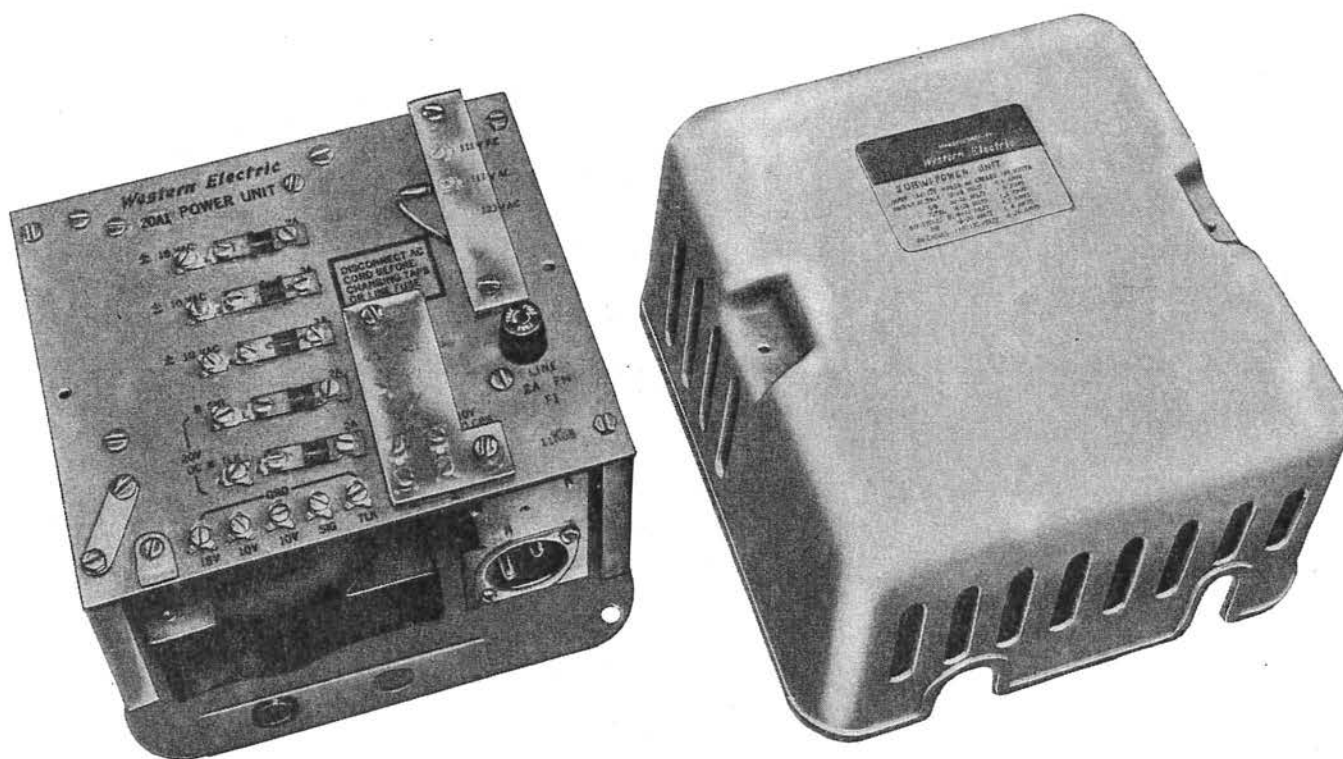


Fig. 1



## UNITS

## Power

## 19 and 20 Type (Continued)

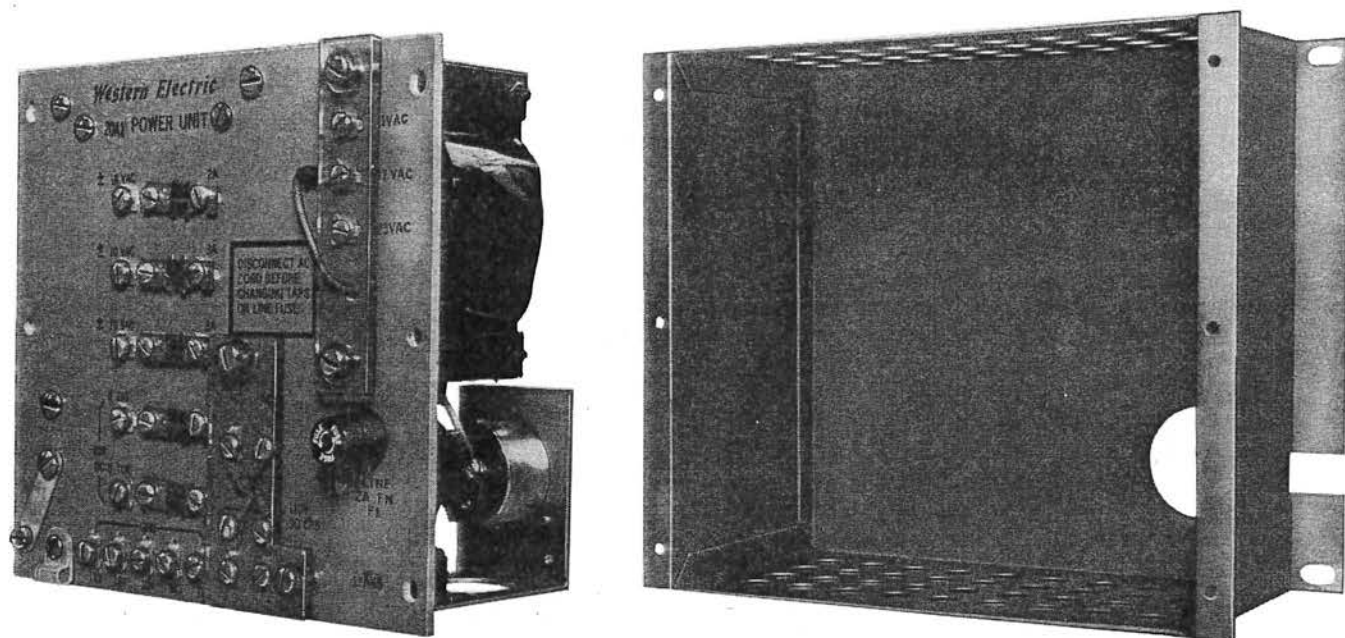


Fig. 2

**19BW2:** An ac-dc power supply consisting of such component apparatus as a transformer, diode, resistor, inductor capacitor, and a fuse and terminal panel assembled within a metal frame. A P15G706 Casing and a P33A830 Backboard are furnished for wall mounting.

Terminals are provided for connection to a 113A Frequency Generator.

Comocode: 101 188 761

A cord is required but not furnished and must be ordered separately. The required length must be obtained by ordering one of the following cords:

Part No.	Comocode
P40J326 is 1.5 feet long	824 013 262
P40J327 is 2.0 feet long	824 013 270
P40J328 is 4.0 feet long	824 013 288
P40J329 is 6.0 feet long	824 013 296

**19CW2:** Same as 19BW2 Power Unit except has a P15G705 Cabinet for frame mounting instead of casing and backboard.

Comocode: 101 188 779

**20BW2:** Same as 19BW2 Power Unit except in addition, equipped with a 113A Frequency Generator within the unit for ringing power. See Fig. 1.

Comocode: 101 188 787

**20CW2:** Same as 19CW2 Power Unit except in addition, equipped with a 113A Frequency Generator within the unit for ringing power. See Fig. 2.

Comocode: 101 188 795

Used in 1A, 1A1, 1A2, and 6A Key Telephone Systems.

## UNITS

## Power

## 19 and 20 Type (Continued)

OUTPUT AND FEATURES								
FEATURE		DESCRIPTION & OUTPUT			POWER UNIT			
		VOLTAGE	AMPS	NOTE	19BW2	19CW2	20BW2	20CW2
DC Output	Talk Sig	18-26 20-26	0.6 1.5	1	X	X	X	X
AC (60Hz) Output		8.75-11 16-20	4.5 1.4	2	X	X	X	X
AC (30 Hz) Output (Ringing Supply)		110-125	Not Specified				X	X
Wall Mounting		9-1/4" high by 8-3/4" wide by 5" deep. Includes metal back- board cover.			X		X	
Rack Mounting		7" high by 8-1/2" wide by 5" deep. Mounted on horizontal bars drilled on 7/16" centers and vertically spaced at 7". Requires 20 mounting spaces.				X		X

Note 1: Total DC TALK and DC SIGNAL not to exceed 1.5 amps.

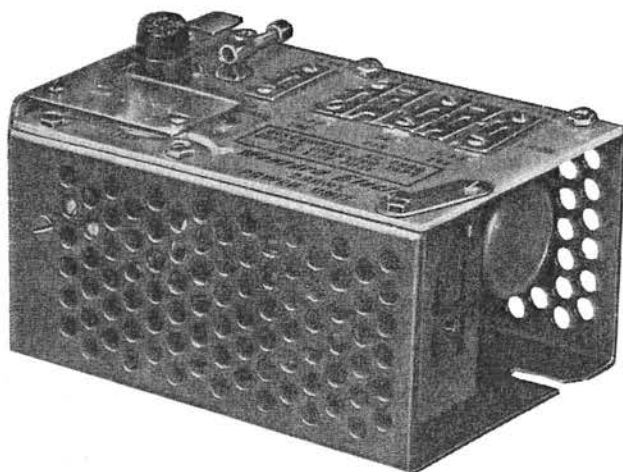
Note 2: Where combinations of the two outputs are used to determine load-carrying capacity, add twice the current used in 16-20 volt output to the current used in the 8.75-11 volt output. A total of 4.5 amperes is maximum.



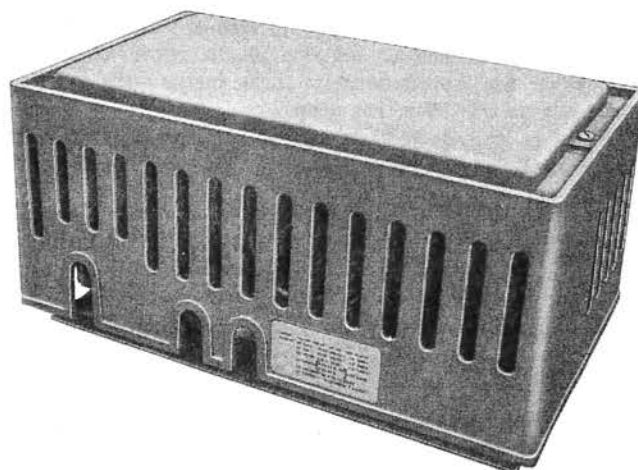
## UNITS

## Power

28AW1



29BW1 &amp; 30BW1



A packaged power supply without battery reserve. Output connections are made through an Amphenol connector type 26-4200-8S which is designed to mate with Amphenol connector type 26-4100-8P. Arranged to mount in key telephone system cabinets.

When used with the number 551 Key Service Unit, one of the following cords is required and must be ordered separately.

Part No.		Comcode
P40J326 is	1.5 feet long.	824 013 262
P40J327 is	2.0 feet long.	824 013 270
P40J328 is	4.0 feet long.	824 013 288
P40J329 is	6.0 feet long.	824 013 296
P40J099 is	12.0 feet long.	824 010 995

The primary is equipped with taps for nominal 111, 117, and 123 volt service. The outputs will remain within the working limits with  $\pm 5$  percent variation from nominal voltage. The outputs are as follows:

20 volts dc signal	0.2 amp
20 volts dc talk	0.09 amp
10 volts ac lamp	2.1 amp
18 volts ac buzzer	0.2 amp

Telephone type fuses are provided on one side of each output circuit.

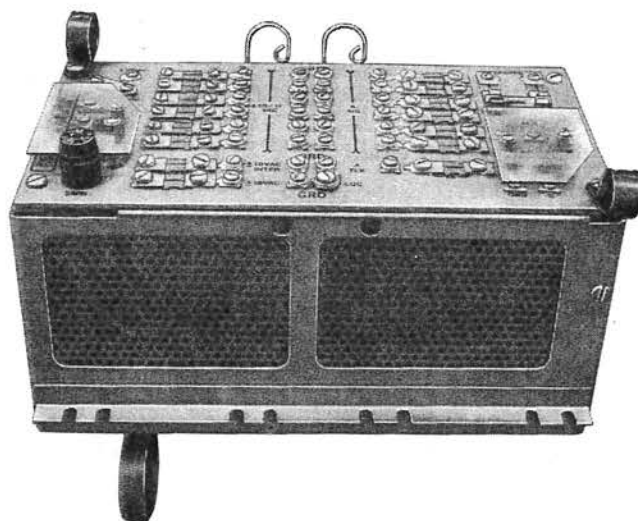
Overall dimensions are 5.81 inches long by 4.19 inches wide by 3.75 inches high.

Used initially to provide power for talking, relays, lamps, and buzzers in miniaturized number 551 type key service units.

Replaces the J86738A Power Unit.

Comcode: 101 594 042

29C1 &amp; 30C1





## UNITS

## Power

## 29 Type (Continued)

**29BW1:** An ac-dc power supply consisting of component apparatus, and a terminal and fuse panel mounted within a metal frame. This assembly is mounted on a furnished wall plate and enclosed under a plastic cover. Overall dimensions are approximately 14.06 inches long by 8.25 inches wide by 6.37 inches deep.

With taps provided for inputs of 111, 117, and 123 volts, 60 Hz, this power unit provides the following outputs:

Tlk. — 18 to 26 volts dc at 0 to 1 ampere(\*)

Sig. — 20 to 26 volts dc at 0 to 4 ampere(\*)

(\*) Total dc output, Tlk, and Sig., shall not exceed 4 amperes.

Lamp — 8.75 to 11 volts ac or 9.75 to 12 volts ac at 0 to 12 amperes.

Buzzer — 16 to 20 volts ac at 0 to 1.6 amperes.

A cord is required but not furnished and must be ordered separately. The required length must be obtained by ordering one of the following cords:

Part No.	Comcode
P40J326 is 1.5 feet long.	824 013 262
P40J327 is 2.0 feet long.	824 013 270
P40J328 is 4.0 feet long.	824 013 288
P40J329 is 6.0 feet long.	824 013 296
P40J099 is 12.0 feet long.	824 010 995

Comcode: 101 594 083

**29C1:** Same as 29BW1 except designed for rack mounting on 9.18 by 6.44 inch centers. Overall dimensions are approximately 10.50 inches long by 6.94 inches wide by 5.75 inches deep.

Comcode: 101 551 216

**30BW1:** Same as 29BW1 except has a 113A frequency generator added to the unit for ringing power.

Ringing — 110 volts ac at 30 Hz.

Comcode: 101 594 125

**30C1:** Same as 30BW1 except designed for rack mounting on 4.18 by 6.44 inch centers. Overall dimensions are approximately 10.50 inches long by 6.94 inches wide by 7.88 inches deep.

Comcode: 101 551 182

Used for supplying power to key telephone systems.

## 34BW1 and 34C1

**34BW1:** A power unit designed for wall mounting and intended to provide interrupter and lamp power. The unit is furnished with a parallel-blade, 3-conductor, input receptacle which will accept an input cord provided with a 3-conductor, parallel-blade, molded plug. A wall mounting plate and fiberglass cover are furnished. Overall dimensions

are approximately 14 inches wide by 8.25 inches high by 6.375 inches deep.

The 34BW1 power unit operates on an ac input of 111, 117, or 123 volts  $\pm 5$  percent, 60 Hz. The outputs of the power unit are as follows:

(a) AC Lamp Outputs: 8.75 to 11 volts or 9.75 to 12 volts; 0 to 25 amperes (0 to 35 amperes intermittent duty).

Note: Links are provided to furnish either  $\pm 10$  volts ac or  $\pm 11$  volts ac lamp power, depending upon individual key telephone unit requirements.

(b) AC Interrupter Output: 8.75 to 11 volts.

An ac input cord is required for each unit and must be ordered separately. Available part numbers and lengths are as follows:

Part No.	Comcode
P-40J326 is 1.5 feet long.	824 013 262
P-40J327 is 2.0 feet long.	824 013 270
P-40J328 is 4.0 feet long.	824 013 288
P-40J329 is 6.0 feet long.	824 013 296
P-40J099 is 12.0 feet long.	824 010 995

Comcode: 101 834 976

**34C1:** Same as 34BW1 except designed for frame mounting. Two units can be mounted side by side in a standard 23-inch equipment frame. The unit is furnished with an input cord provided with three parallel male blades which will accept a cord with female end. Overall dimensions are approximately 10.5 inches wide by 7 inches high by 5.5 inches deep.

Comcode: 101 628 162

Used for supplying interrupter and lamp power to key telephone units.

## 49A

The 49A Power Unit operates on  $\pm 117$  volts ac, 57-63 Hz input and furnishes outputs of +18 volts, 0.25 ampere dc and -18 volts, 0.25 ampere dc, with a common terminal.

Consists of component apparatus, such as capacitors, resistors, diodes, varistors, and transistors mounted on two printed wiring boards, an ac capacitor, and a number 2104E transformer mounted on a metal chassis. Equipped with a removable fiberglass cover.

Arranged to mount by means of three 0.138"-32 threaded holes located on bottom of unit.

Overall dimensions are approximately 4.300" wide by 4.350" deep by 3.250" high.

Used initially in Data Set 103G.

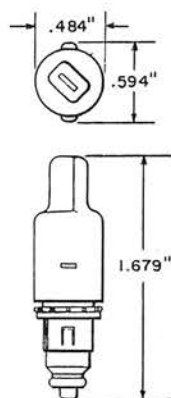
Replaces 25A Power Unit.

Comcode: 101 540 128

## UNITS

## Protector

1A1 Type



2A Type

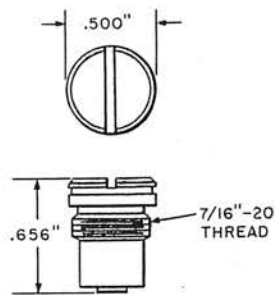


Fig. 1

Fig. 2  
(Otherwise Same as Fig. 1)

Each unit consists of a heat coil and protector blocks assembled in a split metal sleeve holder and provided with a removable molded plastic cap of color indicated in table.

Code No.	Color of Cap	Protection Provided		Contains	
		Sneak Current (Amps)	Voltage	Heat Coil No.	Protector Block No.
1A1A	Black	—	500	77A1	32B and 33B
1A1C	Black	(a)	500	76A	32B and 33B
1A1D	Gray	—	—	77A1	33B and 34B1

(a) Operates at 68° F on .54 ampere. Will carry .35 ampere for 3 hours at 68° F.

1A1A: Used in providing central office voltage protection only.

Comcode: 100 828 052

1A1C: Used in providing standard central office sneak current and voltage protection.

Comcode: 100 828 060

1A1D: Dummy protector used in unexposed central office circuits that do not require protection.

Comcode: 100 828 078

Fig. 3  
(Otherwise Same as Fig. 1)Fig. 4  
(Otherwise Same as Fig. 1)

2A1A, 2A1B, and 2A1E: Each consists of a cylindrical metal cap containing a pair of protector blocks, as indicated in table, and a fusible alloy spacer.

Used in providing high voltage protection in outside plant and station terminating apparatus.

2A1D: Dummy protector unit consisting of a cylindrical metal cap containing an insert of insulating material.

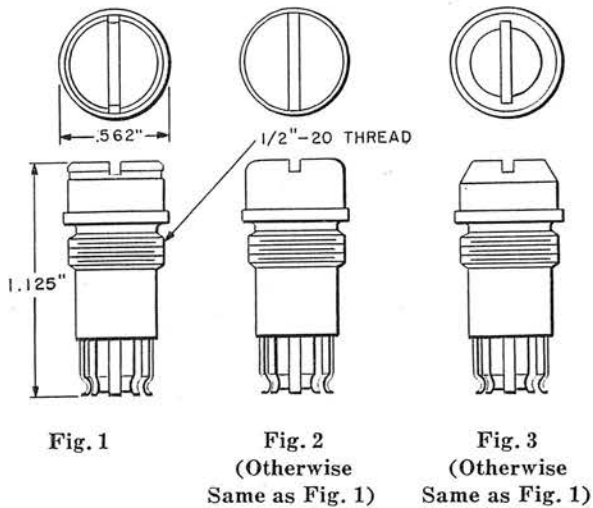
Used in place of 2A1A, 2A1B, and 2A1E Protector Units when these protector units are temporarily removed during testing or when protection furnished by these protector units is to be permanently removed.

Code No.	Comcode	Fig. No.	Protection Provided (Volts)	Contains Protector Block No.
2A1A	100 828 086	1	500	32A and 33B
2A1B	100 828 094	2	800	32A and 33A
2A1D	100 828 102	3	—	—
2A1E	100 828 110	4	1250	32A and 33C

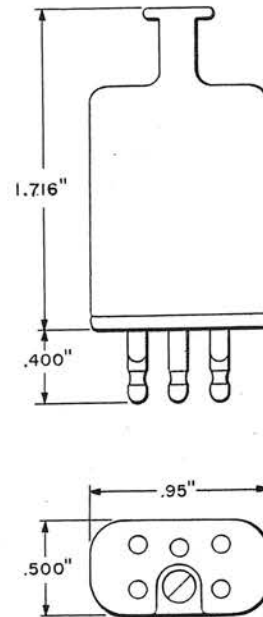
## UNITS

## Protector

2B Type



3A Type



Each unit consists of a metal cap within which is assembled a coil spring and a metal cage containing a pair of protector blocks, as indicated in table, and a fusible alloy spacer.

Code No.	Comcode	Fig. No.	Protection Provided (Volts)	Contains Protector Block No.
2B1A	100 828 151	1	500	32A and 33B
2B1B	100 828 169	2	800	32A and 33A
2B1E	100 828 177	3	1250	32A and 33C

Used in outside plant and station terminating apparatus.

Each unit consists of a five terminal base assembled in a housing of insulating material of color indicated in table. Also contains protector blocks and fusible metal alloy spacers.

Arranged to plug into number 302 type connectors.

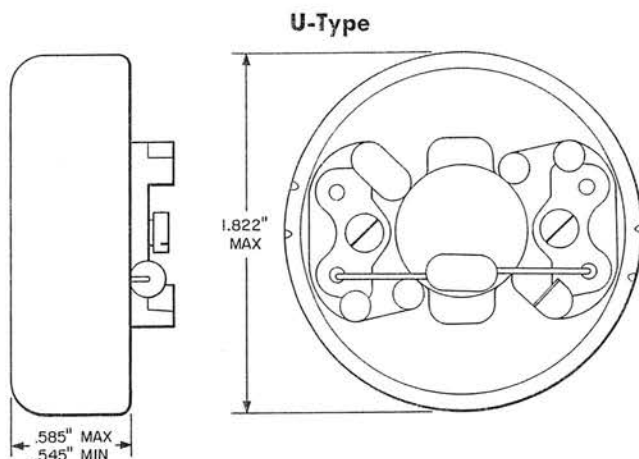
Code No.	Comcode	Color of Housing	Contains (2) Protector Blocks No.
3A1A	100 828 185	Black	32A and 33B
3A2A	100 828 193	Green	32A and 33B
3A3A	100 828 201	Red	32A and 33B
3A4A	100 828 219	Yellow	32A and 33B

Used to provide 500 volt central office protection for one pair of wires.



## UNITS

## Receiver



Composite diaphragm, ring armature, magnetic type receiver unit with screw terminals.

U3: Equipped with a 104A Varistor to limit voltages across the receiver unit and thereby limit acoustic output levels and protect against demagnetization. The 1000 Hz impedance is approximately 150 ohms.

Replaces U1 Receiver Unit.

Comcode: 101 177 913

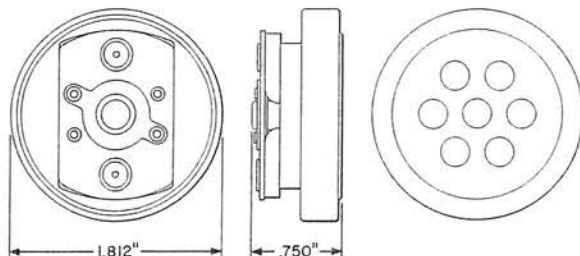
U4: Equipped with a 100A Varistor to limit voltages across the receiver unit and thereby limit acoustic output levels and protect against demagnetization. The 1000 Hz impedance is approximately 600 ohms.

Replaces U2 Receiver Unit.

Used in G-type hand sets.

Comcode: 101 207 660

## HA Type



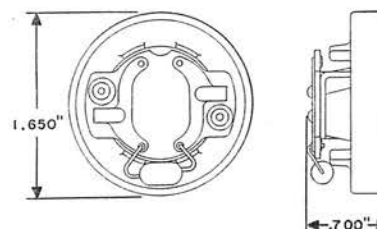
A controlled diaphragm magnetic type receiver unit equipped with varistors to limit the voltage applied to the receiver units and thereby limit acoustic outputs and protect the magnets against demagnetization. HA11 is moisture resistant.

Code No.	Comcode	Impedance at 1000 Hz (Ohms)
HA7	101 188 811	137
HA8	101 188 829	300
HA9	101 207 678	635
HA10	101 207 686	2238
HA11	101 189 611	137

For use in hand sets and receivers.

HA7, 8, 9, 10, and 11 replace HA1, 2, 3, 4, and 6, respectively.

## HC Type



Controlled diaphragm magnetic receiver units.

Provided with a varistor to limit voltage applied to the receiver units and consequently limit maximum acoustic outputs and protect the magnet against demagnetization.

HC6: Forms a part of the 52MW, 52TW, 52PRW, 52RRW, 53JN, 53KW, 53NW, 53JRW, and 53MRW Head Telephone Sets.

HC7: Forms a part of the 52MW, 52TW, 52PRW, 52RRW, 53LRW, and 53PRW Head Telephone Sets.

HC8: Provided with a terminal plate and an adapter for mounting the unit in an F-type hand set. Intended for use in F-type hand sets where improved efficiency is required.

Code	Comcode	*Approximate Impedance (ohms) at 1000 Hz
HC6	101 139 871	275
HC7	101 139 889	600
HC8	101 139 897	275

\*Less Varistor

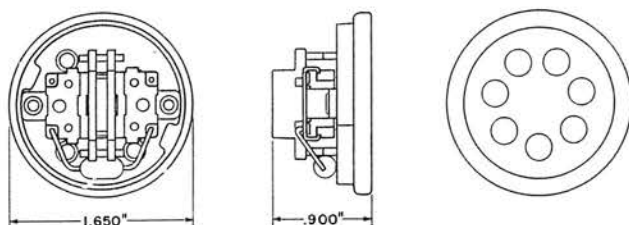
Replace HC3, HC4, and HC5 Receiver Units, respectively.



## UNITS

## Receiver

## LA2 and LA3



LA2: A bipolar, central armature, composite magnetic type, light weight receiver unit. Terminals in the rear of the frame are arranged for electrical connections by means of screw and spade tip, spring contact, or soldered leads.

Equipped with a 104A Varistor which limits voltages across the receiver unit and thereby limits acoustic output levels and protects the magnet against demagnetization. The impedance of the receiver unit at 1000 Hz is approximately 150 ohms.

Replaces the LA1 Receiver Unit.

Comcode: 101 171 320

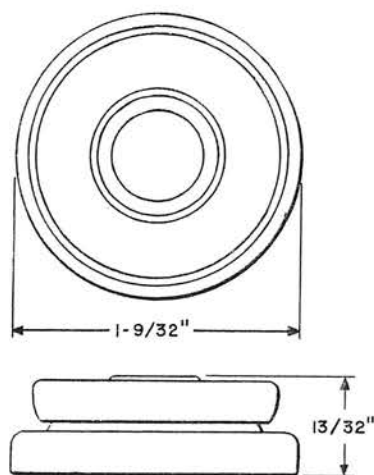
LA3: Same as LA2 except efficiency has been adjusted to more closely match the HA7 Receiver Unit.

Replaces HA7 Receiver Unit in F-type hand sets.

Comcode: 101 467 983

## Transmitter

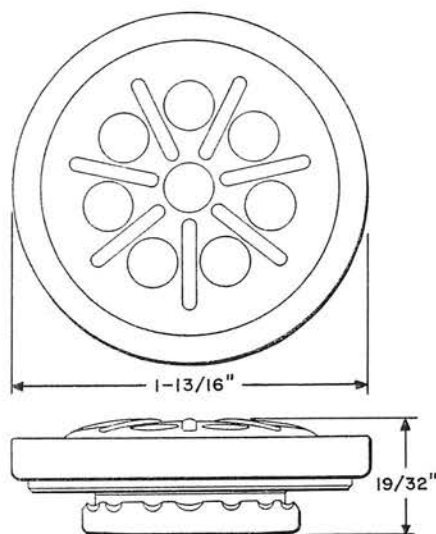
## N1



A carbon type transmitter unit intended to mount in a 55AW Transmitter Arm. It forms a part of the number 52 type head telephone sets.

Comcode: 100 828 557

## T1



A carbon type transmitter unit intended primarily for common battery stations.

Forms a part of the G1, 2, 5, 6, 7, and 8 Hand Sets.

Comcode: 100 828 573

## UNITS

## Transmitter

AB2

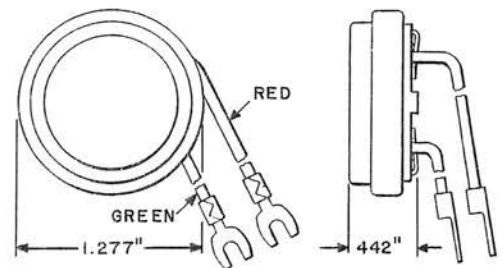
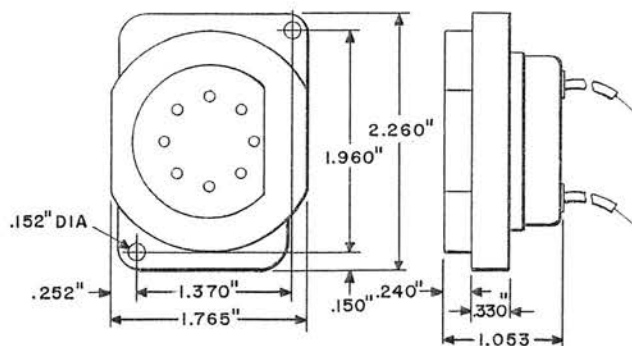


Fig. 2

A controlled diaphragm magnetic type transmitter unit. The impedance at 1000 Hz is approximately 300 ohms. The unit is equipped with two black terminal leads approximately 2-1/2 inches long.

The unit forms a part of the 567B Transmitter.

Comcode: 100 828 599

AC1, AD1, and AC3

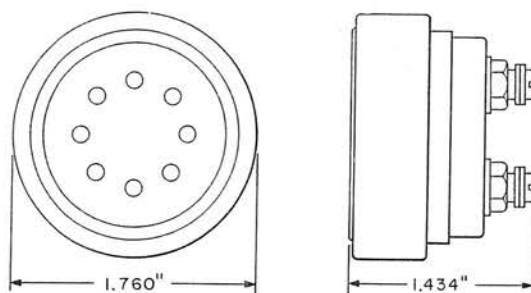


Fig. 1

AC1: A controlled diaphragm magnetic type contained in a housing which provides magnetic shielding. Has a controlled acoustic shunt around the transmitter unit. See Fig. 1.

Impedance at 1000 Hz is approximately 300 ohms.

For applications where the phase of output is important, polarity as indicated by dot stamped adjacent to one of the terminals must be observed.

Part of the 666BW type transmitters.

Comcode: 100 828 607

AD1: A balanced armature magnetic type. Equipped with red and green terminal leads, approximately 3 inches and 2-1/2 inches long, respectively. The cord tips are arranged for a number 4, 5, or 6 screw. See Fig. 2.

Impedance at 1000 Hz is approximately 1000 ohms.

Part of the 52KW Head Telephone Set.

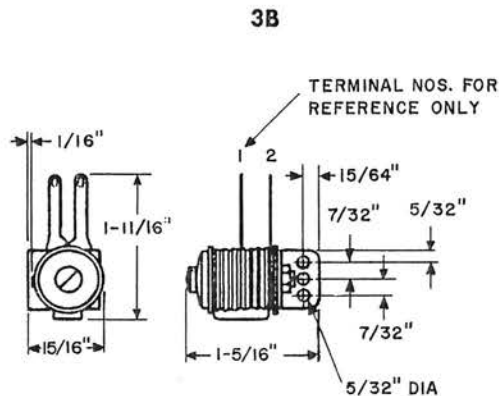
Comcode: 100 828 615

AC3: Same as AC1 except is not equipped with a rubber boot and overall dimensions are 1.434 inches long by 1.760 inch diameter.

Comcode: 100 828 623



## VARISTORS



Oxidized copper disc type varistor with an enveloping lacquer finish. Has two parallel opposing arms each consisting of two 3/4 inch discs. Provided with mounting screws.

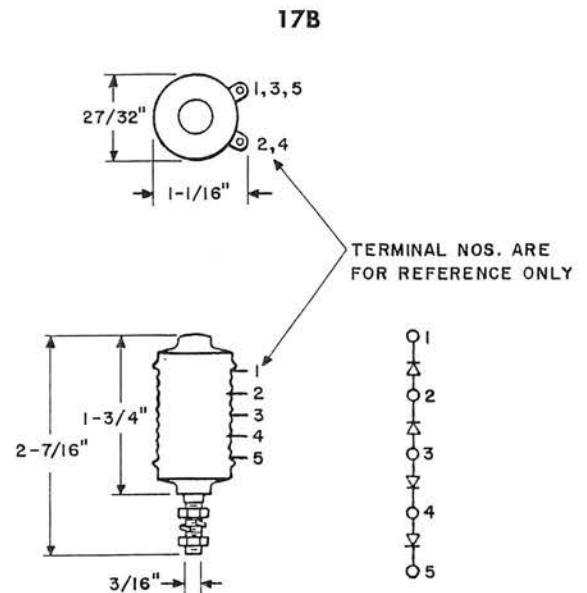
With .10 or 2.0 volts dc applied between the terminals in each direction in turn, the maximum current shall not exceed that determined from columns A and B and columns A and C respectively. See table below.

The insulation between each of the terminals and the mounting bracket shall be capable of withstanding 500 volts ac.

Intended for use across operator's receiver to reduce acoustic disturbances.

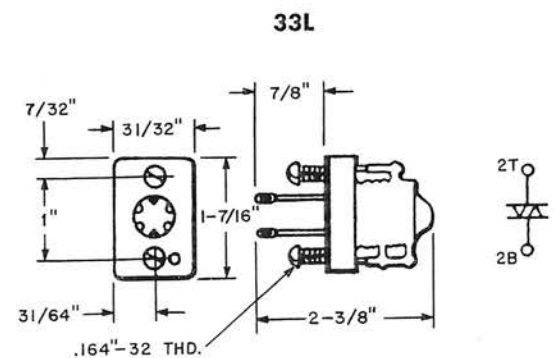
Comcode: 100 828 656

(A) Operating Temperature (°F)	(B) Ampere Max	(C) Ampere Min
60	.0000085	.134
70	.0000105	.152
80	.0000150	.170
90	.0000195	.188
100	.0000245	.206



Oxidized copper disc type varistor with an enveloping lacquer finish. Consists of sixteen 3/4-inch diameter discs arranged electrically to form a bridge with four discs in series per arm. At an ambient temperature not exceeding 105° F, it is designed to have a maximum continuous output per arm of .075 amperes dc and a potential per arm of 12 volts dc.

Comcode: 100 828 698



Oxidized copper disc type varistor with an enveloping lacquer finish. Consists of four 3/4-inch diameter discs clamped to a base of insulating material provided with terminals.

Closest recommended mounting centers are 1 inch by 1-3/4 inches.

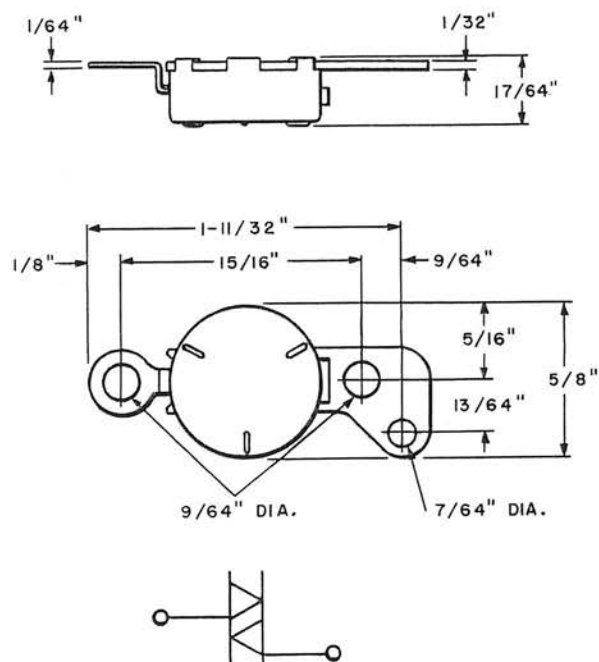
The electrical characteristics are the same as the 3B Varistor.

Comcode: 100 829 019



## VARISTORS

## 44A



Consists of two 1/2-inch diameter oxidized copper discs in a metal case. Provided with two terminals for electrical connection and also for mounting purposes.

With a .20 volt dc applied between the terminals in each direction in turn, the maximum current shall not exceed that determined from columns A and B of the table.

With 1.0 volt dc applied between the terminal in each direction in turn, the minimum current shall not be less than that determined from columns A and C of the table.

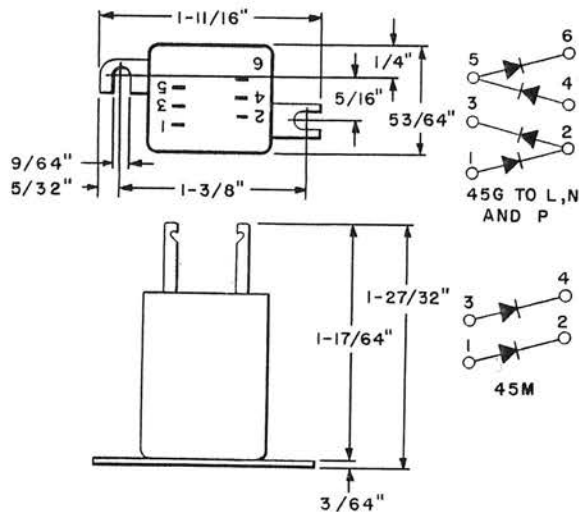
Intended for use as a click reducer.

Comcode: 100 829 191

(A) Operating Temperature (°F)	(B) (Ampere)	(C) (Ampere)
60	.000085	.134
70	.000105	.152
80	.000150	.170
90	.000195	.188
100	.000245	.206

## VARISTORS

## 45G to P



Each consists of an assembly of copper oxide varistor discs potted in a metal can, all having four arms except number 45M which has two arms. Each arm consists of a 3/16-inch diameter disc.

Maximum reverse current per arm at 1.0 volt dc at 26° C is .050 milliamperes dc.

Maximum rating per arm at 40° C:

Reverse voltage, steady state	3.0 Vdc
Reverse voltage, peak for continuous ac operation	6.3 volts
Forward current, steady state	15 mAdc
Forward current, peak for continuous ac operation	45 mA

45G to L, N, and P: Maximum continuous dc output, when used as a bridge rectifier, is 30 milliamperes dc with an input of 4.5 volts ac at ambient temperature not exceeding 40° C.

Forward Current per arm at 26° C  
(Milliamperes DC)

Code No.	Comcode	at 0.3 Volt DC	at 0.75 Volt DC	at 1.0 Volt DC	DC Current Balance per Arm (Percent of Average)
45G	100 829 209	1.3 to 4.0	25 to 46	—	±10 (a)
45H	100 829 217	.75 to 4.0	—	—	±10 (a)
45J	100 829 225	.55 (min)	—	—	—
45K(c)	100 829 233	1.6 to 4.0	—	—	±5 (b)
45L	100 829 241	.55 (min)	—	23 (min)	±5 (b)
45N	100 829 266	—	—	15 (min)	—
45P	100 829 274	.75 to 4.0	—	—	±5 (b)

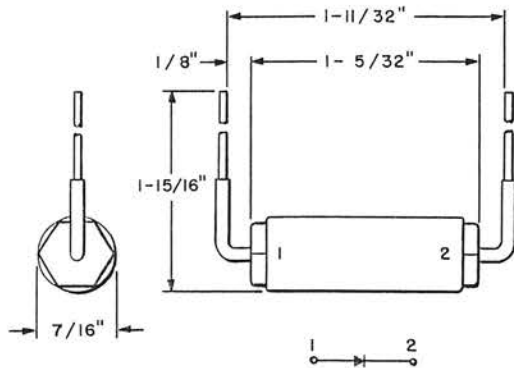
(a) At 0.75 volt dc.

(b) At 0.3 volt dc.

(c) Has an ac carrier balance of minimum 39 db.

## VARISTORS

53A



Consists of eight 3/16-inch diameter oxidized copper discs in a tube of insulating material.

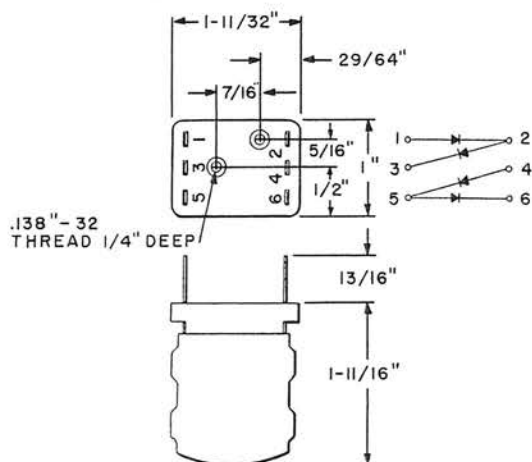
Maximum rating at 40° C:

Reverse voltage, steady state	24	Vdc
Reverse voltage, peak for continuous ac operation	48	volts
Forward current, steady state	15	mAdc
Forward current, peak for continuous ac operation	45	mA
Forward current at 26° C at 1.0 volt dc	15	mA (min)
Maximum reverse current at 25° C at 6.0 volts dc	0.30	mAdc

Replaces D-170188 for government applications.

Comcode: 100 829 365

54A



Consists of twenty-four 3/16 inch diameter oxidized copper discs in a block of insulating material.

With an ambient temperature not exceeding 40° C the maximum continuous dc output, when used as a bridge rectifier, is 30 mAdc with an input of 27 volts ac.

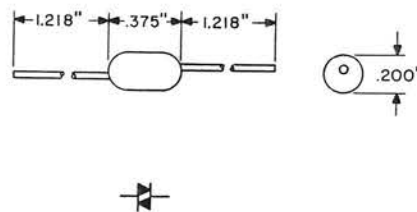
Maximum ratings per arm at 40° C:

Reverse voltage, steady state	18.0	Vdc
Reverse voltage, peak for continuous ac operation	38	volts
Forward current, steady state	15	mAdc
Forward current, peak for continuous ac operation	45	mA
Forward current per arm at 26° C	10	mA (min)
Maximum reverse current per arm at 26° C at 6.0 volts	0.30	mAdc
DC current balance per arm	±5	percent of average

Replaces D-170225 for government applications.

Comcode: 100 829 373

100A



Each consists of two silicon varistor discs encased in resin and equipped with tinned leads. Rated at 10 micro-amperes in either direction in turn at 0.2 volts dc.

Primarily used in U1 and U2 Receiver Units.

Comcode: 100 829 399

## VARISTORS

## 101A

Consists of a group of seven selected 100A Varistors. Four or five varistors of the group will be of one color either aluminum, light green, or tan, and the balance of the seven varistors (3 or 2, respectively) will be colored pink. The colors will appear on the positive ends of the varistors. The electrical characteristics associated with the various colors are shown in the following table:

Color	DC Voltage Drop			
	(a) Min.	(a) Max.	(b)	(c)
Aluminum	0.35	0.45	0.2	0.9
Light Green	0.36	0.46	0.2	0.9
Tan	0.37	0.47	0.2	0.9
Pink	0.43	—	0.2	0.9

(a) With 10 microamperes dc flowing in one direction.

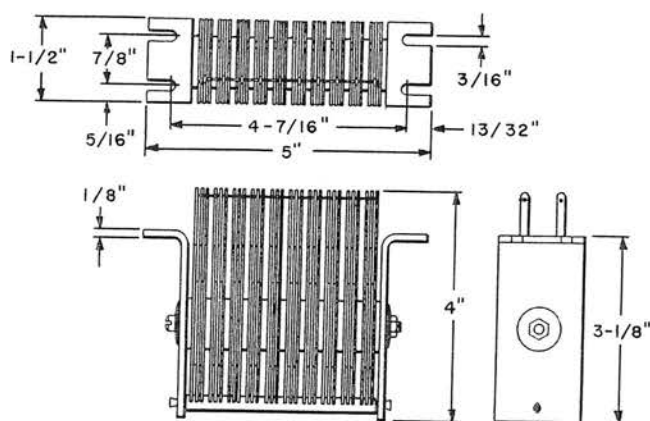
(b) With 10 microamperes dc flowing in opposite direction.

(c) With 100 milliamperes dc flowing in either direction in turn.

Forms part of the 55A Control Unit.

Comcode: 100 829 431

## 300A



Silicon carbide disc type varistor with ten groups of discs, each group having two discs and three terminals. The center terminals of the ten groups are strapped together. Screws for mounting are furnished.

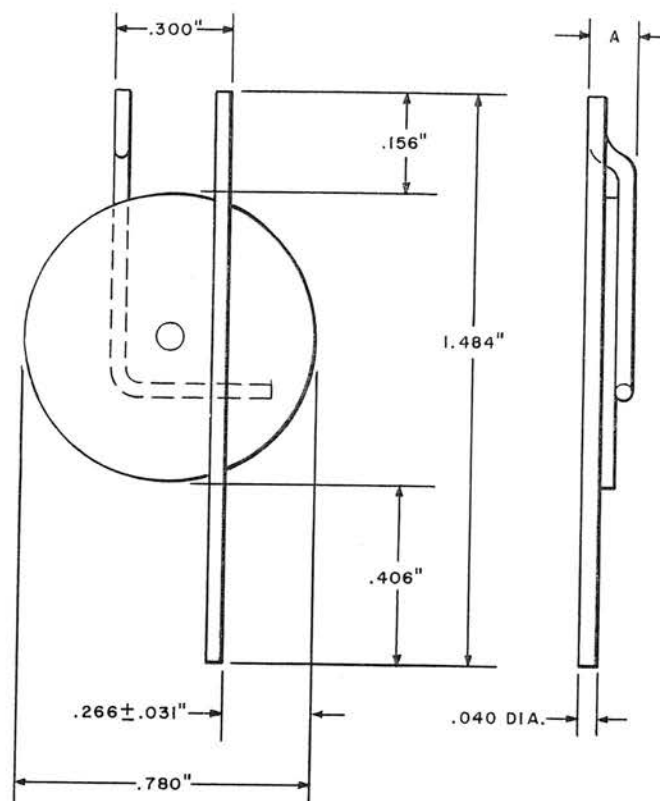
The closest recommended mounting centers are 5-5/16 inches by 1-3/4 inches.

With 20 or 53 volts dc applied between the two terminals, the current shall be .004 ampere maximum and 7.0 amperes minimum, respectively.

Intended for use in switchboards to protect the line lamp in circuits having a severe exposure to induced voltages.

Comcode: 100 829 498

## 312D and 312E



Each consists of a .780 inch diameter silicon carbide disc with metalized surfaces provided with a terminal on each surface for electrical connection.

Current voltage characteristics specified in table below apply over the temperature range of 70° to 85° F.

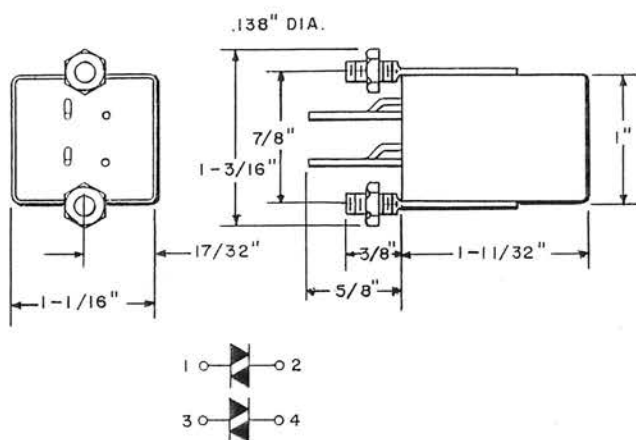
For use as a component part of the 425C Network in the 500 type telephone sets.

Code No.	Comcode	Dimension A (Inches)	Current		DC Voltage	
			Milliamperes DC		Max	Min
312D	100 829 696	.165	10		10.8	8.8
			1.0		—	4.6
312E	100 829 704	.145	100		8.8	7.1
			1.0		—	1.5



## VARISTORS

## 316A



Consists of two 3/4-inch diameter silicon carbide varistor discs potted in a metal can.

Current voltage characteristics apply over the temperature range of 70° to 85° F. With 100 milliamperes dc flowing, the voltage drop across terminals (1-2) and (3-4) is 7.2 volts minimum to 8.7 volts maximum. With 1.0 milliamperes dc flowing, the voltage drop across terminals (1-2) and (3-4) is 1.5 volts minimum.

Intended for use in the 1A1 Key Telephone System to prevent false operation of a relay on incoming ringing signals.

Comcode: 100 829 761

## 317A, D, and E

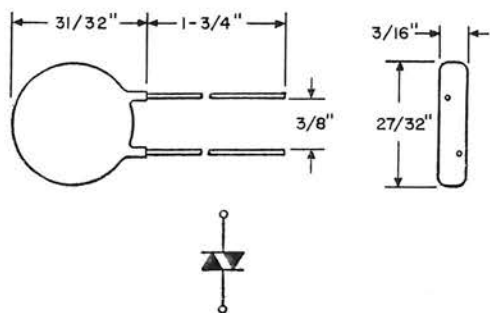


Fig. 1

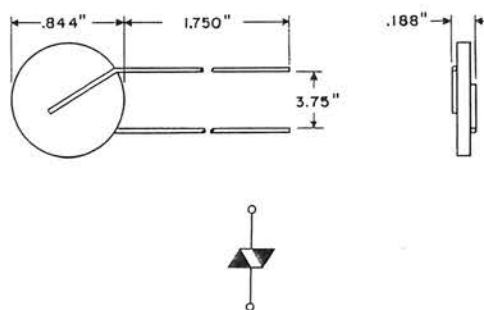


Fig. 2

Each consists of a 3/4-inch diameter silicon carbide varistor disc having a coating of insulating material and equipped with tinned leads.

Current voltage characteristics specified in table below apply over the temperature range of 70° to 85° F.

317A: For use in microwave equipment, PBX trunks, and in ringup relay circuits of the 1A1 Key Telephone System.

317D: For use in the number 400 type key telephone units.

317E: For use in the 400C Key Telephone Unit.

Code No.	Comcode	Current Milliamperes DC	DC Voltage	
			Max	Min
317A	100 829 779	1.0	55.0	41.0
		0.1	—	22.0
317D	100 829 803	4.0	26.0	17.0
		0.1	—	5.0
317E	100 829 811	4.0	26.0	17.0
		0.1	—	5.0

## WIRE

Adapted for use in apparatus wiring and in local and toll switchboards. They are for the most part lacquer treated. This lacquer treatment has many advantages over wax impregnation, some of which are as follows:

1. Eliminates wax as a fire hazard.
2. Eliminates insulation fraying at terminals.
3. Does not collect dirt.
4. Colors remain brighter for long periods of time.

## C-Type

A solid tinned copper wire insulated with PVC and covered with a cotton serving and lacquer coating.

It may be obtained in number 22 or 24 AWG in pairs, triples, spiral fours, and multiple-twin quads in various colors. **The quantity, gauge, number of conductors, and colors must be specified in the order.**

Weight: 2.627 pounds per 1000 feet for number 22 AWG single, and 1.815 pounds per 1000 feet for number 24 AWG single.

Used for switchboard wiring, local cable forms, local toll, and telegraph circuits.

## G-Type

A solid tinned copper wire insulated with double cellulose acetate yarn and covered with a cotton braid and impregnated.

It may be obtained in number 22 or 24 AWG, single only, and in various colors. **The quantity, gauge, and colors must be specified in the order.**

Weight: 3.094 pounds per 1000 feet for number 22 AWG, and 2.313 pounds per 1000 feet for number 24 AWG.

Used for surface wiring of step-by-step switches and small relay units.

## H-Type

A stranded tinned copper wire insulated with double cellulose acetate yarn and covered with a cotton braid and lacquer coating.

It may be obtained in number 22 AWG, singles only, in various colors. **The quantity and colors must be specified in the order.**

Weight: 3.192 pounds per 1000 feet.

Used for wiring telephone sets and for miscellaneous apparatus strapping.

## J-Type

A solid tinned copper wire insulated with a double cotton braid and impregnated.

It may be obtained in number 18, 20, 22, and 24 AWG in black only. **The quantity and gauge must be specified in the order.**

Weight per 1000 feet:

18 AWG	6.636 pounds
20 AWG	4.664 pounds
22 AWG	3.381 pounds
24 AWG	2.559 pounds

Used as a sleeved strap wire.

## K-Type

A solid tinned copper wire insulated with a double cellulose acetate yarn and covered with a cotton braid and lacquer coating.

It may be obtained in number 22 or 24 AWG in singles and pairs in various colors. **The quantity, gauge, number of conductors, and colors must be specified in the order.**

Weight: 2.766 pounds per 1000 feet for number 22 AWG single, and 2.341 pounds per 1000 feet for number 24 AWG single.

Used for making cross connections on crossbar system frames.

## M-Type

A solid tinned copper wire insulated with a double cellulose acetate yarn and covered with a cotton braid and lacquer coating.

It may be obtained in number 22 AWG in singles, pairs, and triples in various colors. **The quantity, number of conductors, and colors must be specified in the order.**

Weight: 3.229 pounds per 1000 feet for single wire.

For use in carrier panel equipment.

## WIRE

## P-Type

A solid tinned copper wire insulated with PVC and covered with a cotton serving and lacquer coating. A tinned copper ground wire (same gauge as conductor) is laid in with the conductor or conductors, and the combination is covered with a braided shield of tinned copper wire and a plastic jacket.

It may be obtained in number 22 or 24 AWG in singles, pairs, and triples in various colors. The quantity, gauge, number of conductors, and colors must be specified in the order.

Weight per 1000 feet for single wire:

22 AWG	14.107 pounds
24 AWG	12.484 pounds

For general use where a shielded wire is required.

## AA Type

A stranded tinned copper conductor insulated with double nylon yarn and a single cotton serving and covered with a cotton braid and lacquer coating.

It is available in 12, 14, 16, 18, 20, and 22 AWG in singles and pairs in various colors. The quantity, gauge, number of conductors, and colors must be specified in the order.

Weight per 1000 feet for single wire:

12 AWG	25.73 pounds
14 AWG	17.19 pounds
16 AWG	11.95 pounds
18 AWG	8.65 pounds
20 AWG	6.30 pounds
22 AWG	5.41 pounds

Used primarily for winding rectifiers.

## AB Type

A stranded tinned copper conductor insulated with a double nylon yarn and single cotton serving, and covered with a cotton braid and impregnated. Obtainable unimpregnated when specified. Paired impregnated wire can be obtained with a braided copper shielding covered with a cotton braid when specified in the order.

It may be obtained in number 12, 14, 16, 18, 20, and 22 AWG in singles and pairs in various colors. The quantity, gauge, number of conductors, and colors must be specified in the order.

Weight per 1000 feet for single wire:

12 AWG	26.49 pounds
14 AWG	17.85 pounds
16 AWG	12.54 pounds
18 AWG	9.18 pounds
20 AWG	6.79 pounds
22 AWG	5.41 pounds

Used in amplifier wiring and as lead-out wire for coils.

## AC Type

A solid tinned copper conductor insulated with double cellulose acetate yarn and covered with a single cotton serving and lacquer. It may be obtained in number 22 AWG in multiple quads in various colors. The quantity and color must be specified in the order.

Weight: 11.21 pounds per 1000 feet.

Used for quadded switchboard wires.

## AF Type

A solid tinned copper conductor insulated with double cellulose acetate yarn and covered with cotton braid and impregnated. It may be obtained in number 20, 22, or 24 AWG in singles and pairs in various colors. The quantity, gauge, number of conductors, and colors must be specified in the order.

Weight per 1000 feet for single wire:

20 AWG	4.68 pounds
22 AWG	3.40 pounds
24 AWG	2.57 pounds

Used in transmission networks.

## AG Type

A stranded tinned copper conductor insulated with double cellulose acetate yarn and covered with cotton braid and impregnated. It may be obtained in number 22 AWG in various colors. The quantity and colors must be specified in the order.

Weight: 3.43 pounds per 1000 feet.

Used in filter networks and as lead-out wire for coils.



## WIRE

## AK Type

A number 16 AWG solid tinned copper conductor insulated with double cellulose acetate yarn and covered with cotton braid and lacquer in various colors, and a number 22 AWG tinned copper ground wire. Both are covered with a braided shield of tinned copper wire. **The quantity and colors must be specified in the order.**

Weight: 17.090 pounds per 1000 feet.

Used for shielded carrier wiring.

## AP Type

A galvanized solid iron wire covered with black cotton braid and impregnated. This wire is not an electrical conductor.

It may be obtained in number 12 AWG, black only. **The quantity must be specified in the order.**

Weight: 34.94 pounds per 1000 feet.

Used as a support in local cable forms.

## AR Type

A stranded tinned copper conductor insulated with double cellulose acetate yarn and covered with a single cotton serving and lacquer. It may be obtained in number 24 AWG in red or blue. **The quantity and color must be specified in the order.**

Weight: 1.918 pounds per 1000 feet.

Used in step-by-step multiple bank wiring in mechanized assembly.

## BF Type

A solid tinned copper conductor insulated with polyethylene and covered with crepe paper, a braided shield of tinned copper wire, paper tape, and a slate colored plastic jacket. It may be obtained in number 22 AWG in singles, pairs, and triples in various colors. **The quantity, number of conductors, and colors must be specified in the order.**

Weight: 10.915 pounds per 1000 feet for a single wire.

For general use where a shielded wire is required in carrier telephone installations.

## BG Type

A solid tinned copper conductor insulated with PVC and covered with a single cotton serving and lacquer. It may be obtained in number 20, 22, or 24 AWG in singles,

pairs, triples, spiral fours, or multiple-twin quads in various colors. **The quantity, gauge, number of conductors, and colors must be specified in the order.**

Weight per 1000 feet for a single wire:

20 AWG	4.742 pounds
22 AWG	3.068 pounds
24 AWG	2.242 pounds

For use in surface and hookup wiring.

## BH Type

A solid tinned copper conductor insulated with PVC and covered with cotton braid and lacquer. It may be obtained in number 20, 22, or 24 AWG in singles, pairs, triples, spiral fours, or multiple-twin quads in various colors. **The quantity, gauge, number of conductors, and colors must be specified in the order.**

Weight per 1000 feet for a single wire:

20 AWG	5.205 pounds
22 AWG	3.617 pounds
24 AWG	2.777 pounds

Used for lead-out wiring.

## BK Type

An AM type wire and a number 22 AWG tinned copper ground wire which are covered with a braided shield of tinned copper wire and insulated with a plastic jacket.

It may be obtained in number 16 or 20 AWG in singles, pairs, and triples in various colors. **The quantity, gauge, number of conductors, and colors must be specified in the order.**

Weight per 1000 feet for single wire:

16 AWG	21.022 pounds
20 AWG	16.513 pounds

Used where a shielded wire is required for power equipment.

## BM Type

A stranded tinned copper conductor insulated with double nylon yarn and cotton braid.

It may be obtained in number 27 AWG in various colors. May also be obtained wax impregnated or lacquered when specified in the order. **The quantity and color must be specified in the order.**

Weight: 1.493 pounds per 1000 feet.

Used as lead out wire in coils, networks, and transformers.



## WIRE

## BU Type

A solid tinned copper conductor with PVC insulation.

It may be obtained in number 22 or 24 AWG in singles, pairs, triples, quads, or spiral fours in various colors. The quantity, gauge, number of conductors, and colors must be specified in the order.

Weight per 1000 feet for a single wire:

22 AWG	2.636 pounds
24 AWG	1.822 pounds

Used in surface wiring, local cables, and switchboard cables.

## BW Type

A solid tinned copper conductor insulated with PVC and covered with a single cotton serving and lacquer.

Maximum operating voltage is 300 volts dc or 200 volts rms ac.

It may be obtained in number 20, 22, 24, or 26 AWG in singles, pairs, triples, spiral fours, and multiple-twin quads in various colors. The quantity, gauge, number of conductors, and colors must be specified in the order.

Weight per 1000 feet for a single wire:

20 AWG	4.165 pounds	24 AWG	1.808 pounds
22 AWG	2.642 pounds	26 AWG	1.199 pounds

Used in surface wiring and local cables.

## BY Type

A solid tinned copper conductor insulated with PVC.

It may be obtained in number 26 AWG in singles, pairs, triples, quads, or spiral fours in various colors. The quantity, number of conductors, and colors must be specified in the order.

Weight: 1.005 per 1000 feet for a single wire.

Used in surface wiring, local cables, and switchboard cables.

## DD Type

A stranded tinned copper conductor insulated with PVC.

It may be obtained in number 27 AWG in various colors. The quantity and colors must be specified in the order.

Weight: 1.493 pounds per 1000 feet for a single wire.

Used in telephone set wiring.

## Distributing Frame

## U-Type

A tinned copper wire insulated with extruded PVC, covered with a serving of cotton yarn, and coated with plasticized cellulose acetate lacquer. This wire can be distinguished by a yellow tracer in each wire.

The wire is furnished in standard 1500-foot coils with the exception of the U22P and U22T. U22P is furnished in standard 3000-foot coils but is also available in coils of 1500 feet and on spools of 500 feet. U22T is furnished in 2000-foot coils.

Code No.	AWG	Number of Conductors	Weight (Pounds per 1000 Ft.)	Colors
U20S	20	1	4.120	Brown
U20P	20	2(a)	8.241	Brown, Black-Brown
U22P	22	2(a)	10.491	White, Black
U22T	22	3(a)	5.245	White, Black, Red
U22F	22	4(a)	7.868	White, Red, Black, Green
U22M	22	4(b)	10.491	Black, Black-White, Red, Green

(a) Conductors are twisted together in a spiral.

(b) The black and black-white conductors form one twisted pair, the red and green conductors form another twisted pair, and the two pairs are twisted together to form a quad.

## WIRE

## Distributing Frame

## W Type

Tinned copper wire, insulated with extruded polyvinyl chloride compound covered with a jacket of extruded transparent nylon.

Furnished in standard coils of 1500 feet, except the W22P wire which is furnished in a standard coil of 3000 feet and the W22T wire is furnished in 2000 foot coils.

Used on distributing frames of No. 1 ESS.

Code No.	AWG	Number of Conductors	Weight (Pounds per 1000 Ft.)	Colors
W22F	22	(a) 4	10.0	Yellow, blue, orange, brown
W22M	22	(b) 4	10.0	Yellow, blue, orange, brown
W22P	22	(a) 2	5.0	Yellow, blue
W22S	22	1	2.5	Brown
W22T	22	(a) 3	7.5	Yellow, blue, orange

- (a) Conductors are twisted together in a spiral.  
 (b) Yellow and blue conductors form one twisted pair, the orange and brown conductors form another twisted pair, and the two are twisted together to form a quad.

## Station

D Type  
(AT-8378)

Consists of number 22 AWG annealed copper conductors individually insulated with distinctively colored high density polyethylene compound for conductor identification. The insulated conductors are twisted in spiral quad and covered with a jacket of light olive gray or ivory polyvinyl chloride compound. The finished wire has a circular cross section with a maximum outside diameter of 0.150 inch and is intended for general use in station wiring.

The jacket has a very low coefficient of friction, consequently wire pulling lubricants are not needed.

The conductors can be terminated on number 66 type connecting blocks without skinning off the insulation.

The conductors have a resistance of 34 ohms maximum per 1000 feet at a temperature of 68° F.

The wire is furnished in 600-foot continuous length. Cord, individually packed in a carton.

Replaces the GS and JKT type station wire.

## DJ-1

A stranded wire of 27 AWG conductors insulated with polyvinyl chloride and covered with a cotton braid and lacquer coating.

Weighs approximately 1.8 pounds per 1000 feet. Available on 6 inch spools containing 4000 feet or 16 inch reels containing 20,000 feet.

Available in colors of black or red as specified on the order.

Used in head telephone sets.

## SK Type

Two 20 AWG annealed copper steel conductors insulated with paper and a shield of braided copper wires covered with a light olive gray colored thermoplastic compound underlaid by a jacket slitting end of nylon.

The conductor resistance averages 52 ohms per 1000 circuit feet at 68° F, the mutual capacitance averages 0.050 uf per 1000 feet, and the attenuation averages 0.72 db per 1000 feet at 1000 Hz. The wire will withstand 1000 volts rms between conductors and between conductors and shield.

Furnished in 1000 foot bundles. Each bundle is divided into connected, separately bound coils 200 feet long. Each bundle is tagged to show the total length of wire which it contains. The connected separately bound coils are not tagged unless the lengths of wire which they contain differ by more than 25 feet from the usual 200-foot length.

Weight: Approximately 25 pounds per 1000 feet.

For use in loudspeaker paging systems and as amplifier leads and associated wiring.





# TELEPHONE APPARATUS AND EQUIPMENT

The material included herein does not purport to be all-inclusive of our line of standard telephone products. Inquiries are invited regarding products not included.

JANUARY 1970

*Western Electric Company*

DEFENSE ACTIVITIES DIVISION  
83 Maiden Lane, New York, N. Y. 10038





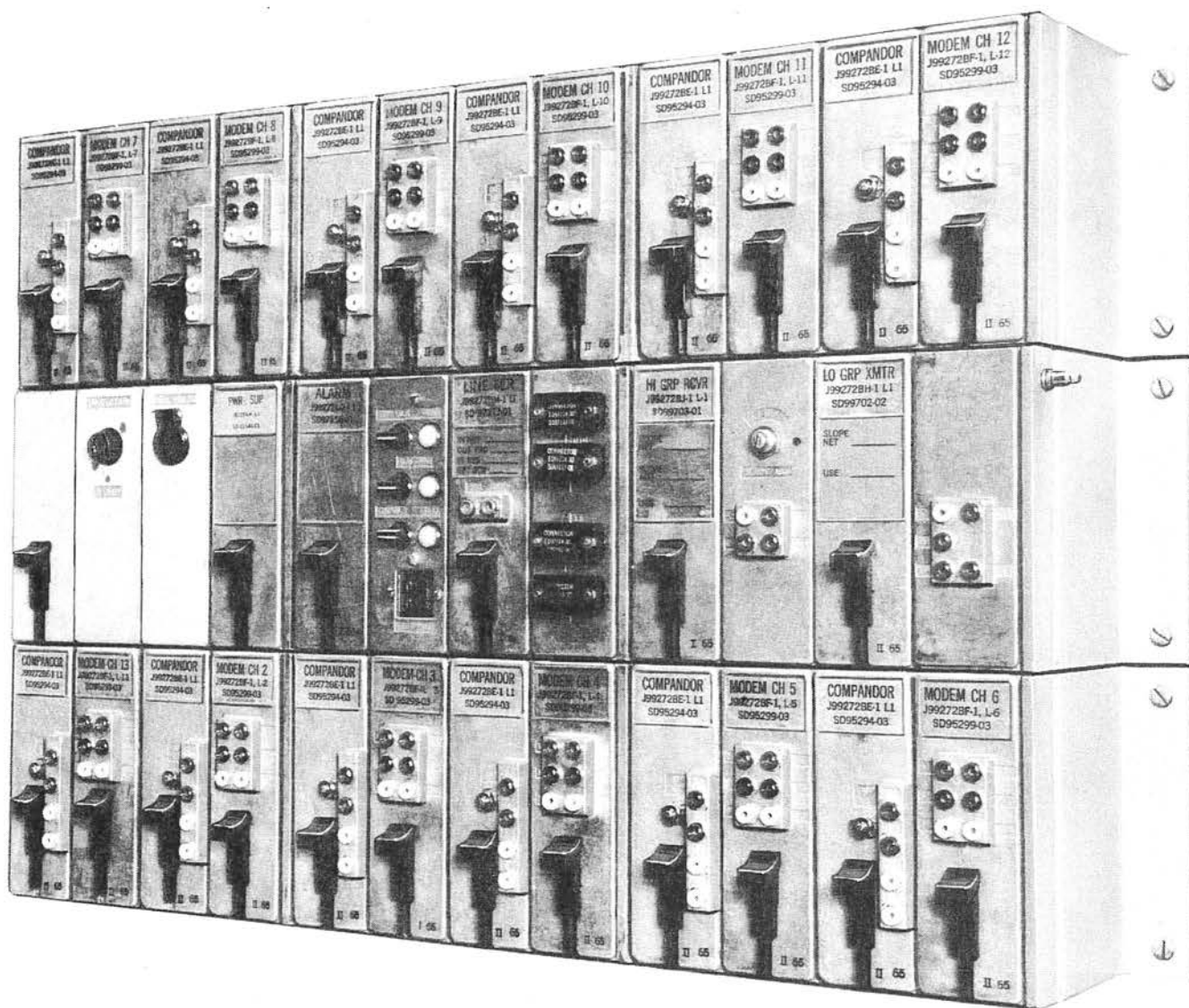
**TELEPHONE APPARATUS AND EQUIPMENT CATALOG****Equipment Section**

The equipment listed in this section is included primarily to provide general information on some of the company's systems and major units of equipment. It is not intended as complete ordering information. In most instances, due to optional features, compatability with existing equipment and other factors, some engineering effort is involved before firm quotations can be made or orders accepted.



## CARRIERS

(J99285) N2



The N2 Carrier is a 12-channel system designed for short haul use on toll and exchange plant cables. The system uses double sideband transmitted carrier transmission with channels spaced every 8 kc. Directional separation, within a single cable, is obtained by using two cable pairs. Each pair requires a different frequency band for its direction of transmission. For most installations, 12 channels, numbered 2 to 13 in the range of 172 to 268 kc, are used in one direction of transmission and 36 to 132 kc in the opposite direction of transmission. Channel 1 is available for use in place of any other channel that may be inoperative.

The equipment for the N2 Carrier includes two terminals and a number of repeaters. The number of repeaters required is determined by the spacing, which depends on the type and gauge of cable used and various other conditions.

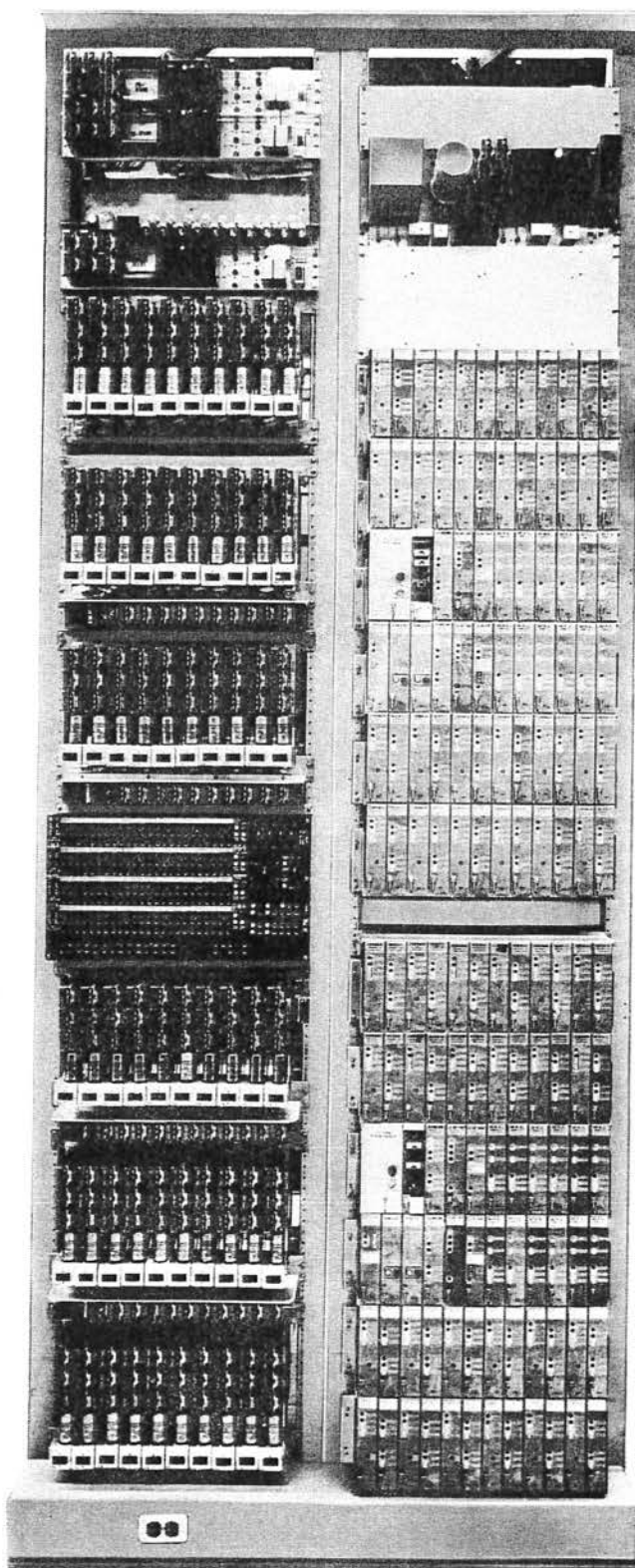
The N2 Carrier terminal bays are 23-inch bulb-angle bays available in 7-foot, 9-foot, and 11-foot 6-inch heights. These bays include the terminal shelves, terminal fuses, repeater power fuses and resistors, and the common bay alarm equipment.





## CARRIERS

## (J99300) N3



The N3 Carrier is a packaged 24-channel system designed for short haul use on toll or exchange cables. Different frequency bands are required for the two directions of transmission using the low band, 36 to 132 kc, in one direction and the high band, 172 to 268 kc, in the other direction. Directional separation within a single cable is obtained by using two cable pairs. Each pair uses a different frequency band for its direction of transmission. A frequency shift control unit corrects for line frequency deviation along the repeatered line. A separate common carrier supply provides all of the frequencies needed for N3 Carrier terminals.

The N3 Carrier terminal equipment is designed to meet the transmission performance requirements of intertoll trunks handling direct distance dialing and message channel traffic.

## Transmission Characteristics:

Channel Gain-Frequency—characteristics average less than 3 db down at 200 and 3400 Hz when terminals are operated back-to-back.

Envelope Delay Distortion—less than 200 microseconds between 1000 and 2600 Hz; less than 800 microseconds between 500 and 3000 Hz.

Net Loss Stability—distribution grade of 0.5 db versus time, battery, and temperature variations.

Regulation—0.2 db over a 25 db range.

Compressor Tracking—typically within  $\pm 1.0$  db over entire range; maximum load capacity is 8 dbm at 0 db system level.

Noise Performance—quieter than 16 dbrnC at 0 TLP for terminals back-to-back.

The equipment for the N3 terminals is arranged in shop-wired packaged frames which are available in 7-foot or 9-foot heights.



## CARRIERS

## (J68858) L-Type Multiplex (LMX-2)

The L-type multiplex carrier is a heavy duty multiplex facility with small job flexibility. It is designed as a package concept which includes voice and high frequency patching outlets, channel banks, group banks, supergroups, and carrier supplies completely assembled and shop wired.

## System Characteristics:

Number of Channels—up to 1860

Modulation—SSB Suppressed Carrier

Channel Spacing—4 kc

Frequency Allocations—basic 12-channel group 60 to 108 kc; basic 60-channel supergroup 312 to 552 kc; basic 600-channel mastergroup 564 to 3084 kc.

Line Frequencies—supergroups 1 to 10 (L-600) 60 to 2788 kc; universal mastergroup (U-600) 564 to 3084 kc.

Group Pilot (Edge of Band)—104.08 kc.

Supergroup Pilot (Edge of Band)—315.92 kc.

Channel Frequency Characteristics—160 to 3300 Hz (3 db points).

Supply Voltages—24 volts dc.

Terminal Background Noise—less than 21 dbrnc0.

Power Drain—receiving bay-transmission circuits 15 amps at 24 volts; transmitting bay-transmission circuits 2 amps at 24 volts; carrier supply 14 amps at 24 volts; scanner and alarm circuits 3 amps at 24 volts.

## HF Levels:

Channel Bank— -42 db transmitting channel bank out; -5 db receiving channel bank in.

Group— -25 db transmitting group out; -28 db receiving group in.

Supergroup— -43.4 db transmitting supergroup out; -21.3 db receiving supergroup in.

L-600 and U-600 (at Line Interface)— -50 db transmitting output; -10 db receiving input.

L-1860— -21 db transmitting output; -14 db receiving input.

VF Levels— -16 db transmitting; +7 db receiving.

HF Impedances—channel bank to group, 135 ohms balanced; group to supergroup, 75 ohms unbalanced; supergroup to receiving and transmitting hybrids, 75 ohms unbalanced.

VF Impedance—600 ohms balanced.

Voice frequency pairs are connected through the voice frequency jack panel to the channel banks. Each channel bank modulates the voice frequencies with carriers, selects the lower sidebands, and combines them in a single 60 to 108 kc band. From this point on, the 12-channel group is treated as a single unit in subsequent steps of modulation. The 12-channel groups are amplified and modulated into the 312 to 552 kc frequency range to form a basic supergroup. The supergroups are combined and connected to the line or radio facilities via office trunks or wire line entrance links. In receiving from the line, the process is reversed by reintroducing the supergroup, group, and channel carrier frequencies and demodulating the sidebands to voice frequency channels.

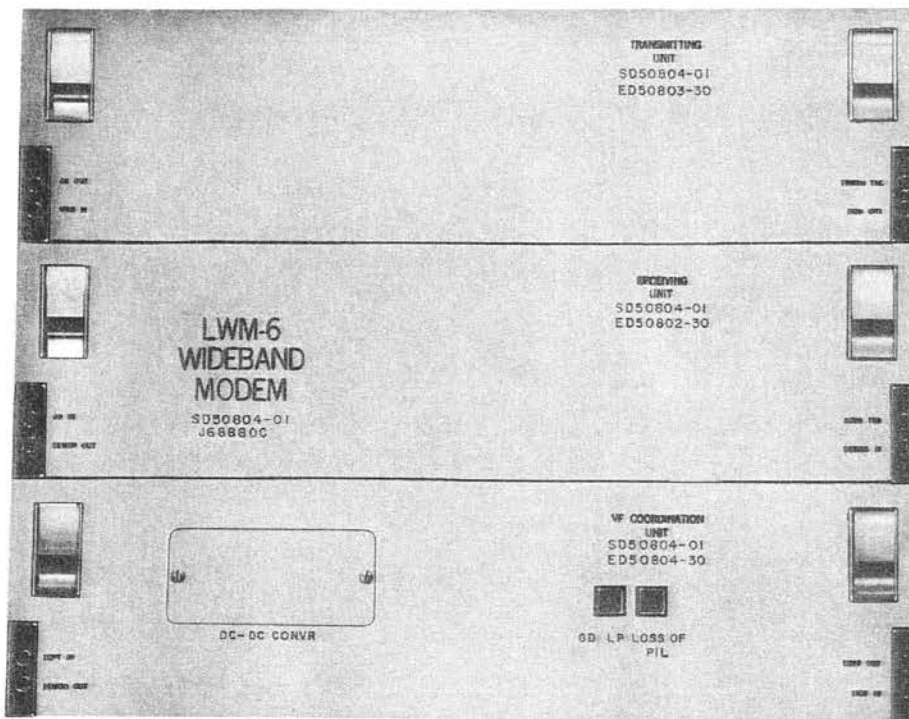
The standard bay height is 7 feet; however, bay extenders are provided optionally for 9-foot, 10-foot 6-inch, and 11-foot 6-inch bay heights.





## CARRIERS

## (J68880) L-Type Multiplex (LWM-6)



The LWM-6 wideband modem is a modulator-demodulator unit that is designed to place a baseband data signal and a single 4 kHz VF channel in the L multiplex basic group band (60 to 108 kHz). It provides for full-duplex operation of both the wideband and voice channel. The equalized baseband data channel extends from 0.1 to 37.0 kHz. The coherent demodulation process, however, requires the recovery of the carrier at the receiving end of the system and this places a restriction on the low frequency content of baseband signals. The energy below 2000 Hz must be attenuated and the dc component removed. These requirements are met by the restored-polar signal format that is generated by the 303-type data set.

The modem incorporates vestigial-sideband suppressed-carrier amplitude modulation. A 100 kHz carrier pilot is added to permit coherent demodulation. The lower sideband extends to 63 kHz and the vestigial sideband to 104 kHz, resulting in an equivalent baseband of 37 kHz. When appropriate high-frequency band shaping is employed in the data set, the modem permits transmission of data signals at any rate up to 50 kilobits.

The LWM-6 wideband modem consists of a welded chassis unit equipped with three drawer assemblies cap-

able of housing a transmitting unit, a receiving unit, and a coordination unit. It occupies ten 1-3/4 inch mounting plate spaces on a 19-inch wide 10-inch deep, cable-duct type bay. The modem when fully equipped, weighs approximately 70 pounds. This equipment is arranged for both wiring and maintenance from the front or equipment side of the bay and may be located in back-to-back line-ups or against a wall.

The transmitting, receiving and coordination drawer assemblies contain plug-in-units and component apparatus and are mounted in the chassis on friction slides located at either end of the drawers.

The 108 kHz carrier frequency for the VF coordination channel should be obtained from the J68857A channel carrier distribution unit.

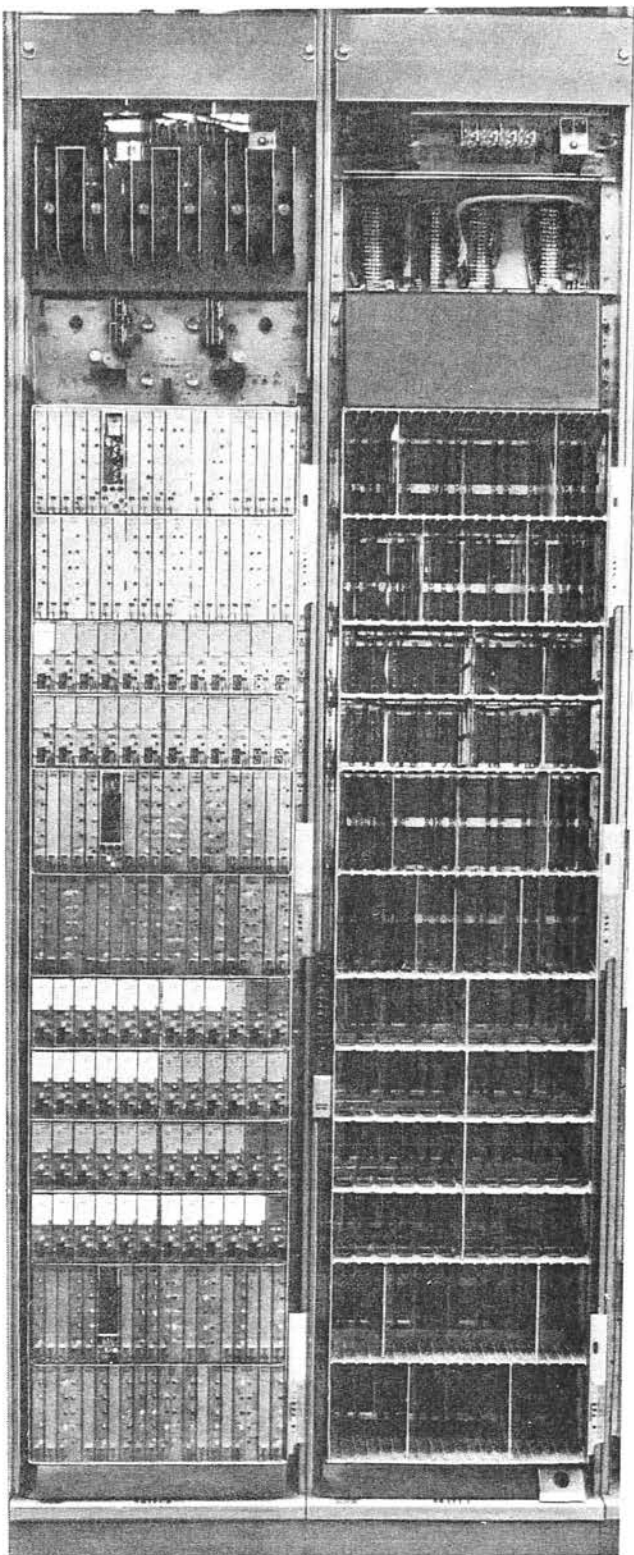
The LWM-6 wideband modem requires a source of -24 volts and will operate within the office battery range of -22.0 to -26.0 volts. The normal current drain is 0.7 plus or minus 0.05 amperes. The maximum number of modems permissible on a single battery feeder is thirty.

The modem equipment has been designed to operate satisfactorily in ambient temperatures ranging from +32° to +120°F.



## CARRIERS

## (J98710) T1



The T1 Carrier is a 24-channel, transistorized, time division, pulse code modulation transmission system. It is applicable to short haul trunks, principally direct inter-office trunks, tandem trunks, toll connecting trunk, PBX trunks, and foreign exchange lines. The system is intended primarily for use in the larger metropolitan areas and should be most economical for large, fast-growing cross sections. The terminals for the T1 system are known as (J98711) D1 Channel Banks. Built-in signaling is provided and the transmission quality of the carrier channels is adequate for signals generally expected in the switched telephone network. Interoffice transmission is on a four-wire basis, i.e., one nonloaded exchange cable pair, free of bridge taps, for each direction of transmission. Regenerative pulse repeaters are required, nominally spaced at 6000-foot intervals. Line repeaters are powered from central office batteries over the carrier signal pairs.

The (J98711) D1 Channel Bank converts the continuously changing voice and signal information of 24 outgoing channels into a single train of pulse code modulated (PCM) pulses, and at the receiving end reconverts the train of PCM pulses into a close approximation of the original signals.

The repeater used in the T1 Carrier is identified by one of two codes: 201A Repeater for one cable operation and 201B Repeater for two cable operation. Each repeater includes two complete regenerators and a common power supply.

Alarms are provided at the terminal and repeater bays for fuse failures. An alarm to indicate loss synchronization between the transmitter and receiver is also provided.

With the exception of a miscellaneous alarm and filter panel on each bay, all the circuits, including all but one of the power supplies, are packaged as plug-in units.

The equipment mounts in a 9-foot high by 23-inch wide bulb-angle bay.





## CARRIERS

## Data

## (J70169) 43B1

The 43B1 Voice Frequency Carrier is a solid state data system capable of multiplexing up to 17 single width (SW, 75 baud) channels or 8 double width (DW, 150 baud) channels and one single width channel on a single 4-wire voice facility. For a 2-wire facility, as many as eight single width or four double width channels may be multiplexed. This system utilizes a total of 25 center frequencies from 425 to 3145 Hz.

A 43B1 Voice Frequency Carrier shop-wired bay, 11 foot 6 inches high and 23 inches wide, is supplied and can be arranged for equipping 54 carrier channels and 54 High Voltage Hub Converter circuits or 72 carrier channels in low-voltage hub offices.

Two basic printed wiring board mounting units (nests) are provided for mounting apparatus coded plug-in circuit packs for channel, line, high voltage hub converters, and system alarm circuits. The channel terminal printed wiring board mounting unit holds the line, channel terminal and alarm circuit packs. The high voltage hub converter printed wiring board mounting unit mounts the high voltage converter circuit packs for use with No. 2 type hubs.

Circuit packs required for the printed wiring board mounting units are not included as part of the shop-wired bay and must be ordered separately. The circuit packs are equipped with a combination handle and lock which facilitates removal and prevents the printed wiring board from vibrating out of its connector. The channel terminal and high voltage hub converter printed wiring board mounting units contain individual fusing for all circuit packs and are arranged to operate a standard central office alarm when used with the shop-wired bay furnished fuse and alarm unit. All external connections, except for power busses, are made by means of wire wrap terminals in the rear of the printed wiring board mounting units. The power busses are connected by means of screw lugs located on the fuse blocks.

A channel terminal consists of a transmitter, an associated demodulator, and a receive interface. There are 25 versions of transmitter and demodulator circuit packs corresponding to the 25 center frequencies. The channel terminal printed wiring board mounting unit can physically accommodate any combination of nine channel terminals, two line circuits, and two associated system alarms; or nine channel terminals, three line circuits, and one system alarm.

The high voltage printed wiring board mounting unit is similar to the channel terminal printed wiring board

mounting unit, except that it is capable of holding up to 28 high-voltage, hub converter circuit packs.

The line circuit contains common transmitting and receiving amplifiers for any combination of single width and/or double width channels in each carrier system. The line end of the amplifier can be arranged for either 2- or 4-wire facilities, and can be set for either 600- or 900-ohm balanced terminations.

The transmitter may be set for either half-duplex (HDX) or full-duplex (FDX) operation by means of a screw terminal option strap which is visible through a window in the faceplate.

The demodulator is also equipped with a screw terminal option strap which is used to select mark hold or space-hold indication upon loss of signal.

The third circuit pack in the channel terminal is the receive interface. It is not frequency sensitive and may be used with any channel terminal in a 43B1 system.

A system alarm circuit pack may be associated with each line circuit used. Each system alarm monitors two preselected channels.

The purpose of the high voltage hub converter is to convert the low-voltage interface provided by a channel terminal to the higher voltage required to operate a high-voltage hub.

The fuse and system alarm unit, when used in conjunction with the system alarm circuit, is capable of triggering standard audio and visual alarms should any channel experience abnormal signal power conditions. An open fuse will also trigger these alarms. This unit is provided with the 43B1 voice frequency carrier shop-wired bay.

Voltages used in the 43B1 channel terminal, line circuit, and system alarm are plus and minus 24 volts. The high voltage hub converter requires -130 volts, which is obtained from a central office battery; in addition to plus and minus 24 volts.

A battery filter, which may be ordered as part of the shop-wired bay, provides a filtered plus and minus 24 volts. No more than 27 channel terminals, and associated line and alarm circuits, plus 27 high-voltage hub converters are to be connected to one filter.

The 43B1 is line compatible with the 43A1 carrier telegraph channel terminal with respect to frequency shift and channel assignment. However, the two lower 43B1 channels do not have corresponding mates in the 43A1.



## CONCENTRATORS

1A Line

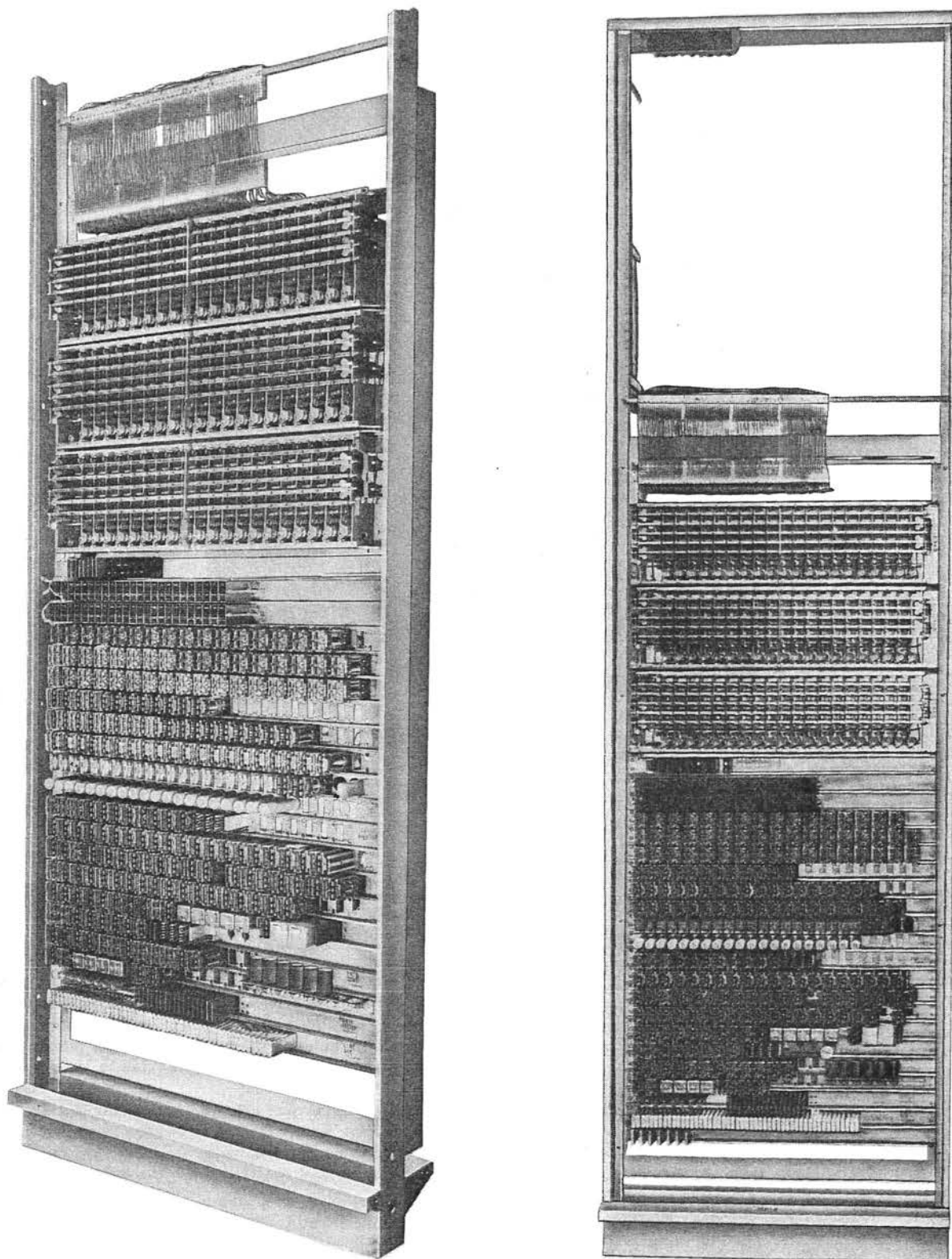


Fig. 1

EQUIPMENT



## CONCENTRATORS

## 1A Line (Continued)

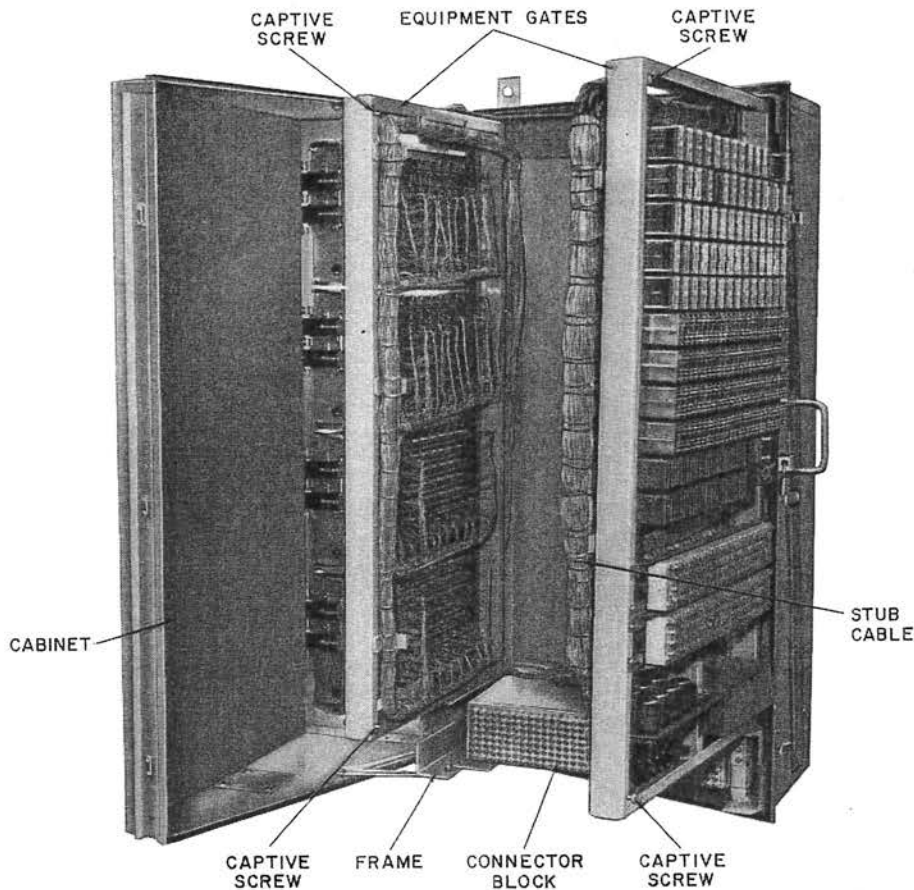


Fig. 2

The 1A Line Concentrator is used to increase the capacity of existing cables by reducing the number of cable pairs required to serve remote locations. The 1A Line Concentrator connects a maximum of 98 remote lines and 2 test lines to the central office by concentrating them over a maximum of 22 cable pairs. Twenty of the cable pairs are trunk circuits that connect a remote concentrator unit to a central office control concentrator-identifier unit. The two additional pairs are used for control signaling between the concentrator units. The 1A Line Concentrator is arranged for use in common dial offices such as No. 1 Crossbar, No. 5 Crossbar, and No. 1 350 and 355 Step-by-Step offices.

The concentrator consists of two major units of equipment: One is a central office (J99258) Concentrator-Identifier Control Unit (Fig. 1) for the remote 100-line concentrator. The expanding networks provide the facility

for connecting the 20 concentrator trunks to 98 line circuits in the central office. The control unit is 38-1/4 inches wide, 85 inches high, and weighs 500 pounds. It is arranged for mounting on 9-foot or 11-foot 6-inch high framework. The other major unit is a (J99259) 100-line Concentrator Unit (Fig. 2) in a compact housing which mounts on a telephone pole or building in a remote strategic location. The remote unit is 51 inches high, 26 inches wide, 16 inches deep, and weighs approximately 450 pounds.

Also available as optional equipment is the (J99263) Concentrator Trunk Usage Recorder, with its associated timer, designed for use with the concentrator to provide scanning of trunk usage. This information is recorded on message registers in terms of CCS's per trunk group indicating concentrator trunk group loadings. Each concentrator trunk usage recorder can serve ten trunk groups of ten trunks each or five 1A Line Concentrator control units.

## TOUCH-TONE CONVERTERS

**(J99266) TOUCH-TONE Calling Receiver**

The TOUCH-TONE Calling Receiver is designed to be bridged across the input terminals of a dial pulse subscriber sender, originating register, or equivalent common dial pulse equipment without interfering with normal operation on dc dial pulses. The receiver is designed to respond to two simultaneous voice-frequency tones, one from a high group and one from a low group of frequencies generated by the operation of a button on a TOUCH-TONE calling subscriber set or similar device. The use of two widely separated frequencies for each digit provides for various operating features. The TOUCH-TONE Calling Receiver in itself is not sufficient to adapt an existing office for TOUCH-TONE calling. In addition to the receiver, a converter designed to accept the output of the receiver is necessary to pass the calling pulses to the existing dial machine.

The circuit components of the receiver are mounted on modular-type cards in slides which plug into a cabinet-type framework. This type of construction facilitates maintenance.

The receiver mounts in a standard 23-inch relay rack. It is 6 inches high and 9-3/4 inches deep. The mounting details are adjustable from front to rear to ensure that the receiver will be protected within the guardrails of the bay in which it is installed.

**Panel System****(J27907) TOUCH-TONE Converter Frame**

This unit consists of the necessary apparatus for the installation of TOUCH-TONE converter frames in panel offices. The conversion equipment consists of one (J27907A List 1) Converter Frame on which are mounted eight (J27907B) Converter Units and eight (J99289B) Receiver Units. The converter frame is 11 feet 6 inches high.

Panel offices require that a receiver and a converter be permanently associated with each subscriber sender assigned for TOUCH-TONE calling. TOUCH-TONE lines are segregated by line finder groups, providing two groups of subscriber senders. One group handles only rotary dial calls, while the other group is associated with the TOUCH-TONE line finder groups and handles both rotary and TOUCH-TONE calls. The sender multiple is then rearranged so that the TOUCH-TONE line finder groups can only reach the modified senders and the rotary dial line finder groups only reach the rotary dial senders.

On a TOUCH-TONE call, the multifrequency signals are detected, translated, and stored in digit registers in the converter. The converter outputs the digits on an overlap basis into the pulse counting circuit of the modified sender at the rate of 20 pulses per second. On a rotary dial call from a TOUCH-TONE line finder group, dial pulses are presented directly to the converter. The con-

verter is arranged to follow dial pulses and repeat them to the sender for registration. Connection to dial tone is made in the converter under control of the sender. Rotary dial calls from rotary dial line finder groups will remain the same.

**No. 1 Crossbar System****(J27951F) Originating Sender Frame**

To add TOUCH-TONE capability to a No. 1 Crossbar System a multifrequency (J99266) TOUCH-TONE Calling Receiver and a (J27951H) TOUCH-TONE Calling Signal to Dial Pulse Converter must be added to each subscriber-sender assigned to TOUCH-TONE lines.

The receiving unit is mounted on a (J99289A) Mounting Shelf which is designed to mount two receivers. The mounting shelf is mounted on a relay rack with the associated converters mounted directly above and below it.

TOUCH-TONE lines are segregated on a horizontal group basis. Each sender subgroup contains both modified and unmodified senders as follows:

- A. Rotary dial only (unmodified)
- B. TOUCH-TONE and rotary dial (modified)
- C. TOUCH-TONE and rotary dial (modified to accept overflow from either of the first two)

The line link controllers and sender link controllers must be modified to differentiate between rotary dial and TOUCH-TONE lines, and establish connections to the proper senders.

On TOUCH-TONE calls, the subscriber sender link directs the call to a TOUCH-TONE sender where the signals are detected, translated, and stored on digit registers in the converter. The converter then outputs the digits on an overlap basis into the pulse counting circuit of the modified sender at a 20 pulse-per-second rate. While rotary dial calls from the TOUCH-TONE horizontal group are also directed to the TOUCH-TONE sender, these dial pulses have no effect on the receiver-converter circuits. Rotary dial calls from rotary dial horizontal groups are directed to the rotary dial sender and are handled as at present.

**No. 5 Crossbar System****(J27962A) Originating Register Frame**

To add TOUCH-TONE capability to a No. 5 Crossbar System, the (J27962A) Originating Register Frame must be modified by adding one (J27962AU) TOUCH-TONE Control Unit and one (J99289B) TOUCH-TONE Calling Receiver Unit for each originating register. In addition



## TOUCH-TONE CONVERTERS

### (J27962A) Originating Register Frame (Continued)

one TOUCH-TONE Calling Receiver Mounting Shelf is required for each two originating registers. These units are mounted on a relay rack with a TOUCH-TONE Control Unit above and below the receiver mounting shelf.

The receiver and converter detect the TOUCH-TONE signals, translate them into two-out-of-five indications, and transfer them on a multilead basis to the originating register for storage in the proper digit register.

A TOUCH-TONE indication is registered in the originating register for traffic measuring and trouble recording purposes. On both TOUCH-TONE and rotary dial calls, the originating register continues to perform such functions as applying dial tone, coin test, and party test.

Two groups of originating registers are provided. One group handles only rotary dial calls, while the registers in the other group are associated with TOUCH-TONE units and handle both TOUCH-TONE and rotary dial calls. Lines with TOUCH-TONE telephones are segregated on a vertical group basis. Dial pulses from a rotary subset are detected by the originating register. On the originating register frame, there is no requirement for segregation of registers in one group or the other, and any register position may be equipped for either type of pulsing.

### Step-by-Step System

#### (J33024) Step-by-Step Converter Frame

The Step-by-Step Converter Frame contains the apparatus necessary to convert TOUCH-TONE calling signals to dial pulses in step-by-step offices. The conversion equipment consists of the (J33024P) Converter Frame which is 11 feet 6 inches high or the (J33024Q) Converter Frame which is 9 feet high. On each converter frame are mounted four (J33024R) Converter Units, four (J99289B) TOUCH-TONE receivers, two (J33024T) Party Test Units, and one (J33024S) Talk Line Miscellaneous and Test Set Connector Unit.

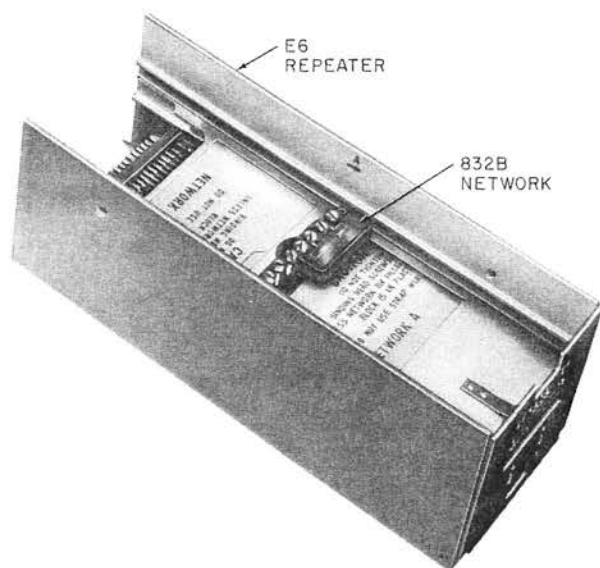
Use of this converter frame allows a step-by-step office to service both dial and TOUCH-TONE originated calls. When the pulses of the first digit of a call are dial pulses the converter will disconnect and the pulses will be registered directly on the step-by-step switches. When the pulses of the first digit of a call are TOUCH-TONE pulses, they are received by the TOUCH-TONE receiver and transmitted to the converter. The converter translates the output of the TOUCH-TONE receiver into dial pulses that are transmitted to the step-by-step switches for completion of the call.

A maximum of 13 customer keyed digits will be accepted by the converter. A timing control circuit monitors converter functions to allow a maximum time interval for call completion. The converter also provides dial tone for TOUCH-TONE telephone sets.

The converter frame is provided with signal lamps and test jacks for making maintenance and operational tests on each converter.

## REPEATERS

## (J99253) E6



The E6 Repeater is a two-wire voice frequency, transistorized repeater designed to reduce the transmission losses of exchange area trunks. The repeater assembly consists of a shell in which the various networks are mounted.

Quantity and type of networks determine whether the unit is used as a terminal repeater or as an intermediate repeater.

The E6 Repeater will operate on 48 volts from an unfiltered central office battery. Transmission gains up to 12 db are obtained by screw type adjustment on the networks. Direct current supervisory signals and most low frequency signaling currents are passed by the E6 Repeater without serious impairment and without the aid of auxiliary bypassing equipment. The only exception is that panel incoming reverberative signals are not passed successfully. Voice frequency signaling is amplified the same as voice currents.

The repeater is suitable for use on:

- A. 6000-foot spaced, 88 millihenry (H88) high capacitance number 19, 22, or 24 AWG cable.
- B. 6000-foot spaced, 88 millihenry (H88) low capacitance number 19 AWG cable.
- C. 1500-foot spaced, 88 millihenry (D88) high capacitance number 19 or 22 AWG cable.

The overall dimensions of the repeater are 3-3/8 inches wide by 3-9/16 inches high by 9-19/32 inches deep. It is arranged for plug-in mounting on a relay rack mounted repeater shelf.





## REPEATERS

## (J99271) E7

The E7 Repeater is a 48-volt transistorized negative impedance device. It is designed for use on nonloaded loops used for TWX and DATA-PHONE services. It is installed at the central office end of such loops and is not intended for intermediate use. It improves the return loss of the loop by modifying the impedance seen from the central office end, and provides moderate gains at the higher voice frequencies to permit meeting return-loss and insertion-loss requirements. The E7 Repeater acts essentially as a series repeater at low voice frequencies and as a shunt repeater at high voice frequencies.

The E7 Repeater is designed to meet the following conditions:

- A. No more than 18,000 feet from the central office to distant working station.
- B. No more than 1200 ohms external loop resistance.
- C. Straight and mixed gauge utilizing number 26, 24, and/or 22 AWG cable. (Only trivial amounts of number 19 AWG or open wire.)
- D. Bridged taps.
  1. No loaded bridge taps.
  2. Total bridged tap (including nonworking end section) not to exceed 6000 feet.

3. No bridged taps within 600 feet of the central office.

E. No more than 500 feet of drop wire.

Variations within these conditions are taken care of by adjustment of the network in the repeater.

For transmission purposes, an E7 Repeater is not considered as an entity apart from its associated loop. It is designed so that, within the condition given above and with proper line-up, it will produce the following minimum return-loss results for the repeatered loop as a whole:

Frequency (Hz)	Return Loss (Decibels)
1000	At least 14
2300	At least 10
3500	At least 4
300 - 3000	At least 8

The return losses are measured against a standard of 900 ohms in series with a 2-uf condenser.

The E7 Repeater is an assembled unit consisting of a shell in which a negative impedance converter, an adjustable network, and an inequality ratio transformer are mounted. The overall dimensions are 3-3/8 inches long, 3-9/16 inches wide, and 9-13/32 inches deep. The E7 Repeater is arranged for plug-in mounting on a relay rack mounted repeater shelf.



## REPEATERS

## V4

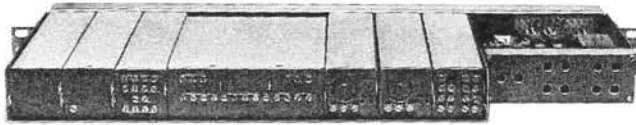


Fig. 1

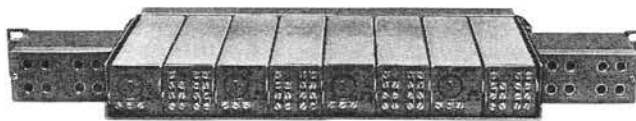


Fig. 2

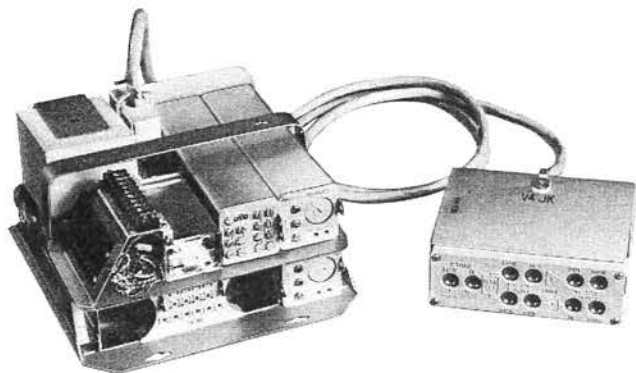


Fig. 3

The V4 Repeater is used primarily to provide a simple means for engineering and installing high-grade, low-loss, four-wire voice trunks. The V4 Repeater achieves extraordinary flexibility by standardizing two basic units: the 24V4 Terminal Repeater which furnishes gain, equaliza-

tion, and a two-wire to four-wire transition; and the 44V4 Intermediate Repeater which inserts at an intermediate point the gain and equalization in the longer four-wire trunks. Both units feature the transistorized 227 type amplifier as the basic plug-in module and will operate from either a 24 or 48 volt power source.

The V4 Repeaters are suitable for both voice and data transmission over four-wire facilities. Their applications include:

- A. Direct trunks
- B. Tandem trunks
- C. Intertandem trunks
- D. Short intertoll trunks or VF extensions of carrier channels in intertoll trunks
- E. PBX tie trunks and central office trunks
- F. Foreign exchange lines
- G. Off-premises extensions
- H. Special service lines
- I. Voiceband data circuits

For large installations the repeaters are mounted on a 23-inch wide by 1-3/4 inch high mounting shelf. One shelf mounts one 24V4 or two 44V4 Repeaters. These shelves are designed for mounting in the J98615 Repeater Bays.

Fig. 1 shows a 24V4C Terminal Repeater Mounting Shelf typically equipped.

Fig. 2 shows a 44V4A Intermediate Repeater Mounting Shelf typically equipped with 2 units.

Fig. 3 shows a special V4 Voice Frequency Repeater complete for 24V4 operation. This unit is designed for small installations and can be mounted on a wall or under a desk. This unit features an optional ac power supply unit. The unit measures 8 inches wide by 9 inches long by 4-1/2 inches deep.

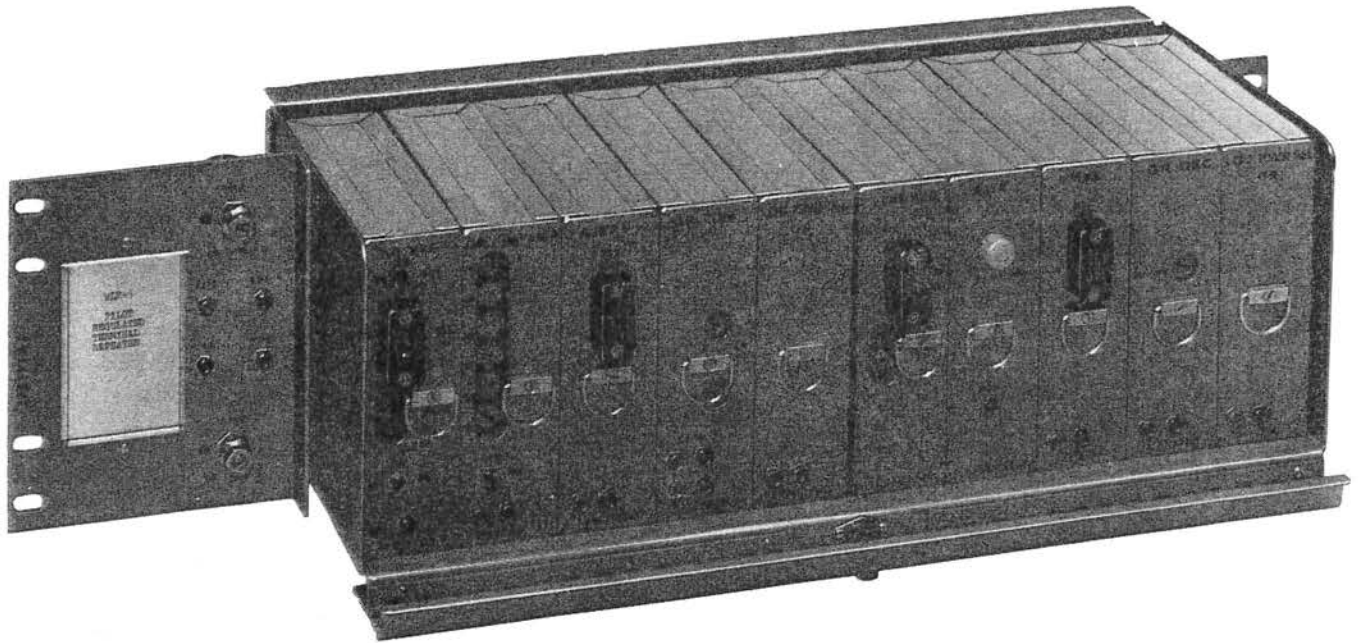
Another arrangement of the terminal repeater is the 24V4B which is arranged to fit into 16C or 31A Apparatus Mountings.





## REPEATERS

(J70171) WLR-5



The WLR-5 wideband loop repeater is used to condition loops for wideband data transmission. It provides amplification and continuously adjustable loss equalization to postequalize wideband local loops.

The WLR-5 repeater provides active curve fitting pre-amplifiers that are capable of equalizing cable losses up to 30 db at 25 kHz from 100 Hz to 50 kHz. Pilot controlled twist regulation is available, on an optional basis, to compensate for cable attenuation changes caused by temperature variation.

Each Wideband repeater is a 2-way repeater normally required at each end of the loop. Long loops should be pilot regulated and may require repeaters at intermediate locations. For short loops, one of the repeaters may be eliminated.

The WLR-5 repeater consists of a shelf containing 10 plug-in units, 5 for each direction of transmission. Plug-in units are inserted, as required, to meet the individual requirements of a particular repeater. The repeaters may

be mounted on 19 or 23 inch width relay racks or a single remotely powered intermediate repeater may be housed in a watertight apparatus case for pole or manhole mounting. A pole mounted weathertight apparatus case is also available for a maximum of 7 remotely powered repeaters.

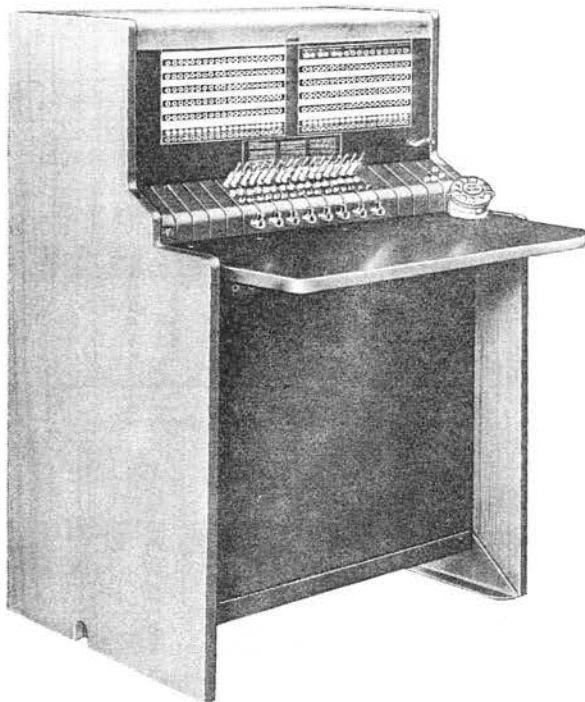
A filtered power supply is provided for the active units associated with each direction of transmission by a voltage regulator in the plug-in power selector. The voltage regulator in locally powered repeaters is supplied directly from -48 volt battery, while remotely powered repeaters are powered by sending simplex current over the cable pairs.

Office mounted repeater shelves are available, equipped to send simplex current out over the line in either direction, to power remote repeaters or to seal unsoldered splices on the cable pairs. One or two repeaters may be powered in series by using +130 volts, -48 and +130 volts, or -130 and +130 volts, as required. All power should be derived from quiet, filtered supplies.



## SWITCHBOARDS

(J59018) 556A PBX



A small, single position, nonmultiple switchboard for use with the 756A Dial PBX as a manual auxiliary. Two sections may be coupled together to be operated as a two-position switchboard. Connections are made manually between trunks and station lines, to trunks, to dial central offices, or to distant PBXs. The attendant establishes connections by inserting the plugs of the cord circuit into the jacks of the line or trunk desired. The stations are called directly by operating the ringing key instead of dialing.

When used with the 756A Dial PBX, the switchboard is arranged on a package basis for 60 dial station lines, three attendant trunks, six manual central office trunks, and eight cord circuits. Provisions are made for adding seven additional cord units and four additional central office trunks.

Power is supplied from the power plant of the associated dial PBX. Ringing current is supplied from the central office, whenever possible.

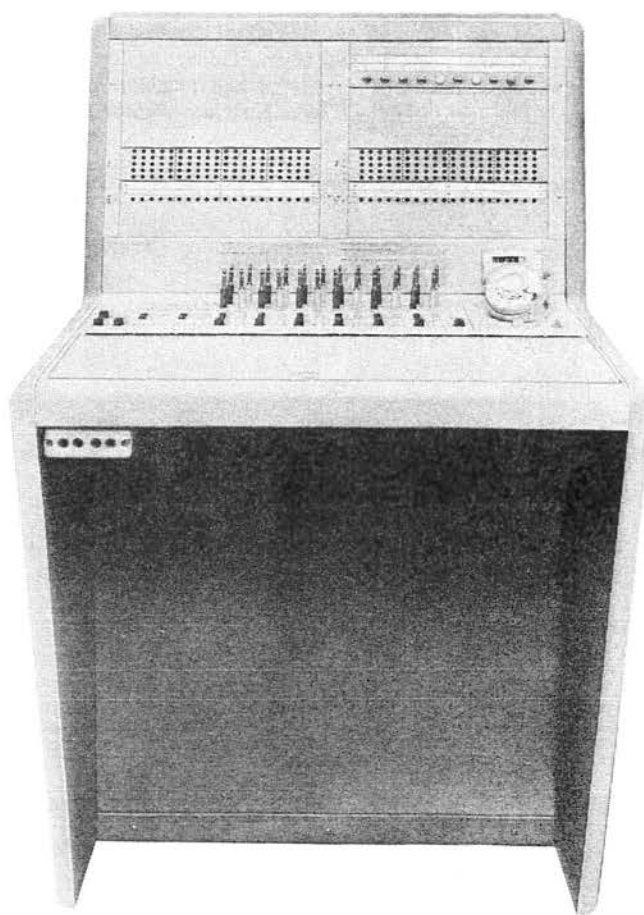
A convenient writing shelf is used instead of the conventional hinged keyshelf. All keys, plugs, and lamps have been located in a sloping panel in the face of the board at a convenient height, thus leaving a large unobstructed writing surface for clerical purposes.

This switchboard is suitable for built-in installation, particularly where the attendant must also serve as a receptionist. Available in oak or mahogany finish with walnut trim, or in unfinished panels that may be finished in the customers choice of colors. The dimensions are 3 feet 10-1/16 inches high by 2 feet 5-7/16 inches deep by 2 feet 5-3/8 inches wide with an approximate weight of 400 pounds.

**Capacity:**

Station lines	60
Central office and tie lines	10
Manual conference circuits	2
Cord circuits	15

(J53129) 608D PBX





## SWITCHBOARDS

## (J53129) 608D PBX (Continued)

This PBX is a cord switchboard designed for use on a multiple or nonmultiple basis as a manual PBX or as an attendant board, for use with a dial PBX. It may be arranged as a single position nonmultiple switchboard or as a three or four-panel multiple switchboard and can be used as a manual board or as an attendant position for a 701 type PBX system. Connections are established manually between trunks and station lines, or from station lines to trunks to central office or to distant PBXs as required.

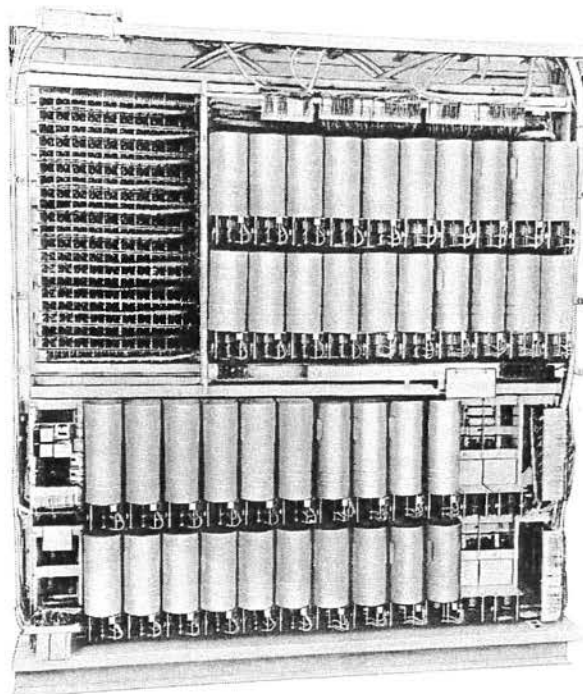
The 608D Switchboard offers slide-mounted equipment units, plug-in feeder cables and connector-ended jacks and an automatic transfer arrangement on all packaged positions. The circuit and equipment arrangements used in the 608D PBX shorten installation time and reduce maintenance effort.

Furnished in a Beige Gray or Medium Gray finish, the 608D PBX position without end panels is 48 inches high, 25 inches wide and 36 inches deep. The depth is measured from the front edge of the Keyshelf to the rear panel. End panels are 1-1/4 inches thick. Thirty inches of space should be provided in the rear of the position for maintenance. The weight of a single position is approximately 550 pounds.

Switchboard Capacity-Cord pairs per position 16.

Multiple	Station Lines	Trunk Jacks
Manual	560-1600	60-160
Dial	560-2400	120-480
<b>Nonmultiple</b>		
Manual	180-360	20-40
Dial	160-560	30-60

## (J58831) 701B PBX



The No. 701B PBX is a Step-by-Step dial switching system arranged for the completion of intercommunicating calls directly by dial with provisions for completing calls to the central office over trunks, and to other PBX's over the lines directly by dial. Incoming calls from the central office are completed by the attendant of the associated manual switchboard. Station users can dial certain codes which will give them access, without assistance from the attendant, to central office trunks, tie trunks, and code calls.

Consists of dial equipment mounted on switch frames, a manual cord type switchboard, trunk and tie line circuits mounted on relay racks, the necessary cross-mounting facilities, and a local power plant. The manual switchboard furnished may be either multiple or nonmultiple type. The type of attendant positions are determined by the number of stations and trunks necessary.

## SWITCHBOARDS

An equipment room is necessary for installation of this equipment, the size being determined by the equipment required.

## CAPACITY

Based on the use of one selector level for attendant trunks to the switchboard.

Type of Operation	Switchboard	Station Lines
2 digit	608 Type Nonmultiple	90
3 digit	608 Type Nonmultiple	300
3 digit	608 Type Multiple	600
3 digit	608 Type Multiple	999
4 digit	608 Type Multiple	2,000
4 digit	608 Type Multiple	3,200**
4 digit	608 Type Multiple	5,600**

When selector levels are used for Central Office trunks or for trunks to another PBX, the capacity of the 2 digit PBX will be reduced by 10 and the 3 digit PBX by 100 per level used.

\*\*608 Type may be used if station multiple is not required.

Optional pre-engineered 701B PBX equipment may be ordered for small and medium-size installations. Considerable flexibility in ordering makes this equipment readily adaptable to traffic and floor space limitations which may be encountered. The equipments range in size from 60 to 400 station lines, in steps of 20 lines and are intended only for initial installations. All installations are for 3-digit operation, so, in case of 60 or 80 line PBX's, this will permit growth with less conversion expense than would be required if selector-connectors and 2-digit operation were employed initially.

The pre-engineered equipments are associated with two basic codes. These codes are as follows:

J58832A — Dial PBX Switching Equipment

J58832B — Power Plant Equipments

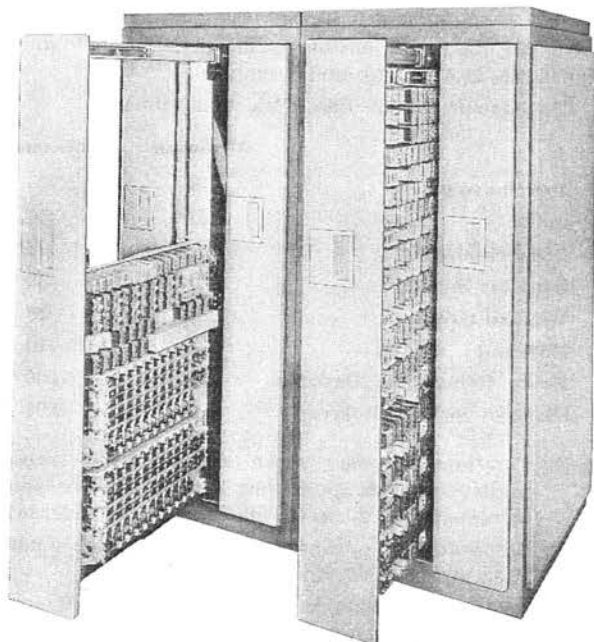
A 608D Attendant Switchboard may be ordered with the above coded equipment.





## SWITCHBOARDS

(J58830) 756A PBX



This Crossbar PBX is a two-digit dial system available in 40- or 60-line sizes and compatible with existing systems, trunks, and tie trunks. It can be installed in any type dial or manual central office area. This PBX is designed primarily to operate with telephone consoles. However, when required, the 556A or the 608D Switchboards may be used as attendant equipment. A batteryless power plant is provided and, if needed for emergency types of business, storage battery power plants may be furnished.

The system is contained in two beige or gray modules, each of which is 5 feet 3.625 inches high, 2 feet 6.125 inches deep, and 2 feet 3.250 inches wide.

**Capacity:**

	40 Line	60 Line
Station lines	30	50
Universal lines	10	10
Trunks (two-way C.O.)	10	10
Trunks (attendant)	3	3
Intercom paths	6	6
Links	16	16

(J58839) 758A PBX

The 758A PBX is a four-wire, manually controlled, 20- to 40-link crossbar, common control switching system having a capacity of 100 terminations for connecting Dial Pulse Register (2 maximum), Conference Line Circuits (2 maximum) and Line Circuits.

Line circuits are used to provide connections to:

- A. Stations having loop signaling by four-wire auxiliary circuits.
- B. Remote locations using E&M lead signaling by four-wire auxiliary circuits.
- C. Central offices via two-wire auxiliary circuits.

The 758A PBX offers the following operational features.

- A. **Four-wire switching**—Assures good transmission.
- B. **Complete attendant control**—Ability to screen and exercise priority on calls.
- C. **Conference capability**—Attendant control of conference call (Five parties per circuit or ten parties per circuit when two conference circuits are bridged).
- D. **All calls handled by key operation.**
- E. **Connect and supervisory signals**—Visual display of all lines in use as well as visual call progress.
- F. **Automatic identification**—Of all established connections (both line and conference line) with one console operation.
- G. **Attendant monitoring**—Always automatically effected when entering an established connection.
- H. **Automatic ringing or signaling**—Provided on all calls directed to PBX stations. All signaling from station to the console is also automatic.
- I. **Hold**—On all answered calls, if desired, with signal identification.
- J. **Dialing**—To central office by attendant.
- K. **Hand set or head set**—Operation by attendant.
- L. **Manual release**—Automatic calling party control but attendant has ability to manually release.
- M. **Direct station selection by attendant**—Calls set up by pushing two buttons.

The 758A PBX equipment is housed in one or two consoles and on floor-supported, single-sided, bulb-angle type frames 6 feet 10.5 inches high by 2 feet .625 inches wide. The console constitutes a cordless switchboard mounting the keys, lamps, and associated equipment. Except for the common control keys all other keys and lamps are mounted on a plug-in basis. The two-piece pedestal permits desk or stand up attendant operation.



## SWITCHBOARDS

**(J58839) 758B PBX**

The 758B PBX is a four-wire, two-digit, dial-controlled, 20- to 40-link crossbar, common control switching system having a capacity of 100 terminations.

A line circuit is used to provide external connection to four-wire auxiliary circuits to remote locations using E&M signaling.

A four-wire, two-way central office trunk is provided to connect four-wire central office facilities to four-wire line circuits.

Provision has been made on an optional basis for TOUCH-TONE receivers and TOUCH-TONE to dial pulse conversion.

The 758PBX offers the following operational features.

- A. **Four-wire switching**—Assures good transmission.
- B. **Dialing**—Arranged for dialing after receipt of a dial tone from a terminating PBX or switching system.
- C. **Hunting**—One- or two-way hunting over terminations in same ten groups.
- D. **Unattended operation.**
- E. **Busy tone trunk.**

The 758B system is used for interconnecting local and remote locations.

It is mounted on floor-supported, single-sided, bulb-angle type frames, 6 feet 10.5 inches high by 2.625 feet wide and can be optionally equipped with console type attendant equipment if desired, however, no standard arrangement is provided.

**(J58845) 758C PBX**

The 758C PBX is essentially a nonblocking, four-wire, crossbar, common control switching system capable of fully automatic tandem switching with senders. Manual switching and other attendant functions are performed at specially provided consoles.

The versatility of this system is such that it can connect to two- or four-wire facilities, dial or manual, crossbar or step-by-step systems and any other type system provided and can be interconnected to these systems by two- or four-wire metallic or four-wire carrier facilities. It has wideband data transmission capability and voice and wideband may be transmitted simultaneously.

The flexibility of this system permits operation with any numbering plan desired up to a maximum of 13 digits.

The system is arranged to receive TOUCH-TONE and/ or dial type pulses and outpulse dial type pulses. It may also be arranged to receive and outpulse multifrequency type pulsing. Station consoles can be equipped with 10, 12, or 16 button facilities to provide auxiliary functions, i.e., Priority and Preemption.

The capacity of the 758C PBX is as follows:

	Minimum	Maximum
Terminations	40	560
Links	20	100
Decoder-Marker	2	2
Register-Sender	10	30
Vertical Group	2	28
Horizontal Group	2	10
Route Relays per Decoder	40	100
Class of Service Relays	10	100

A. Terminations may serve station lines, trunks, or register-senders or no test trunks and are added in increments of 20 up to the maximum indicated.

B. Horizontal links may be increased in increments of 10 up to the maximum of 100.

The 758C system is arranged for operation with a negative 48-volt power plant.

All terminations in the system are switched at the same level. This level is an optimum level and is generally selected so as to require a minimum number of amplifiers in the overall system.

The system may be provided with two conference lines. The conference line enables the attendant to establish a conference between a maximum of five lines and trunks. When a 6- to 10-party conference is desired, the two conference lines may be connected together by the attendant.

The system is arranged with an alarm system to furnish visual and audible signals to indicate alarm conditions in the PBX. The alarm system indicates two classes of alarms (major and minor) and distinguishes between them.

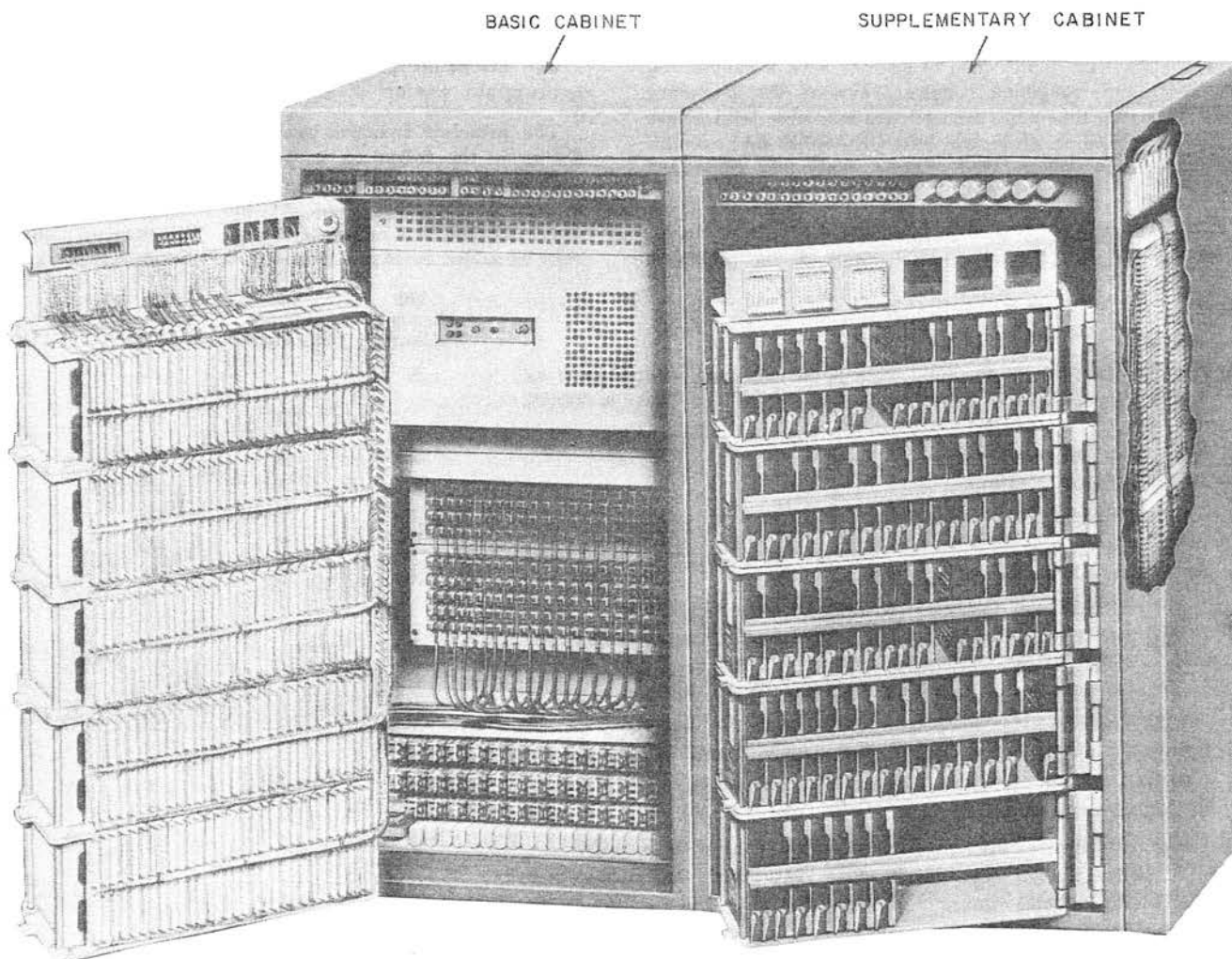
The switching equipment of the 758C PBX is arranged for relay rack mounting.

Due to the complex functions and extensive options of this system and associated equipment, the above description is expressed in general terms. For additional information, it is suggested that the engineering personnel listed on Page ii be contacted.



## SWITCHBOARDS

(J58860) 800A PBX



A compact, self-contained, electronic dial switching system for use on customer premises. It uses solid state devices and three-wire ferreed switches to perform its switching functions and provides for batteryless operation for station-to-station, trunk-to-station, and station-to-trunk calling operations. Service is provided in the range of 14 to 80 station lines and from 6 to 20 central office trunks and may be arranged for light or heavy traffic capacities with series 100, 200, or 300 PBX service. In addition, a number of individual service features may be provided on an optional basis.

The 800A PBX is packaged so that the number of station lines, traffic handling capacity, and PBX service features can readily be changed at the customer's location. To facilitate circuit and feature changes after the equipment is in service, the equipment in the basic and sup-

plementary cabinets is arranged so that it is easily accessible for replacement on a plug-in basis.

The switching network used in the 800A PBX is available in 30, 44, 60, and 80 line sizes, each with a light and heavy handling option.

The series 100 service packages provides basic PBX service while the series 200 and 300 service packages provide additional service features.

The 800A PBX equipment, except for the attendant position equipment, is contained in equipment cabinets specially designed to match the height and depth of a standard five-drawer office file cabinet with the expectation that they will be installed in a general office area and possibly in a line up of file cabinets. The cabinet is 2 feet 10 inches wide, 2 feet 4 inches deep and 4 feet 9 inches

## SWITCHBOARDS

## (J58860) 800A PBX (Continued)

high. One to three cabinets are required at each 800A installation depending upon optional features provided.

The 800A PBX is intended to operate with a number 14, 15, or 16 type telephone console providing the attendant functions. All telephone consoles are available with either a rotary dial or a 10-button TOUCH-TONE dial. A full capacity 800A system will require only one attendant position.

A number 608 type cord switchboard is available on an optional basis and may be used in place of the telephone

console as the attendant facility for series 100 service installations.

The attendant position equipment is described in the appropriate section of this publication.

The principle features provided by the 800A PBX are shown in the following table. The features provided by each service package (series 100, 200, or 300) are indicated in separate columns. The optional features available are also indicated in a separate column. The optional features may be added to either of the three service packages.

Feature	100 Service Package*	200 Service Package*	300 Service Package*	Optional Feature*
A. Non-DSS direct trunk type console or 608 type switchboard as attendant equipment with either rotary dial or TOUCH-TONE key unit	X			
B. Station-to-station calling	X	X	X	
C. Station-to-trunk calling	X	X	X	
D. Station hunting	X	X	X	
E. Code restrictions	X	X	X	
F. Automatic attendant intercept when:	X	X	X	
(a) Station or dial repeating trunk dials a vacant code				
(b) Restricted station or dial repeating tie trunk dials a restricted code				
(c) Station or dial repeating tie trunk times out on a register				
G. Emergency transfer on power failure or major alarm	X	X	X	
H. One-way splitting on incoming central office trunk call	X	X	X	
I. Attendant transfer with locked-in attendant recall	X	X		
J. Batteryless operation	X	X	X	
K. Night station service with flexible night conditions	X	X	X	
L. DSS direct trunk type console with integrated busy lamp field with either rotary dial or TOUCH-TONE key unit		X	X	
M. Direct station selection by attendant		X	X	
N. Camp-on with indication of camp-on call to busy station		X	X	
O. Attendant controlled conference		X	X	
P. Dial transfer with private consultation and add-on conference			X	
Q. Trunk answer from any station			X	
R. Tandem dialing—tie trunk to tie trunk				X
S. Transmission pad control on tandem dialing tie trunk to tie trunk—provided with four-wire operation only				X
T. TOUCH-TONE calling with C1 (junior) or A3 (senior) receiver				X
U. Dial conferencing				X
V. Recorded telephone dictation				X
W. Code calling				X
X. Access to paging				X
Y. Tie trunks—ringdown and dial repeating				X
Z. PBX interface trunk				X

\*The presence of an X in the 100, 200, or 300 column, but not in the option column, indicates option is provided with the feature package.

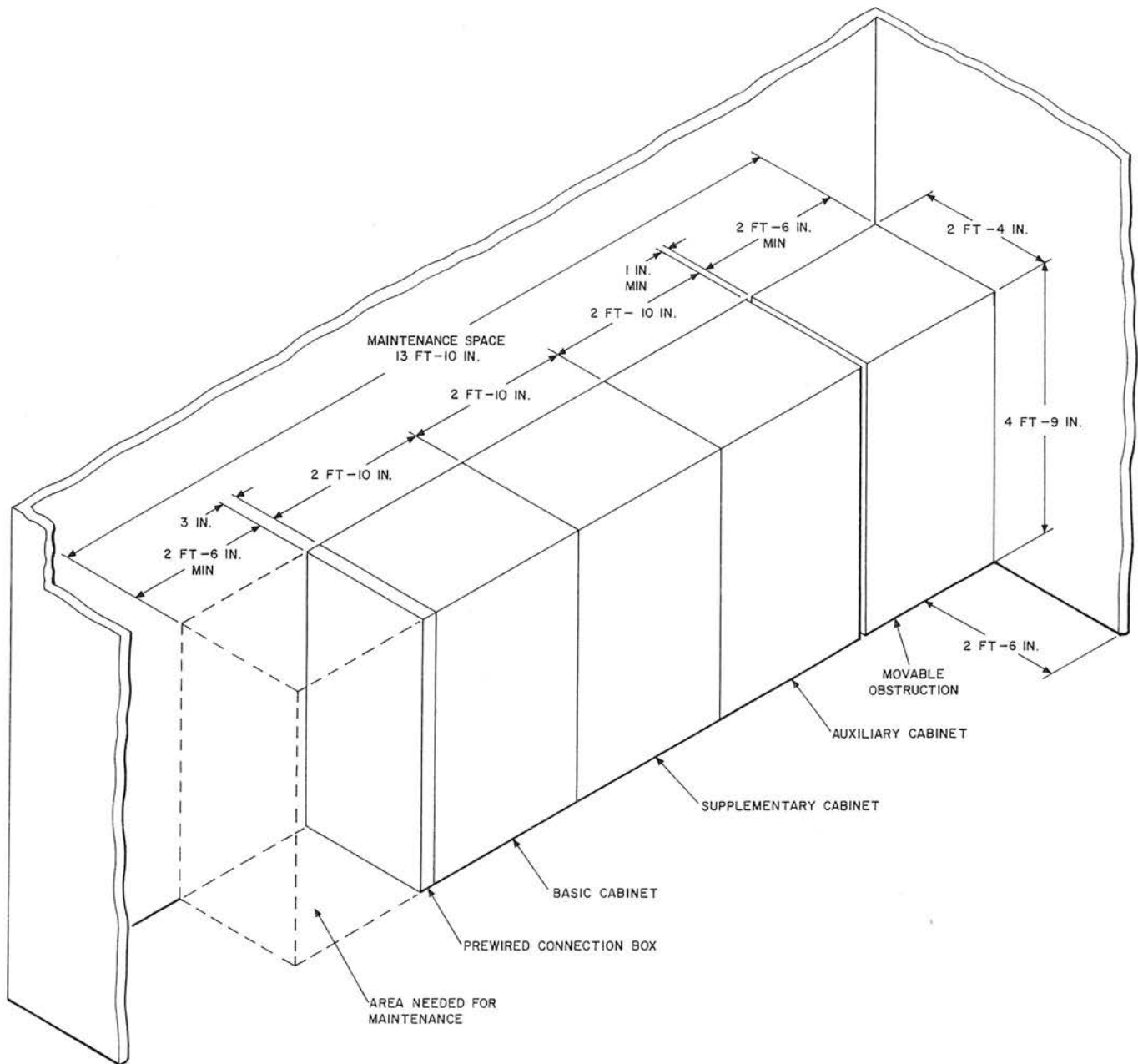
The presence of an X in the option column indicates the feature is available but is provided on a required basis only for 800A installations.



## SWITCHBOARDS

(J58860) 800A PBX (Continued)

The following illustrates a typical equipment layout.







## SYSTEMS

## (J44108) A2AT Video Transmission

The A2AT video system is a solid state wide band transmission system used for establishing short-haul channels for the transmission of television signals at video frequencies.

A video circuit, approximately 4.5 miles in length, would use a transmitting terminal and a receiving terminal. When circuit losses exceed certain parameters, one or more repeaters must be included in the system. One such repeater will permit the circuit to be extended to approximately 9 miles (two 4.5 mile sections):

The A2AT channels may be used to interconnect the broadcaster's various locations within an area and to connect the broadcaster to a master control point. Examples of these connections are loops between the master control point and outlying studios, remote program pickup points, or transmitter location. In addition, the A2AT system may be used to provide special closed circuit television facilities such as theater television. The system may also be used to provide the entrance link for microwave radio systems. In these applications only the picture portion of the television signal is carried; the sound portion is transmitted over standard program channels.

The term "video transmission" denotes the flat transmission of all frequencies in the range extending from 30 Hz to 4.5 MHz. This system will meet the requirements for the NTSC method of color television as well as for standard monochrome television when engineered within the recommended system lengths.

A2AT systems are comprised of a transmitting terminal, a receiving terminal, repeaters (when required), and line facilities to interconnect the units. Combinations of fixed and variable equalizers, plus amplifiers to compensate for loss incurred by the signal in passing through the line facilities and the equalizers, provide an essentially flat transmission medium for video program signals.

The terminal is designed for either balanced or unbalanced input. In its simplest form, the transmitter contains an Output Amplifier, one pad, one equalizer, and a dc regulator. The receiver includes an Input Amplifier to terminate the balanced video cable and provide the large longitudinal suppression required. In addition the receiver includes a variable equalizer, an Intermediate "A" Amplifier, a Clamper-Amplifier to reduce the low frequency distortion and noise, and various pads and equalizers. The repeater includes Input and Output amplifiers which provide termination for the video cable, and the necessary equalizers and amplifiers to give the desired signal characteristics and level at the input to the next line section.

Terminals and repeaters of the A2AT system require both plus and minus 24 volt power for operation. Transistorized voltage regulators, mounted on the rear of each unit, provide regulated, low-noise voltages of plus and minus 18 volts from the primary power. The regulators are provided with alarm and protection features. Primary dc input power for A2AT units may be obtained from plant battery, dc-to-dc converters, or ac rectifiers.



## SYSTEMS

## 3A Communications

The 3A Communication System is designed primarily for hospitals as a means of communication between nurse and patient. It is intended to operate as an adjunct to the hospital PBX system.

The system offers the following features:

- A. Patient-to-nurse or nurse-to-patient signaling and talking.
- B. Hands-free or hand set talking at control console and patient stations.
- C. Access to central office or PBX line at console and patient station.
- D. TOUCH-TONE or rotary dial operation.
- E. Direct station selection of patient stations at the control console.
- F. Privacy feature at patient station.
- G. Automatic selection and answering of patient calls from an optional remote answering station.
- H. Optional message waiting lamp and data jack at patient telephone set.
- I. Continuous audible and 120 ipm visual signaling on patient to nurse emergency calls from optional customer provided emergency key.
- J. Connection to optional customer-provided door lamp circuitry.

The system consists of a control console, up to 40 patient telephone sets, an equipment cabinet, and optional remote answering stations.

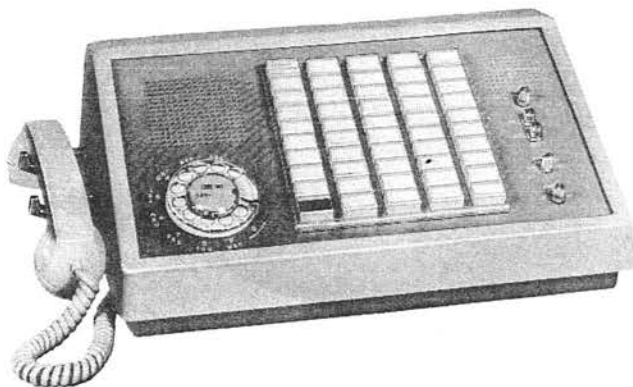


Fig. 1

## CONTROL CONSOLE

A J53038E console, Figure 1, is used as the control console for the 3A Communication System. Overall dimensions are 17.500 inches wide by 6.750 inches high by 12.250 inches deep.

The following is an ordering guide for the control console.

J53038E, List 1—Control console equipped with: rotary dial; two 645A Keys for 20 interphone station lines; one 645B Key for pickup, hold, and auxiliary signals; 2 sheets of P49K048 Designation Strips; and SPEAKERPHONE transmitter unit.

J53038E, List 2—Same as List 1 except equipped with a TOUCH-TONE dial.

J53038E, List 3—Ten-button, nonlocking, illuminated 645A Key module. One List 3 must be ordered separately for each ten additional interphone stations. A maximum of two 645A Keys can be added.

ED-1E023-50—Housing for control console. **Must be ordered separately and by group number for desired colors as follows:**

Group 1	Moss Green
Group 2	White
Group 3	Light Beige
Group 4	Light Gray

ED-1E010-50—Face plate assembly for control console. **Must be ordered separately and by group number for coordinated color and type of dial as follows:**

	Rotary Dial	TOUCH-TONE Dial
Light Green	Group 1	Group 5
Light Gray	Group 2	Group 6
Muted Beige	Group 3	Group 7
Charcoal Gray	Group 4	Group 8

G3AR Hand Set—Hand set for control console. **Must be ordered separately as follows:** Green (-51), White (-58), Beige (-60), and Gray (-61).

D200L Mounting Cord—Eight feet long for control console, plug-ended to accept a 100C Connector Cable. **Must be ordered separately (when required) as follows:** Green (-51), White (-58), Beige (-60), and Gray (-61).

A100C Connector Cable—Plug-ended on one end to accept D200L Mounting Cord and raw-ended on equipment cabinet end. **Must be ordered separately when required.** Available in 50, 100, and 200 foot single-ended lengths.

A100F Connector Cable—Plug-ended to plug directly into console and raw-ended for equipment cabinet terminations. **Must be ordered separately.** Available in 100 foot single-ended lengths, unless otherwise specified.

Note: One of the two connector cables listed above is required when the equipment cabinet is to be located beyond the limits of the D200L Mounting Cord.



## SYSTEMS

## 3A Communications (Continued)

**55BW-49 Control Unit**—Control unit for number 3 type SPEAKERPHONE service. A separate control unit must be ordered for the control console and for each remote answering station when equipped with SPEAKERPHONE.

**760AW Loudspeaker**—Loudspeaker for SPEAKERPHONE service. Must be ordered separately, specifying color, when required.

**D180006 Kit of Parts**—One required to modify each 55BW-49 Control Unit installed. Must be ordered separately.

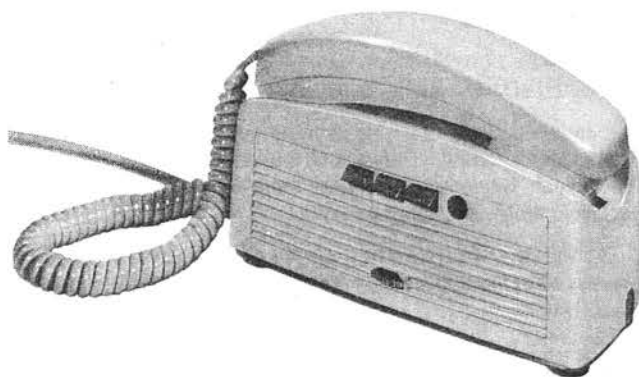


Fig. 2

## PATIENT STATION

The system has a capacity of 40 patient stations. The sets used at these locations are composed of a hand telephone set and a telephone base, Figure 2. The patient telephone set has the following features:

- A. Recall switch in hand telephone set.
- B. P1A Ringer with volume control wheel and optional OFF position.
- C. Button assembly with NURSE, PRIVATE, and NORMAL buttons.
- D. Nurse call cord.
- E. Message waiting lamp.
- F. Optional data jack.
- G. Microphone with one stage of amplification for hands-free operation on interphone calls.
- H. Loudspeaker for hands-free operation with volume control accessible through base of set.

The following is an ordering guide for the patient telephone set:

**AEW1 Telephone Base**—Telephone base for patient telephone set. Equipped with: one 6 foot M2ER nurse call cord; P21F291 (bedding) clamp; and one loose 53A Lamp. Available in -58 (white), -60 (Light beige), and -61 (Light gray).

**AEW2 Telephone Base**—Same as AEW1 except equipped with a message waiting lamp.

**220AW Hand Telephone Set**—Standard rotary dial TRIMLINE hand set. Available in the same colors as the telephone base. A 220AW Hand Set must be ordered separately for each telephone base. Cord for Hand Set must also be ordered separately.

**1220AW Hand Telephone Set**—Same as 220AW Hand Telephone Set except equipped with a TOUCH-TONE dial.

**M2ER Nurse Call Cord**—Available in 6 and 11 foot lengths and in the same colors as the telephone base. One must be ordered separately if two cords are required at a patient's telephone set.

**P21F291 Clamp**—Used to fasten nurse call cord to patient's bedding. Must be ordered in same quantity as separately ordered M2ER nurse call cords.

**D180032 Kit of Parts**—Installed locally to provide optional data jack in AEW1 and AEW2 telephone bases. Must be ordered separately.

**A12D Connector Cable**—A 12-conductor cable to connect patient telephone set to equipment cabinet. Available double-plug-ended in 30, 80, 100, and 200 foot lengths, and single-plug-ended in 13, 50, and 100 foot lengths.

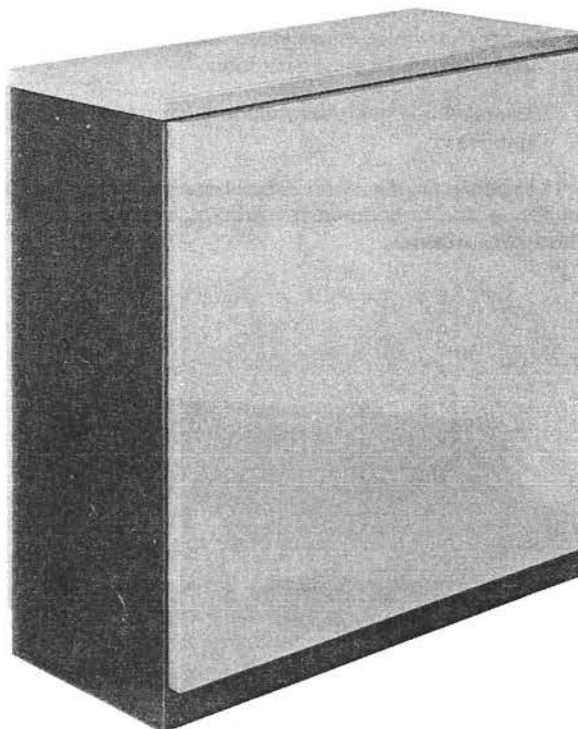


Fig. 3

## SYSTEMS

## 3A Communications (Continued)

## EQUIPMENT CABINET

The station and control circuit packs, power supply, and distribution terminal for the system are housed in a two-toned gray steel and fiberglass cabinet, Figure 3. The decor of the cabinet makes it suitable for installation in an office area or at the same location as the control console. Overall dimensions are 28.00 inches wide by 30.00 inches high by 13.750 inches deep. The following is an ordering guide for equipment cabinet.

J53038A-1, List 1—Equipment cabinet fully wired for 40 interphone lines. Equipped with: J86731D, List 1, A, and NP or 19C1W1 Power Supply; 57BW Control Unit; KS-15900, List 1 Interrupter and Circuit Packs AE1, AE2, and AE4. The interrupter and three circuit packs are shipped loose.

AE3 Circuit Pack—Station line circuit pack. One required for each interphone line. Must be ordered separately.

J53038A-1, List 2—Unit required in addition to List 1 to provide up to four 1A2 Key Telephone System central office or PBX line terminations at control console. One 400 type key telephone unit per central office or PBX line, and one KS-19175, List 1 Interrupter are also required and must be ordered separately.

## REMOTE ANSWERING STATION

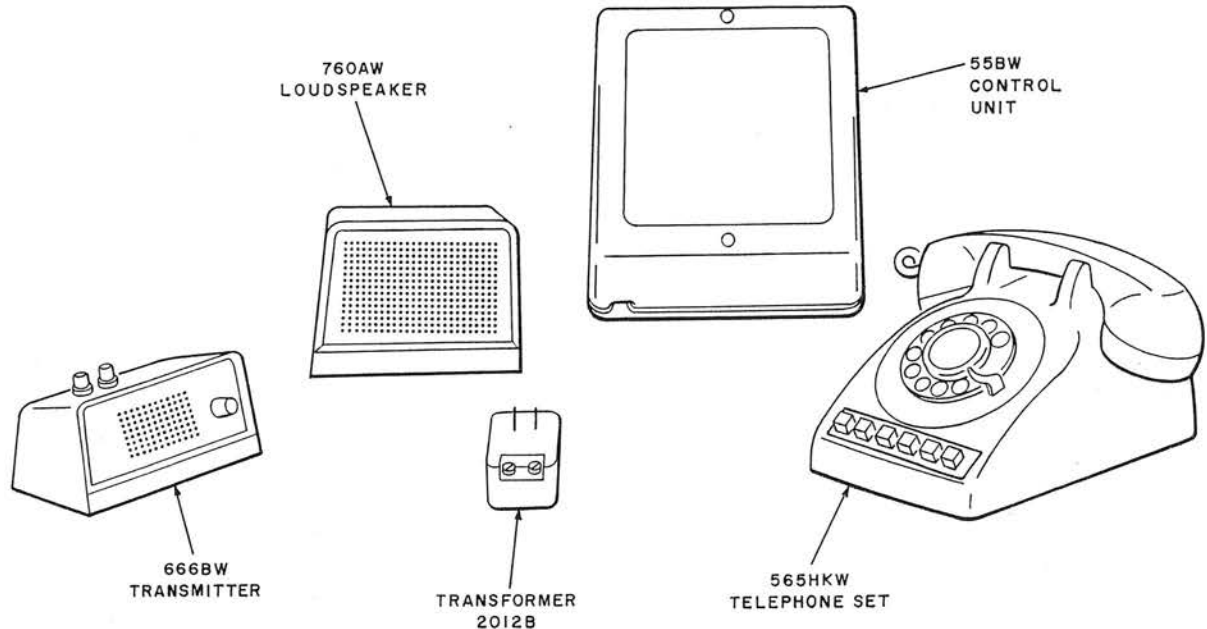
When desired, an optional remote answering station or stations can be provided to answer patient calls when the control console is unattended. Any standard telephone set wired for "A" lead control may be used as a remote answering station; however, if it is necessary to answer central office or PBX calls in addition to the interphone line, a key telephone set or equivalent must be used.

When SPEAKERPHONE is required at a remote answering station, the telephone set used must be wired for this option. A separate number 55BW-49 Control Unit must be ordered. Only one remote station may have SPEAKERPHONE.



## SYSTEMS

## 3B Speakerphone



The 3B Speakerphone is a transistorized voice switched microphone-speaker system which permits hands free conversation. An adjustable volume control for loudspeaker exclusion permits private conversation in a room without transmitting over a line.

A normal installation is composed of a 500SRW or 565HKW (six button) Telephone Set, 666BW Transmitter, 760AW Loudspeaker, 55BW-49 Control Unit, and a 2012B type transformer. A 110 volt outlet is required for power.

A conference system may be arranged by adding multiples of 670AW and 671AW type transmitter and 760AW Loudspeakers. This arrangement provides for adding up to five auxiliary transmitters and one additional loudspeaker to the system in order to improve the overall transmission performance of the system when it is used by a conference group.

The 3B Speakerphone System is available in the following colors: green, yellow, white, beige, and gray. Colors must be specified on the order.

A 148B-49 Adapter is available for converting plug-ended 6, 18, and 30-button type telephone sets, which if required must be specified on the order.

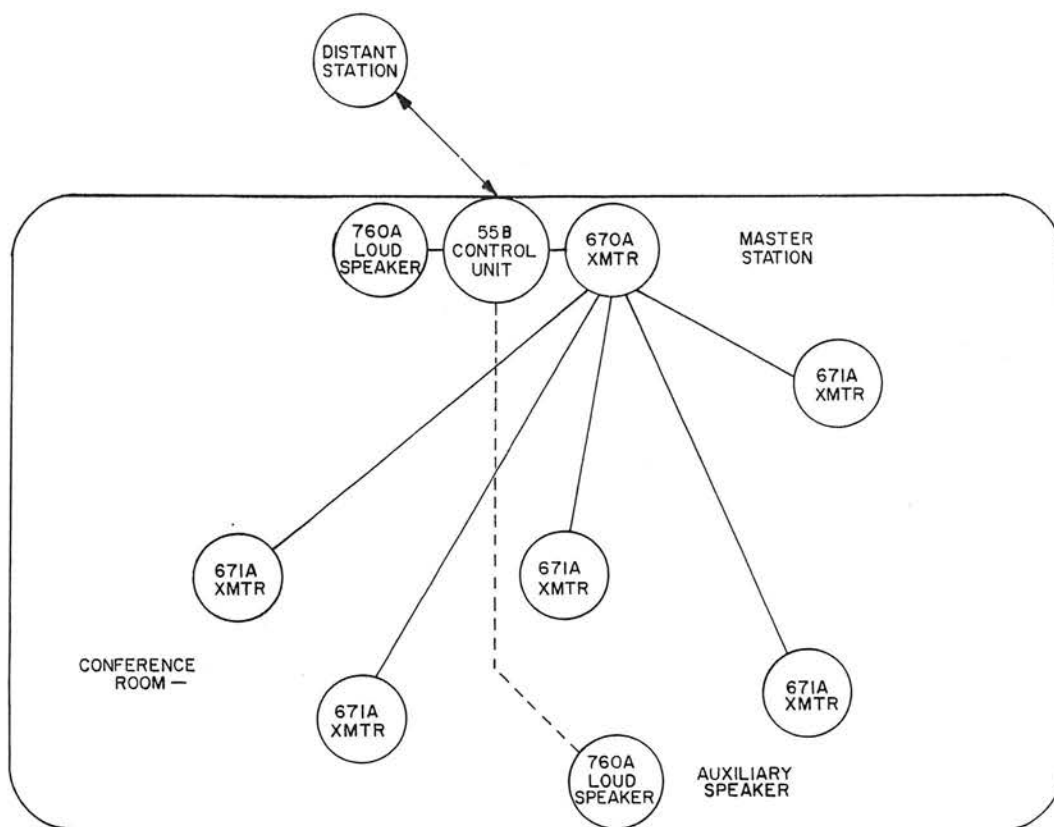
A 667B Transmitter is available for use with existing 630 or 631 type CALL DIRECTOR telephone set (providing space is available) which if required must be specified on the order.

A 630 or 631 type CALL DIRECTOR telephone set may be used with the system thus eliminating the 666BW Transmitter and standard telephone set which if required must be specified on the order.



## SYSTEMS

## 3B Speakerphone (Continued)



## SYSTEMS

## (J53026) 300 Switching

The 300 System is a crossbar type common control switching system designed primarily to meet the requirements of the Federal Aviation Agency (FAA) for use at Air Route Traffic Control Centers (ARTCC). The purpose of the system is to provide voice communication facilities between personnel at ARTCC's and to other allied agencies over regular telephone lines and also to connecting customer owned radio facilities. This system provides the means for attendants to communicate with each other over various types of land lines and customer owned radio equipment. The switching functions of this system are controlled by nonlocking push button keys at the attendant positions. More than one position can connect to the same line at the same time, but conference connections of more than one line to a position are not permitted except where combining of radio lines is provided. The switching equipment places no restriction on the number of calls that can be in progress at the same time. Transmission through the switching equipment is on a four-wire basis. The attendant equipment is designed to mount in various types of Non-Bell System consoles at ARTCC's.

The principal features of the 300 Switching System are as follows:

- A. Enables a position attendant to have direct access to a number of most wanted lines or air ground radio arrangements by merely operating a key (one per line).
- B. Enables a position attendant to have indirect access to any position, air ground radio line, or other line available to the center by the use of push button dialing.
- C. Permits incoming long line calls intended for a specific position in the ARTCC to be indicated at that position.
- D. Provides circuit arrangements to permit establishment of connections over dial, manual, or selective signaling lines or to air ground radio facilities either singly or in combination.
- E. Permits incoming dial selection of attendant positions with call storage and sequence answering, and with primary and secondary answering responsibility arrangement on certain lines.
- F. Provides position intercommunication on an override basis so that one position always has access to another even though it may be busy.
- G. Provides distinctive types of lamp indications at positions such as steady, flashing, fluttering, or winking to indicate the status of a line or call.
- H. Provides individual position blanking of lamp displays to eliminate any unnecessary flashing or steady lamp displays.
- I. Includes provisions for using the position telephone set with FAA provided radio equipment on an automatic transfer basis; for example, wire versus radio.
- J. Provides auxiliary lamp panels to indicate all or a limited number of calls to a center during light traffic periods.
- K. Includes an audible guard tone signal on dial lines while dialing is in progress.
- L. Includes arrangements to permit the origination and termination of a multiplicity of line and position connections established at the same time.
- M. Includes arrangements to prevent a position from establishing a connection to more than one line or position at the same time.
- N. Provides rapid service connections via push button dialing.
- O. Provides a means of establishing a radio combination or pattern by the operation of keys at an attendant position with access by direct access.
- P. Provides a means for an attendant, through the use of the push button dial, to set up radio lines in combination access via direct access.
- Q. Provides a means of assigning a fixed combination of radio lines to a position by soldered cross connections with access to the combination at the position via direct access.
- R. Provides a means of establishing combinations of radio lines with a push button dial from a remote point within the center for assignment to a position with access at the position via direct access.
- S. Provides a means of assigning single radio lines to a position with access at the position via direct access.
- T. Includes syllabic lamps to provide a visual indication of speech received from radio channels by a variation in the intensity of illumination.



## SYSTEMS

## (J53032) 301 Switching

The 301 Switching System is primarily for use at Nike-Zeus installations and for the Federal Aviation Agency (FAA) use at small Air Traffic Control (ATC) installations such as ATC towers and Instrument Flight Rule (IFR) rooms. The 301 Switching System provides a single line display lamp with nonlocking push button keys. Line connections are indicated by a flutter signal on the display lamp, a wink signal to indicate a hold, a 60 ipm flashing to indicate an incoming call signal, and a steady lamp to indicate a busy at other appearances. Multiple Access Attendant Telephone (MAAT) permits the attendant to talk on radio and override and/or hot (voice signaling) lines simultaneously when the pickup buttons for these lines are held depressed for the duration of the conversation. Connections can be made with two-wire lines, four-wire lines, and customer-provided radio equipment.

The attendant telephone circuit is provided with the following features:

- A. Low impedance connections to provide equalized transmission regardless of the number of simultaneous hot or override line terminations.
- B. Interconnections of a number of attendant positions on an override basis by establishing talking connections even though the calling party, the called party, or both, may be engaged in conversation on another line.

- C. Connection of a number of lines to a single position loudspeaker.
- D. Transfer of position receiver circuit to the loudspeaker when a hand microphone is used.
- E. Selectively transferring incoming override calls to the position loudspeaker.
- F. Separate recording facilities for the attendant receiver circuit and the position loudspeaker.
- G. Restricting preselected lines from recording except when the attendant is receiving an override call.

The equipment is arranged on a unit basis, i.e., each installation may be arranged for any combination of telephone lines, maintenance lines, station lines, etc., selected as desired and connected at the time of installation. At each installation there is a variety of consoles into which telephone keys, dial units, hand set units, jacks, connector cables, and connecting blocks are installed. There are equipment areas with special equipment for Nike-Zeus on which jacks, dials, and keys are mounted. At various locations telephone sets will be mounted which can be connected into the system. The dial, jack, and key units are provided with quick disconnect connectors to provide ready maintenance of units in consoles.

All relay units are surface-wired or local-cabled on 2-by 23-inch mounting plates or a multiple thereof unless otherwise specified.





## SYSTEMS

## (J53033) 302 Switching

The 302 Switching System provides telephone communications including central office, PBX, station lines, tie lines (for connecting to distant air traffic control facilities to effect coordination of flight plans, etc.) and ring down lines (used primarily for on-base coordination with facilities as the control tower, base operations, etc). The system also provides audible and visual communication between tower and station at Ground Control Approach (GCA) and Radar Control Approach (RAPCON) fixed on mobile installations.

The equipment for a typical fixed RAPCON installation is arranged on a unit basis, i.e., each installation, instead of being coded as a complete plan, may be arranged for

any combination of telephone lines and radio channels, selected as desired and connected at the time of installation. The exceptions to this are the GCA installation which is a 6 line, 3 position system and the mobile RAPCON installation which is a 12 line, 4 position system. In these cases, the equipment is provided in a 6-foot 8-inch steel cabinet.

There is a variety of consoles into which telephone key modules, apparatus units, dial modules, jacks, cable assemblies, etc. may be installed.

All cable assemblies are provided with quick disconnecting plugs and receptacles to provide for ready maintenance of the keys and for replacement of defective consoles.



## SYSTEMS

## (J1G013) 304 Switching

The 304 Switching System is designed to attain the following objectives:

- A. Simpler and more economical switching circuits by use of the bus bar bridging arrangement rather than the conventional four-wire bridging arrangement.
- B. Good transmission to all parties and more economical transmission by providing, in cases where the round-trip delay time is more than 20 milliseconds, a cancellation arrangement and sectionalized bus bars.
- C. A simple conference display at an attendant position which permits ready identification of connected parties.

The 304 Switching System provides push button control by an attendant of a four-wire cordless switching system. From a central console an attendant may set up point-to-point or conference connections, large or small, by simple operation of nonlocking keys. Arrangements are provided for the attendant to add or remove conferees at will and to control their talk-and-listen and listen-only capability. Lamp displays associated with each line permit the attendant to determine the immediate status of any line.

The system consists of a central control console (large console) or a desk-type turret (small console) and a push button controlled switching network with large conferencing capability. Crossbar techniques are used to establish conferencing paths by connecting the incoming lines to the verticals and using the horizontal links to connect the lines together. Each link may serve as a conferencing bus bar to which all parties in the system may be connected simultaneously. Point-to-point connections may also be set up on horizontal links. Equipment arrangements permit a user to equip a system with as many links as required in multiples of ten.

Two bus bar bridging arrangements are used. Lines having round-trip delays of 20 milliseconds or less may be connected to the simpler bridge. The other and more complex bridging arrangement is used where the delays are greater than 20 milliseconds. This helps to ensure good transmission to all parties with a minimum of transmission treatment.

Line equipment is provided for use with four-wire stations, ringdown and automatic trunks, central office lines, PBX tie trunks, and private lines arranged for SS1 signaling.

A patch panel provides means for patching any four-wire line facility to any associated four-wire line circuit. This panel also provides a means for monitoring and testing the transmit and receive loops of connected four-wire lines.

The following are the most important of a number of features included in the functions of the 304 Switching System:

- A. Termination of up to 200 four-wire lines or trunks on one console. (A limited number of two-wire lines may be included in this number.)
- B. The attendant may place all parties in the system into one single conference.
- C. The attendant may set up a number of conference calls at one time.
- D. The attendant may control the talk-and-listen or listen-only capability of each party on a connection.
- E. A patch panel permits access to drop and line terminations of lines and trunks.
- F. The status of each line may be determined by observing the console lamp display.
- G. Four conferences are continuously and readily identified by means of colored lamp indications. Parties to other point-to-point and conference connections may be determined by the state of the pickup key.
- H. A variety of signaling arrangements between the various line facilities and the 304 Switching System.
- I. Audible signals are used to alert the attendant.
- J. Prearranged conference arrangements.
- K. Attendant, push-to-talk operation via a handswitch or footswitch from either a hand set or a head set.
- L. Recorders, loudspeakers, or public address systems may be connected to conferences. (Loudspeakers are mounted on the console.)
- M. Attendant operation may be conducted from large or small consoles.
- N. The attendant may enter any conference connection at will.

All control is exercised manually from a console. Each termination, line or trunk, has an appearance in a field of pickup keys and lamps which extends across the full width of the upper section of the console. Two arrangements of indicator lamps associated with the pickup keys and lamps may be provided. One arrangement provides for an all-white conference link system, where only a white indicator lamp is used to indicate a connected line. The second arrangement provides a six-state indicator lamp display associated with each termination. The various states are indicated by different colors (red, white, yellow, amber, blue, and green), from which the attendant can tell the condition of any line or trunk. Four conferences are continuously and readily identified by means of the colored lamp indications. Common control keys and a dial are provided below the pickup keys and status indicators. The common control keys are used by the attendant to perform such functions as release, signal, audible signal, cutoff, etc. The dial is provided to permit dialing outgoing calls to PBXs or central offices. The TOUCH-TONE keying unit may be provided in place of the rotary dial.



## SYSTEMS

### (J1G013) 304 Switching (Continued)

The console can also mount up to four loudspeakers. A second console can provide dual control of the same lines.

A hangup hand set is positioned at the far left of the console. Jacks permit the use of a head set when desired. Push-to-talk capability via a handswitch or footswitch may also be provided.

Turret-type consoles designed to mount on the tables or desks are available for initial installations of 80 lines or less. The turrets include the same features as presented in the large console except only one loudspeaker is provided. Two turrets can be furnished to provide dual control.

## SYSTEMS

## (J1G022) 310 Switching

The 310 Switching System is a manually-controlled, short-haul direct access dispatch service system which provides for one to eight attendants to terminate, interconnect, or conference 2-wire and 4-wire telephone lines. Connections to lines and trunks are controlled from a cordless key type console. This system is used by right-of-way and similar customers for dispatching purposes.

A 310 system may be completely 2-wire or 4-wire or any combination of 2-wire and 4-wire lines. Connections between lines and trunks are established with a crossbar switch field with a capacity of up to 20 links and 100 lines. Provision for conferencing 2-wire, 4-wire or both 2- and 4-wire lines and trunks is provided.

The main components of the 310 system are the one to eight consoles and the supporting equipment consisting of wire spring relays, amplifiers, conference bridges, and one or more crossbar switches. The supporting equipment, except the crossbar switches, mounts on 7 foot (height) 23 inch (width) frames. Crossbar switches mount on 7 foot (height) 36 inch (width) frames.

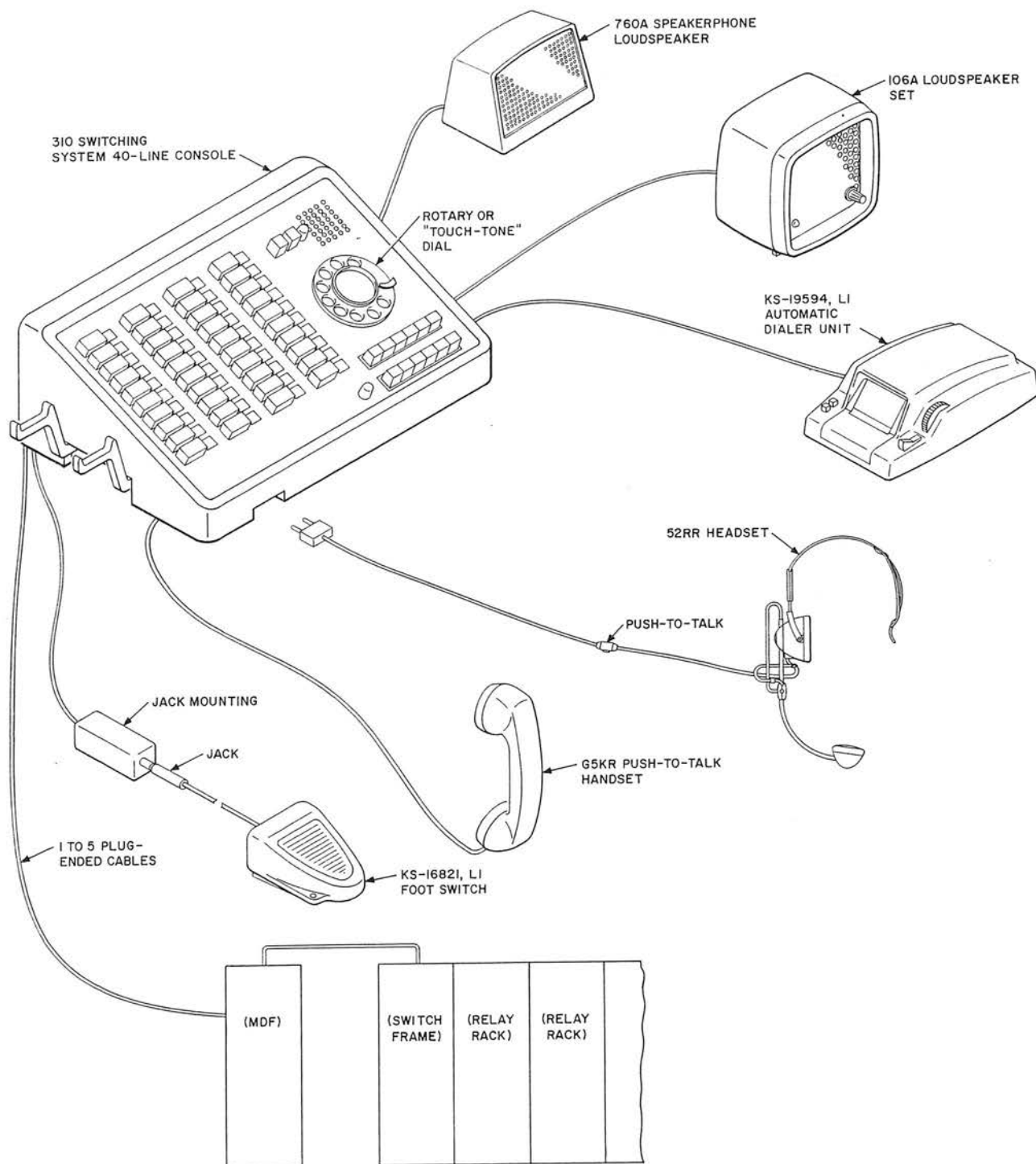
Attendant positions are of the console type and are available in 40- and 100-line sizes. The 40-line unit is normally supplied equipped for 20 lines and the 100-line console is supplied for 40 lines. The 40-line console is approximately 12 by 17 by 6-1/2 inches high with an additional 3 inches required on the left side for the handset. The 100-line console is approximately 12 by 31-1/2 by 6-1/2 inches high with an additional 3 inches required on the left end for the handset. When either console is flush-mounted, the handset is not mounted on the left side of the console, but is mounted separately on a handset mounting.

The 310 Switching System requires only one DC power supply. This power supply should be regulated 48 volts (45 to 50 volts) and should be engineered for the desired reserve in the normal manner. Lamps require a 115 volt AC source which can be supplied from commercial power or an optional solid-state inverter powered by the 48 volt DC.

## SYSTEMS

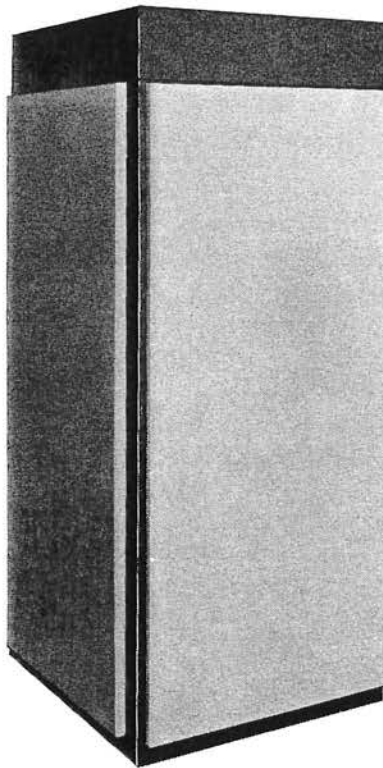
(J1G022) 310 Switching (Continued)

The following illustrates a typical equipment layout for a 40-line Console, 310 Switching System.



## SYSTEMS

## (J53035) 400 Switching



The 400 Switching System is a two-digit crossbar type dial system. The basic 400 Switching System is a packaged unit with six talking paths and 20 station lines. It is expandable to 30 or 40 station lines by adding plug-in, ten-line supplementary units. The system has a self contained batteryless power plant operating on 115 volts ac; it supplies +48, -48, and +10 volts ac. Dial tone, busy tone, automatic ringing, and audible ringing also are supplied. Calls between stations associated with this system are made by two-digit dial selection over six talking paths. Exchange and toll calls to and from stations which do not have direct termination of central office lines may be made through a primary answering station (six button key station or a CALL DIRECTOR set) by the use of an add-on feature.

The 400 Switching System is contained in a single cabinet 27-1/2 inches wide by 30-1/2 inches deep by 63-5/8 inches high. The apparatus within the cabinet is mounted on three vertical sliding type racks, each supported at the top and bottom by telescoping tracks. Each slide is readily released when a slide is to be withdrawn. The three slides are provided with an interlocking device so that only one slide may be pulled out at a time, thus the weight distribution is such that the cabinet need not be anchored to prevent tipping. Each slide has a capacity for twenty-six 2 inch by 23 inch mounting plates. Plug-in cables are furnished to interconnect the three slide units within the cabinet. There is space within the cabinet for providing combinations of Direct Station Selection, TOUCH-TONE Calling, and additional add-on units on an optional basis.





## SYSTEMS

## Crash Alarm and Command Conference

The Crash Alarm and Command Conference Systems are designed for use at air fields of the Armed Forces. The systems enable a responsible person at one of several control stations to communicate without delay with a group of subordinate stations over a telephone conference connection. With systems associated with PBX's, the subordinate stations will usually be regular PBX extension stations. When the control station originates a conference connection either of two conditions prevail: (1) With the crash alarm circuit, each station is cut off from the regular PBX line equipment and connected immediately to the conference circuit; (2) With the command conference circuit, an audible tone, which may be heard above the conversation, is applied to the established connection and the station is not cut off, but when the regular connection is released in the normal manner, the station is immediately connected to the conference circuit. With the crash alarm circuit, a group of lamps is provided at the control station, one for each station which lights while its associated station is on the conference circuit with its hand set off the mounting. These lamps are not provided with the command conference circuit.

The principal features of the crash alarm and command conference circuits are as follows:

- A. Audible signal is provided on incoming calls to the control station.
- B. When two control stations or control and subcontrol stations are provided, busy lamps are provided at the control and subcontrol stations.
- C. Provision is made for holding the PBX line.
- D. A supervisory lamp per called station is provided at each control or subcontrol station.
- E. Any called station may disconnect during the conference, except for the crash alarm circuit for use with 551, 555, 604 and other low voltage PBX's.
- F. Called stations which disconnect during the conference may be recalled before the end of the conference.
- G. On the crash alarm systems independent of the PBX, provision is made for a continuous electrical test of all lines to subordinate stations.

The crash alarm and command conference systems consist generally of one or more control, or control and subcontrol stations, and a group of subordinate stations. Except for the crash alarm system with continuous line test, the subordinate stations may be regular PBX extension stations.

With the exception of the low voltage circuits, all of the systems are arranged to couple the subordinate stations to the control station by means of repeating coils. The subordinate station repeating coils are connected in parallel groups of three coils in series. Up to a maximum of 21 stations may be connected in this manner to form a branch, and in larger systems, with more than 21 subordinate stations, the branches are connected in series and then through repeating coils to the control station. When there are two or more control stations, the control station repeating coils are connected in series. In the case of crash alarm systems for use with 551, 555, 604 and other low voltage PBX's, the subordinate stations are connected in multiple.

The capacities of these systems are as follows:

- A. Crash alarm circuit for use with 605, 701, 711, and other 48-volt PBX's.

- (1) 63 subordinate stations and one control station.
- (2) 62 subordinate stations and one control with one subcontrol station.
- (3) 36 subordinate stations and two control stations.
- (4) 30 subordinate stations and three control stations.

- B. Command conference circuit

- (1) 63 subordinate stations and one control station.
- (2) 62 subordinate stations and one control station with one subcontrol station.
- (3) 36 subordinate stations and two control stations.
- (4) 30 subordinate stations and three control stations.

- C. Crash alarm circuit arranged for continuous electrical test of lines.

- (1) 147 subordinate stations and one control station.
- (2) 63 subordinate stations and two control stations.
- (3) A total of 24 subordinate or control stations.

- D. Crash alarm circuit for use with 551, 555, 604, and other 24-volt PBX's.

- (1) Ten subordinate stations and one control station.
- (2) Ten subordinate stations and two control stations.
- (3) Ten subordinate stations and three control stations.



## SYSTEMS

## (J95421) Group Alerting

The Group Alerting System is designed to convert, on a temporary basis, a telephone system, or a part of it, to an emergency alerting system. Its purpose is to assure that certain personnel are notified (alerted) of a given situation so that they may take proper action.

An alert is initiated from the control station by dial pulses. The central office equipment, upon receiving the code pulses from the control station, makes a busy test on the lines to be alerted and rings the lines found idle. The lines found busy will be "camped-on" and receive 14 seconds of group alerting tone. This informs the person on the line that an alert is in progress and that by hanging up, he will receive the alert. If the user does not hang up before the tone times out, the line will be "camped-on" and will be connected to the alert when it becomes idle provided that the alert has not been terminated. The alerted lines that are idle are transferred from regular telephone service to the group alerting system equipment.

When the alerted telephone is answered and the announcement received, hanging up the telephone restores its line to the regular telephone network. The alert may be terminated manually by the control station or it will terminate automatically at the end of the timing interval set in the central office equipment. An alert period may be extended by redialing from the control station prior to the automatic time-out.

All transmission is one way from the control station to the alerted stations. The alerted stations cannot communicate with each other or with the control stations.

A maximum of 480 lines may be connected to one system. These lines may be individual, full selective, or eight-party semiselective, with a restriction of one alert station per party line.