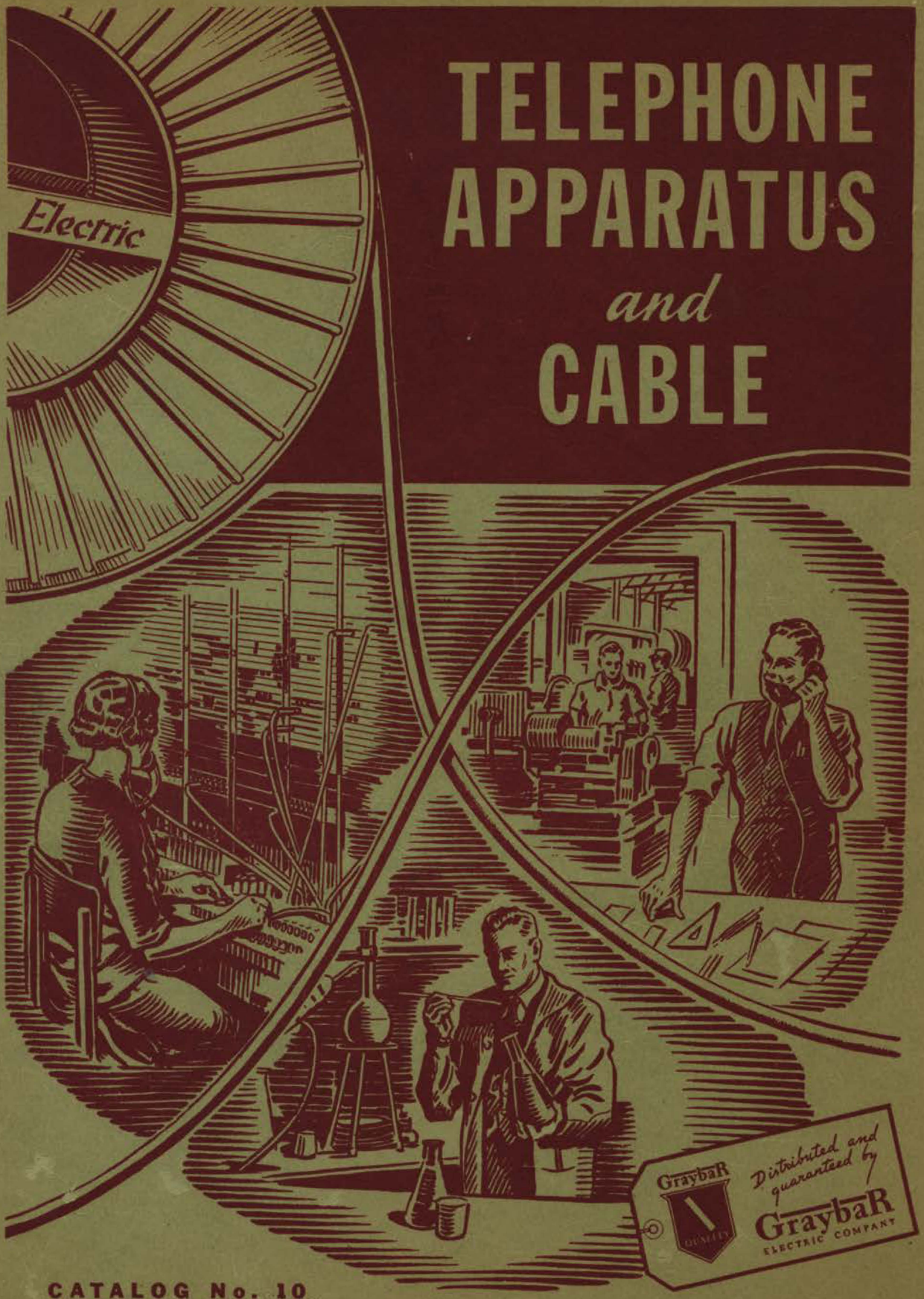
TELEPHONE APPARATUS *and* CABLE



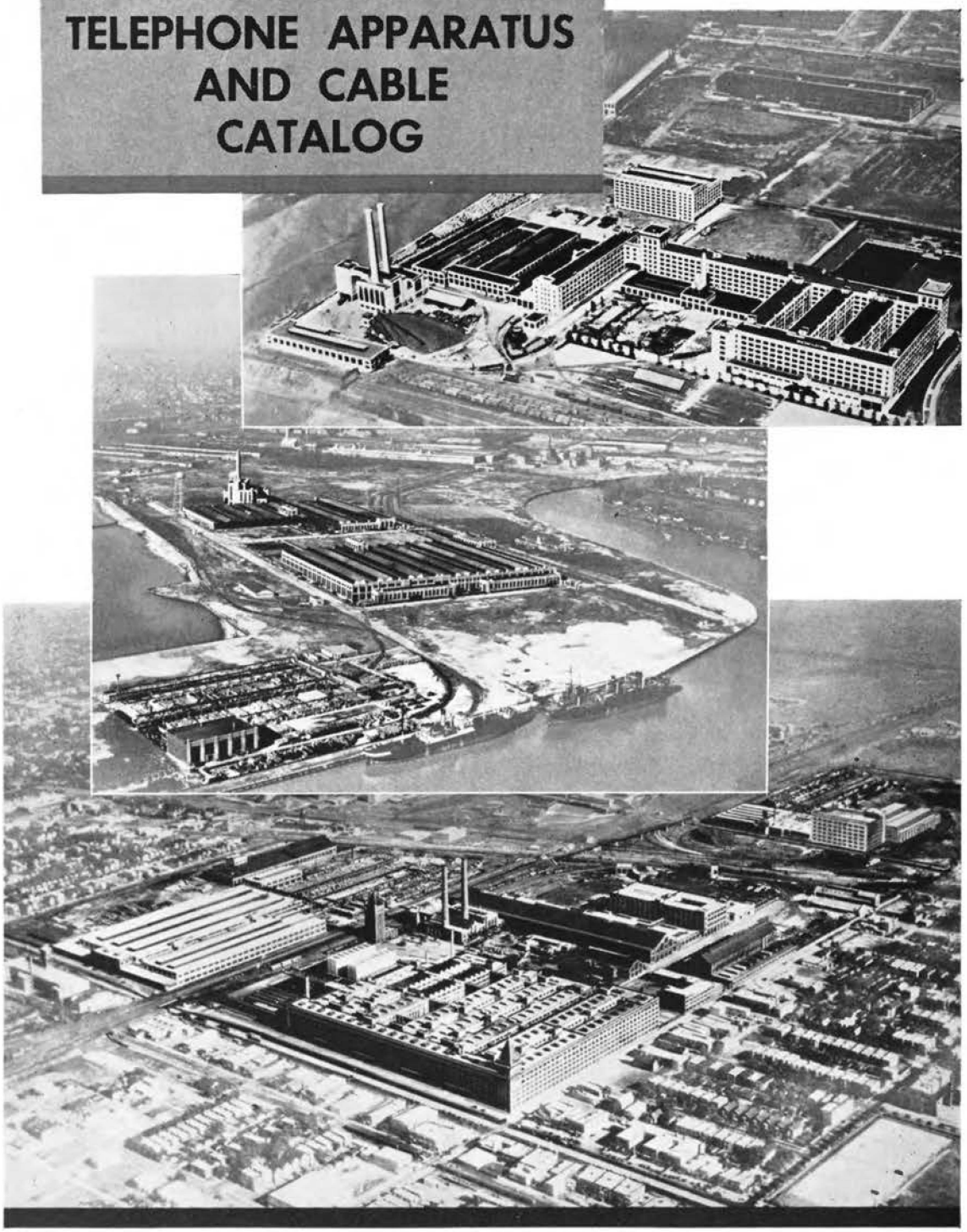
CATALOG No. 10

Western Electric

TCI Library: www.telephonecollectors.info

Western Electric

TELEPHONE APPARATUS AND CABLE CATALOG



Airplane views of plants in which Western Electric Telephone Apparatus and Cable are manufactured: (top) Kearny Works, Kearny, New Jersey, (center) Point Breeze Works, Point Breeze, Maryland, (bottom) Hawthorne Works, Chicago, Illinois

(See last page for list of distributors)

Copyright, 1930, 1935, WESTERN ELECTRIC COMPANY, INCORPORATED
Copyright, 1939, WESTERN ELECTRIC COMPANY, INCORPORATED

TCI Library: www.telephonecollectors.info

Western Electric Company

History

THE Western Electric Company was organized in 1881 as the successor to the Western Electric Manufacturing Company of Chicago, manufacturers of telephone apparatus. This was just five years after Alexander Graham Bell invented the telephone. The Western Electric Company is therefore the oldest electrical manufacturer in the United States continuously engaged in the production of electrical apparatus.

Factory, Products, Distribution

Telephones, telephone central office equipment and telephone cable have always been the chief products of this company. The main factory which covers over 203 acres, is located at Hawthorne, Illinois, six miles from the center of Chicago. Another plant of 141 acres, is located at Kearny, N. J., a third plant of 167 acres located at Point Breeze, Baltimore, Md., and a fourth, the Queensboro Long Island Works, occupies 25 acres. These manufacturing facilities combined with a centralized system of purchasing and inspection enable the Western Electric Company to produce at all times telephone equipment which sets the standard in the field of communication.

Western Electric telephone products are given world-wide distribution through selling organizations maintaining branch houses in the principal business centers. This means that products of this company are readily available everywhere together with the services of specialists who understand the use and application of these products and can supply definite and comprehensive information and assistance to the prospective customer. The worth of such extensive service and cooperation has proven of great value on innumerable occasions.

Accessibility of Permanent Sources of Supply

An important factor to be considered in the purchase of telephone apparatus is the certainty of a permanent source of supply initially, as well as for repair and additional parts. Purchasers of Western Electric equipment are assured of this advantage. As advances in the art of communication make it necessary to develop new types of apparatus, the improved or newly developed equipment, when ready for the market, is made immediately available through the Western Electric Company's domestic and foreign distributors.

Prices

Prices have purposely been omitted from this catalog. They are always as low as possible consistent with the high grade of material, expert workmanship and excellent performance which form the basis of the Western Electric Company's manufacturing policy.

Due to market fluctuations, prices on apparatus listed and on any special equipment that we are in a position to furnish will vary from time to time. Quotations will be furnished upon application to the nearest distributing house (see list on last page of this catalog). Inquiries should clearly describe the apparatus and quantity desired.

Suggestions when Ordering Telephone Apparatus Parts and Supplies

In order to avoid mistakes in ordering parts, please furnish the following information:

1st Quantity desired.
2nd "P" number of the parts required when this information is available.
3rd Name of the part or apparatus required.
4th Code number of the part or the apparatus on or in which the part is used.
5th Page number and date or number of the catalog in which the part appears.

If the part desired is not shown in the catalog, please furnish the following information:

1st Quantity desired.
2nd Name of apparatus or part.
3rd Code number of part or the apparatus on or in which the part is used.
4th If possible, submit a sample of the part desired.

Be sure to place a tag on the sample, giving your name, the name of your company and description of the part wanted: for example: "3 Contact Springs for No. 48A Generator, per sample attached." Address your inquiry or order to any Western Electric distributor, preferably the one located nearest you. Location of distributors will be found on the last page of this publication.

This catalog replaces the No. 9 Edition.

TCI Library: www.telephonecollectors.info

APPARATUS BLANKS



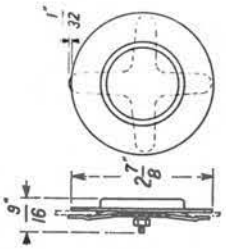
No. 32B Apparatus Blank



No. 39B Apparatus Blank



No. 42B Apparatus Blank



No. 50B Apparatus Blank



No. 85A Apparatus Blank

Code No.	Material	Finish	Used
28A	Metal	Black	In unequipped positions of the No. 89D Signal Mountings on the No. 105B Magneto Switchboard.
32B	Metal	Black	In unequipped cord circuit positions of No. 1 Type Switchboards in No. 13 Lamp Socket Drillings.
33B	Metal	Black	In unequipped positions of the No. 109 Plug. Recommended in place of the No. 26 Type.
38B	Metal	Black	In unequipped cord circuit positions for plugging drillings for Nos. 49, 110, 111 and 117 Plugs and plugs of similar size.
39B	Metal	Black	In unequipped positions of Nos. 2, 8, 55, 56, 60, 61, 65, 71, 72, 91, 99, 102, 103, 104, 107, 108, 109, 110, 117, 118, 123, 124, 126, 127, 128, 134, 136, 139, 140, 151, 153, 154, 155, 156, 159, 160, 165, 172, 174, 175, 176, 177, 178, 184, 188, 189, 215 and similar type Jacks. Recommended in place of No. 12 Type.
40B	Metal	Black	For plugging unequipped drillings for the Nos. 16, 33 or 34 Lamp Sockets and No. 92B Keys in the piling rail of toll switchboards arranged for pneumatic tube equipment. Recommended in place of the No. 6 Type.
42B	Metal	Black	In unequipped No. 13 Lamp Socket drillings and Nos. 22, 27, 32, 37, 53, 65 and 78 Plug drillings. Recommended in place of the No. 7 Type.
50B	Metal	Black	On Nos. 553 or 653 Type Subscriber Sets to cover unequipped dial positions when sets are used in manual service.
50C-3	Metal	Black	On Nos. 50 or 150 Type Coin Collectors to cover unequipped dial position when collector is used in manual service.
50C-13	Oxidized	Bronze	Same as 50C-3.
50E	Metal	Black	To clamp on Nos. 51 or 151 and similar type Desk Stands to cover unequipped dial position when stand is used in manual service. Has a weight to compensate for weight of dial. Also provided with an insulating block having two screw terminals to which may be attached the leads which are ordinarily connected to the dial.
*50H-3	Metal	Black	On "B" and "E" Type Handset Mountings to cover unequipped dial position when mountings are used in manual service. Has card holder.
*50J-3	Metal	Black	On "D" Type Handset Mounting to cover unequipped dial position when mounting is used in manual service. Has card holder.
*82A-3	Metal	Black	On H1-3, H4-3 and H5-3 Telephone Set Mountings.
85A	Metal	Black	Used in place of the dial on 320 Type Telephone Sets.

* May also be obtained in Ivory, Old Brass, Statuary Bronze, Oxidized Silver, Dark Gold, Old Rose, Dark Blue, Gray Green and Pekin Red Finish.

TCI Library: www.telephonecollectors.info

BACKBOARDS



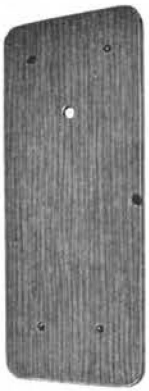
No. 83A Backboard



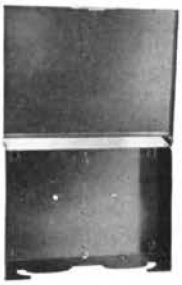
No. 136C Backboard



No. 146A Backboard



No. 148A Backboard



No. 159AW Backboard

Code No.	Description and Principal Use	Overall Dimensions, Ins.
79	Wood, black finish. Used to facilitate mounting No. 58 Type Protectors on brick or stone walls	12½ x 5 x 13/16
82A	Wood. For mounting miscellaneous apparatus in the H202 Cable Terminal Section. Provided with screws and washers for mounting	37 x 6¾ x ¾
82B	Wood. For mounting miscellaneous apparatus in the H303 and K606 Cable Terminal Sections. Provided with screws and washers for mounting	54⅞ x 9⅜ x ¾
82C	Wood. For use in K606 Cable Terminal Section to cover exposed ends of the wiring rods and also for mounting miscellaneous apparatus. Provided with screws, nuts and washers for mounting	55⅝ x 12 x ¾
82D	Wood. For mounting miscellaneous apparatus in H102 Cable Terminal Section. Provided with screws and washers for mounting	21⅜ x 6¾ x ¾
83A	Wood. Equipped with a distributing ring at each end. For mounting "H" Type Binding Post Chambers and "L" Type Cable Terminal Sections. Part of LA16 Cable Terminal	18⅜ x 11¼ x 2⅞
83B	Same as 83A, except forms part of LA26 Cable Terminal	25⅞ x 11¼ x 2⅞
83C	Same as 83A, except forms part of LA51 Cable Terminal	45⅜ x 11¼ x 2⅞
84A	Wood. Intended for use in LA16 Cable Terminal Sections	18⅜ x 14¼ x 2⅞
84B	Wood. Intended for use in LA26 Cable Terminal Sections	25⅞ x 14¼ x 2⅞
84C	Wood. Intended for use in LA51 Cable Terminal Sections	45⅜ x 14¼ x 2⅞
136B	Wood, oak finish. Also furnished in walnut or in birch with ebonized finish when specified. Arranged with battery box for 3 dry cells. Used with No. 1293 and No. 1305 Type Telephone Sets. Top of battery box forms writing shelf	26 x 8⅛ x 7 13/16
136C	Wood, black finish. Also furnished in oak when specified. Arranged with battery box for 3 dry cells. Used with Nos. 1293, 1533, 1553 and 1653 Type Telephone Sets. Top of battery box forms a writing shelf	24 5/16 x 8⅛ x 7⅛
144C	Wood, black finish. Intended for mounting a No. 150 Type Coin Collector and a No. 334, 534, 584 or 684 Type Subscriber Set. The coin collector mounts above the subscriber set. Replaces the Nos. 144B and C Backboards	27 5/16 x 7¼ x ¾
146A	Black finished metal Backboard with writing shelf; for use with Nos. 533, 553 and 653 Type Subscriber Sets where a writing shelf is required. Replaces the No. 143A Backboard	9½ x 7½ x 6 3/64
147A	Wood, black finish. Drilled for Nos. 333, 334, 533, 534, 553, 554, 634 and 653 Type Subscriber Sets where it is desired to insulate them or facilitate mounting on brick or irregular surfaces	9 9/16 x 7⅛ x 9/16
148A	Wood, black finish. Drilled for Nos. 333, 334, 533, 534, 553, 554, 634, 653 and 684 Type Subscriber Sets together with a No. 7J Coin Collector; also drilled for use with Nos. 333, 533 and 553 Type Subscriber Sets in combination with a No. 146A Backboard	18 13/16 x 7⅛ x 9/16

TCI Library: www.telephonecollectors.info

BACKBOARDS—*Continued*

Code No.	Description and Principal Use	Overall Dimensions, Ins.
154A	Black finished wood Backboard. Intended for use in mounting the No. 584 and No. 684 Type Subscriber Sets on brick walls and metal partitions	7 11/16 x 6 x 5/8
155A	Black finished metal plate. For mounting the No. 534 and No. 634 Type Subscriber Sets on baseboards. Provided with tapped holes and screws for mounting subscriber set to backboard and holes for mounting backboard to baseboard	12 3/8 x 6 13/16 x 3/64
156A	Black finished metal backboard. Intended for use in mounting the No. 584 and No. 684 Type Subscriber Sets on baseboards. Provided with tapped holes and screws for mounting subscriber set to backboard and holes for mounting backboard to baseboard	10 1/2 x 5 5/8 x 3/64
159AW	Steel box and hinged cover with slots in the bottom end of the box to permit the gongs to protrude. A conduit knockout is also provided in the bottom of the box. Intended for use in housing the Nos. 342J and 342K Subscriber Sets	10 31/32 x 4 7/8 x 14 5/16
163A	A phenol fibre block. Intended to mount 14A and 20A type indicators on plaster or tile walls	4 7/32 x 2 7/32 x 1/4
164A	Black finished wood Backboard. For mounting telephone directory hangers or C or G Type Handset Mountings on surfaces which do not permit secure mounting of the hangers or handset mountings directly on the surfaces. Replaces the No. 157A	4 1/2 x 3 x 3/4

BATTERY BOXES

Code No.	Dry Cell Capacity	Dimensions Inches
1A	3 No. 6 Cells	3 1/4 x 7 15/32 x 9 7/16
2A	4 No. 6 Cells	3 7/32 x 7 3/8 x 12 19/64
2B	9 No. 6 Cells	5 23/32 x 7 5/8 x 14 7/32

The Nos. 1 and 2 Type Battery Boxes provide a neat and convenient means of mounting dry cells and protecting them from injury. These boxes are made of sheet metal finished with black japan and are lined with insulating material. Pear shaped mounting slots in the back of the boxes provide an easy means of mounting on vertical surfaces and in such a way that they are readily removable. This feature permits of their being located at the sides or under desks and in other places where they will be out of the way yet adjacent to the telephone or other apparatus to which they are connected and accessible for maintenance purposes.

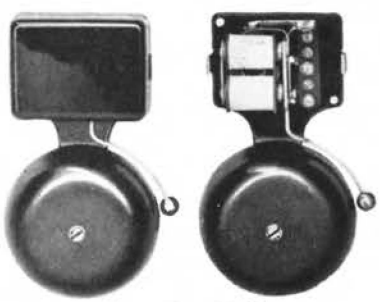


No. 1A Battery Box

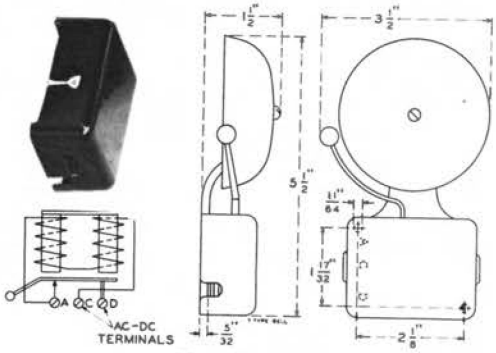
BELLS

NO. 7 TYPE—A.C. OR D.C. OPERATION

The No. 7 Type Bell consists essentially of two coils connected in series on a reed mounted armature and a clapper provided with a circuit interrupting member and having a separate cantilever type retractile spring and three screw terminals. These are all mounted on a black finished base and enclosed by a black finished metal cover fastened to the base by spring clips. The base is provided with two holes for mounting purposes and has a projection on which a No. 20 gong is mounted.



No. 7 Type Bell



No. 7 Type Bell

The three terminals permit connections for either A.C. or D.C. operation. When operated on alternating current, connections are made directly to the coils eliminating the use of the make and break contact. These Bells are equipped with heavy contact points of platinum or No. 2 contact metal. Overall dimensions approximately 5½″ x 3½″ x 1½″.

Code No.	Total Approx. Resistance Ohms	Operating Voltage D.C. Min.	Operating Voltage D.C. Max.	Operating Voltage 60 Cycles A.C. Min.	Operating Voltage 60 Cycles A.C. Max.
7AW	270	14	40	25	50
7CW	2.6	2	5	4	9
7DW	15.8	3	10	6	18
7EW	105	10	20	18	30
7FW	682	24	60	35	60

TCI Library: www.telephonecollectors.info

BINDING POSTS



No. 1A Binding Post



No. 2A Binding Post



No. 2E Binding Post



No. 3A Binding Post



No. 16A Binding Post



No. 20A Binding Post



No. 29A Binding Post



No. 30A Binding Post



No. 33D Binding Post



No. 37A Binding Post



No. 44A Binding Post



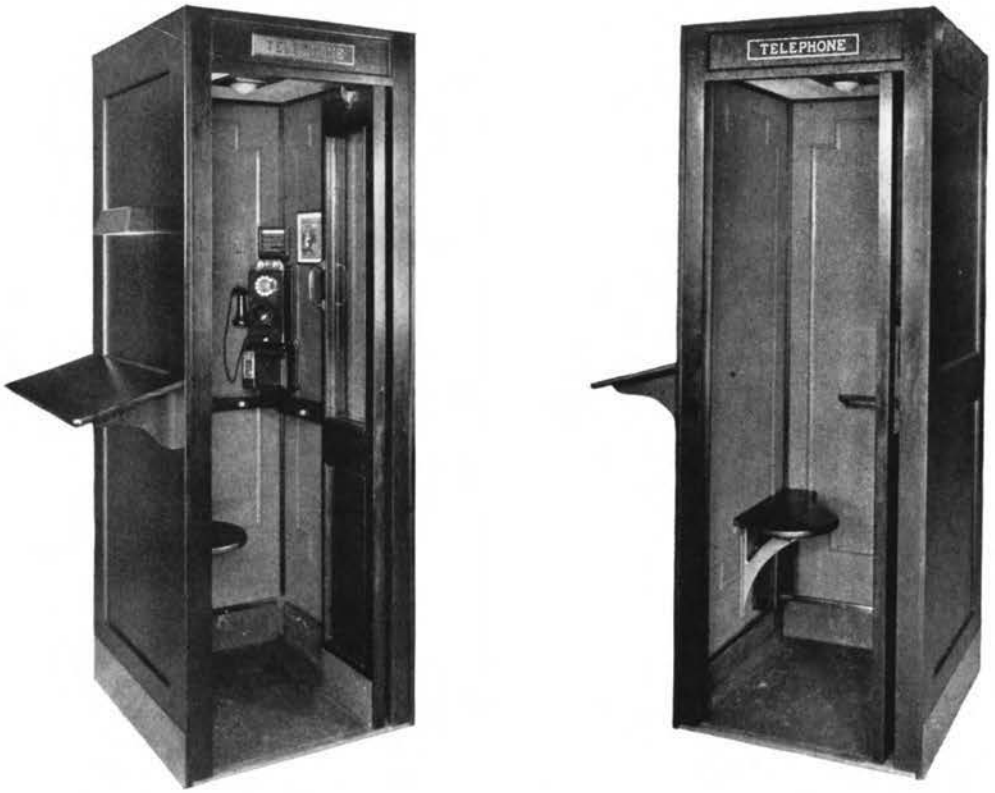
No. 45A Binding Post

Code No.	Finish	Description
1A	Brass lacquered	Arranged for tubular tips. Thumbscrew connection. No soldering terminals.
2A	Nickel	Lock nut connection. One back soldering terminal.
2E	Brass lacquered	Lock nut connection. One front soldering terminal.
3A	Nickel	Arranged for tubular tips. Lock nut connection. One back soldering terminal.
16A	Nickel	Arranged for tubular tips. Screw connection. No soldering terminals.
20A	Nickel	Arranged for tubular tips. Screw connection. One front soldering terminal.
29A	Tinned	Used in Nos. 8 and 14 Type Cable Terminals when original binding post is broken off above the lower nut. For 10–32 thread only.
29B	Tinned	Used in Nos. 8 and 13 Type Cable Terminals and the Nos. 6 and 10 Type Connecting Blocks when the original binding post is broken off above the lower nut. For 8–32 thread only.
30A	Tinned	Screw connection. One front soldering terminal.
33D	Black	Insulated post. One back soldering terminal. Arranged for mounting on ½ inch panel.
37A	Brass lacquered	Screw connection. One front soldering terminal.
44A	Nickel	Wing nut connection. One front soldering terminal.
45A	Black	Insulated post. For mounting on ¼, ⅜ and ½ inch panels. Screws for mounting on ¼ inch panel furnished unless otherwise specified.

TCI Library: www.telephonecollectors.info

BOOTHS—TELEPHONE

Nos. 5 and 6 Type Telephone Booths



No. 6 Type Telephone Booths, equipped with accessory equipment—No. 11 Type Directory Shelf, No. 2A Directory Light Fixture and No. 10 Telephone Sign

The Nos. 5 and 6 Type Telephone Booths present a very pleasing appearance. They are of the same construction except that the No. 5 is arranged for use without a seat and the No. 6 is equipped with a seat. For use in single or multiple installations. Overall dimensions: height, 83½ inches; width, 28⅞ inches; depth, 30 inches.

The features and equipment of these booths are outlined below.

Ventilation: These booths are arranged to provide ventilation when the door is closed. The air enters at the bottom of the door and passes out through openings in the light fixture or blank. In booths with the light fixture, ventilation is further improved by the heat from the lights.

Exterior: Bronze plates are placed at the bottom of the sides and back of the booth for protection of the outside of the booth against the effect of cleaning fluids or mechanical injury.

Interior: Metal lining of a new panel design.

Floor: The floor is substantially flush thus facilitating entrance to and exit from the booth. It is of heavy galvanized steel, which makes for a rigid construction of the booth, and is covered with rubber of a black and white marble pattern. The rubber flooring in one piece is carried up the sides to form baseboards for the protection of the inside of the booth against the effects of cleaning fluids or mechanical injury. Bronze finished moldings are used on the sides and back to protect the upper edges of the rubber.

Door: The construction of the door is such that it does not project materially outside the booth when in the open position. The bottom of the door panel which is exposed when the door is open is protected by a bronze kick plate. Bevel glass windows and bronze door handles and hinges add to the general appearance of the front of the booth.

TCI Library: www.telephonecollectors.info

BOOTHS—TELEPHONE—*Continued*

Threshold: A door tread of wear resisting metal, the appearance of which harmonizes well with the general booth appearance, extends completely across the booth. The tread is beveled over the rubber flooring to prevent the rubber from being kicked up from the metal floor.

Mounting for Coin Collector: A triangular iron mounting, coded 153A Backboard, is provided as a part of the booth, to mount the coin collector diagonally in the rear right-hand corner. This arrangement utilizes to the best advantage the space available. It also makes possible the mounting of the standard 1B Instruction Card Holder in a more desirable position.

Shelf: Due to the arrangement of the coin collector provision is made for a shelf, coded No. 10 Type Shelf, adapted for writing as well as an elbow rest.

Lighting: Lighting for the booth and the instrument is provided from a fixture, coded No. 1A Light Fixture, of pleasing appearance mounted in the ceiling. The operation of the light is effected by a new and improved type of switch (No. 215A), the operating mechanism of which is concealed above the ceiling. As a further aid to the lighting of the booth the ceiling is finished in white. To guard against unauthorized removal of the light bulb a lock is provided.

Where it is desired that the booths be not equipped for lighting, the lighting fixture is replaced by a booth light blank of the same general design but without the glass lens. Provision is made for the subsequent addition of the lighting fixture.

Booths will be furnished with lighting equipment unless otherwise specified.

Wiring: To facilitate installation, the booths will be pre-wired for the coin collector, bell box and light. When a light fixture is not furnished the light wiring is omitted.

Code Number				
Without Seat	With Seat	Front	Finish	Back
5-A	6-A	Mahogany	Medium Dull Mahogany	Mahogany
5-B	6-B	Mahogany	Medium Dull Mahogany	Softwood
5-C	6-C	Oak	Medium Dull White Oak	Oak
5-D	6-D	Oak	Medium Dull White Oak	Softwood
5-E	6-E	Mahogany	Dark Dull Mahogany	Mahogany
5-F	6-F	Mahogany	Dark Dull Mahogany	Softwood
5-G	6-G	Mahogany	Medium Dull Walnut	Mahogany
5-H	6-H	Mahogany	Medium Dull Walnut	Softwood
5-J	6-J	Walnut	Medium Dull Walnut	Walnut
5-K	6-K	Walnut	Medium Dull Walnut	Softwood
5-L	6-L	Mahogany	Unfinished	Mahogany
5-M	6-M	Mahogany	Unfinished	Softwood
5-N	6-N	Oak	Unfinished	Oak
5-P	6-P	Oak	Unfinished	Softwood
5-R	6-R	Walnut	Unfinished	Walnut
5-S	6-S	Walnut	Unfinished	Softwood

The above code numbers do not include the end panels, coded No. 51 Type Panels, which are required for both single and multiple installations or separators, coded No. 1 Type Separators, that are required for multiple installations. Orders should specify the number of end panels and separators required.

The code letters A, C, E, G, J, L, N, and R have been assigned to cover the various woods and finishes of the No. 51 Type Panels, No. 1 Type Separators, No. 10 Type Writing Shelves, No. 11 Type Directory Shelves and No. 101 Type Seats. These code letters cover the same woods and finishes as the corresponding code letters of the Nos. 5 and 6 Type Booths and indicate that these parts are for use with the telephone booths bearing the same code letter and the next letter in alphabetical order. For instance, the No. 51A Panel, No. 1A Separator, Nos. 10A and 11A Shelves are used on both the No. 5-A and No. 5-B, also No. 6-A and No. 6-B, Telephone Booths.

Booths will be furnished with lighting equipment unless otherwise specified.

ACCESSORY EQUIPMENT

Material	Use
No. 11 Directory Shelf*	Directory shelf for mounting on booth end panel.
No. 10 Telephone Sign per KS6467	Bronze sign with word "Telephone."
Card Frame per KS6486 for holding card 7″ x 10½″	Bronze frame for advertising cards for mounting on inside wall of booth.

* The finish required should be specified.

TCI Library: www.telephonecollectors.info

BOOTHS—TELEPHONE—*Continued*



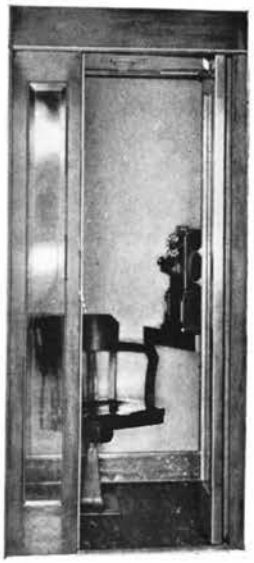
No. 7 Type
Telephone Booth

No. 7 Type Telephone Booth

The No. 7 Type Telephone Booths are similar in construction to the Nos. 5 and 6 Type Booths having the same height except for the ventilator cowl on the roof but with the width 8⅛″ greater and the depth 6″ greater. They are intended for use in locations such as clubs and hotel lobbies.

The door which folds inside the booth when opened consists of two vertical sections with full length beveled plate glass panels in each section.

The interior of the booth is equipped with a smooth lining having a gold and brown mottled finish. The booth is equipped with a revolving non-reclining arm chair and ceiling light, shelf, ventilating fan and grille and a backboard for mounting the coin collector. Telephone wiring is provided for the coin collector and the subscriber set and power wiring for the light and fan. The light is turned on and off and the fan started and stopped by means of a switch (No. 215B), which is actuated by the opening and closing of the door. The fan is also controlled by a switch located near the coin collector.



No. 7 Type
Telephone Booth, Door Open

Booths will be furnished completely assembled unless the order specifies otherwise. When shipped unassembled, the switch, light fixture, fan and grille are assembled to the ceiling.

DIMENSIONS: The overall dimensions are as follows:

Height 7′ ¾″ Width 3′ 1″ Depth 3′

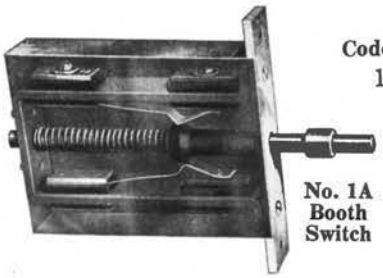
Booths are arranged for use singly or in groups or in conjunction with other booths of the same type or with standard Nos. 5 and 6 Type Telephone Booths.

Two No. 55 Type Panels are required with each single booth or group of booths. No. 2 Type Separators are required for use between booths when two or more are used in a group. The panels and separators do not form a part of the booth and must be ordered separately.

EXTERIOR: The finish and material of the backs and the finish of the booths are as follows:

Code No.	Front	Finish	Back
7A	Mahogany	Medium Dull Mahogany	Mahogany
7B	Mahogany	Medium Dull Mahogany	Softwood
7C	Oak	Medium Dull White Oak	Oak
7D	Oak	Medium Dull White Oak	Softwood
7E	Mahogany	Dark Dull Mahogany	Mahogany
7F	Mahogany	Dark Dull Mahogany	Softwood
7G	Mahogany	Light Dull Walnut	Mahogany
7H	Mahogany	Light Dull Walnut	Softwood
7L	Mahogany	Unfinished	Mahogany
7M	Mahogany	Unfinished	Softwood
7N	Oak	Unfinished	Oak
7P	Oak	Unfinished	Softwood

Note: Mahogany backs are equipped with a metal kick plate.



No. 1A
Booth
Switch

BOOTH SWITCHES

Code No.

1A This switch is used for disconnecting a telephone, located in a booth or pole-box, from the line when the booth or pole-box is locked. It operates when a hasp is placed over the staple, and held in place by a padlock. It guards the telephone set against injury from lightning discharges. The approximate dimensions of the switch case are: width, 3½ ins., depth, 1 in., and length, 4½ ins.

TCI Library: www.telephonecollectors.info

BRIDGING CONNECTORS



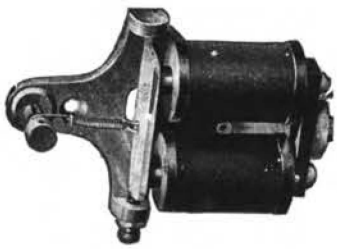
No. 6A
Bridging Connector



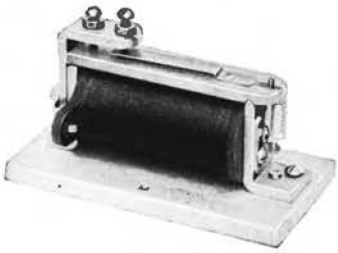
No. 3A
Bridging Connector

Code No.	Description	Slotted to Receive
1A	Brass	Bridle and Drop Wire.
2A	Brass	080 Copper Line Wire.
3A	Brass	104 and 128 Copper Line Wire.
4A	Galvanized Steel	083, 109 and 134 Steel Line Wire.
6A	Steel and Brass	083, 109 and 134 Galvanized Line Wire.

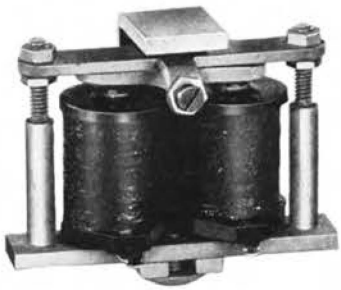
BUZZERS FOR ALTERNATING CURRENT



No. 2D
Buzzer



No. 4C
Cover Removed



No. 5A
Buzzer

Code No.	Resistance Ohms	Type	Dimensions Inches	Principal Use
2C	1000	Not Polarized	$2\frac{29}{32}$ x $2\frac{1}{4}$ x $\frac{27}{32}$	Test Sets
2D	100	Not Polarized	$2\frac{29}{32}$ x $2\frac{1}{4}$ x $\frac{27}{32}$	No. 1017 Type Test Sets
2E	100	Not Polarized	$2\frac{29}{32}$ x $2\frac{1}{4}$ x $\frac{29}{32}$	Test Sets
3B	2500	Polarized	$2\frac{3}{16}$ x $3\frac{3}{8}$ x $1\frac{1}{2}$	No. 1331 Telephone Set
4B	1200	Not Polarized	$3\frac{11}{16}$ x $1\frac{15}{16}$ x $2\frac{1}{4}$	P.B.X. Switchboards. Operates on A.C. ringing current of $16\frac{2}{3}$ cycles.
4C	1200	Not Polarized	$3\frac{51}{64}$ x $2\frac{5}{16}$ x $2\frac{1}{4}$	P.B.X. Switchboards. Operates on A.C. ringing current of $16\frac{2}{3}$ cycles, also on 24 volts D.C. Has a dustproof cover.
5A	2150	Polarized	2 x $2\frac{15}{32}$ x $1\frac{9}{16}$	Operates on 90 volts. 375B Subscriber Set.

No. 7 Type Buzzer

The No. 7 Type Buzzers are equipped with heavy platinum contacts and reed mounted armature with a flat retractile spring and stop. Black finished.



No. 7 Type
Open View





No. 7 Type
Closed View

TCI Library: www.telephonecollectors.info

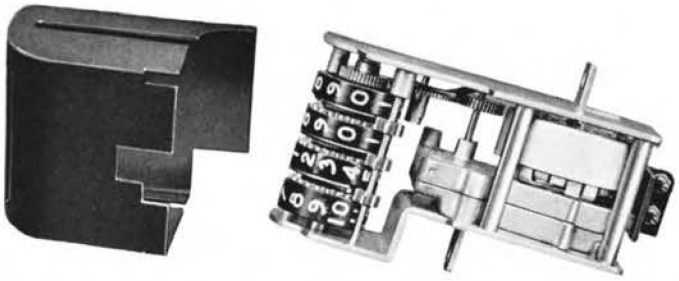
No. 7 Type Buzzer—*Continued*

The No. 7 Type Buzzers are intended for either D.C. or 50-60 cycle A.C. operation. For A.C. operation connections are made directly to the coils eliminating the make and break contact and thus the need for contact maintenance. Will normally operate without readjustment on the voltage ranges listed below. The minimum effective resistance to D.C. or impedance to 60 cycle A.C. of these buzzers should be assumed to be approximately 3 times the nominal D.C. resistance.

Code No.	Approx. Resistance Ohms	Operating Voltage D.C.		Operating Voltage 60 Cycles A.C.	
		Min.	Max.	Min.	Max.
7AW	270	14	40	15	21
7BW	10.5	2	6	4	9
7CW	2.6	2	8	3	8
7DW	15.8	4	15	4	15
7EW	105	10	20	10	20
7FW	682	20	60	20	60

Dimensions overall, $2\frac{11}{16}$" x $1\frac{31}{32}$" x $1\frac{1}{8}$".

ELECTRIC CLOCKS



No. 1 Type Electric Clock

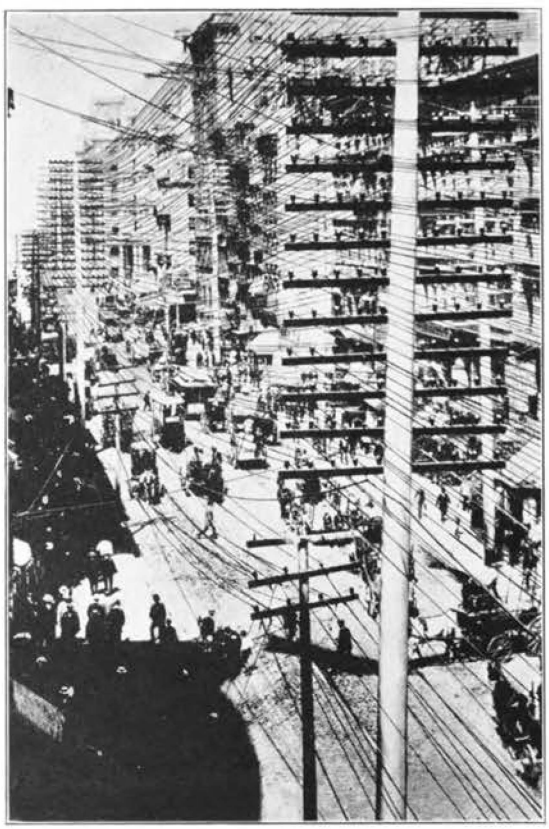
The 1A and 1B Electric Clocks are arranged to mount in switchboard keyshelves in a vertical position and indicate time in hours, minutes and tenths of minutes. Operated electrically by means of a master clock, the 1A Type operating with 24 volts and the 1B Type with 38 volts.

The 1A and 1B Electric Clocks are equipped with black finished covers having a celluloid window. The clocks are provided with a mounting bracket for fastening to inside of keyshelf and also an escutcheon plate which fastens to the top of the keyshelf.

Code No.	Approx. Resistance Ohms	Operating Current (Ampere D.C.)	Non-Operating Current (Ampere D.C.)
1A	500	.028	.020
1B	1100	.0195	.0138

TCI Library: www.telephonecollectors.info

LEAD COVERED CABLE



New York City—Lower Broadway in the 1880's

The Western Electric Company, pioneer in the development of telephone cable, has maintained constant leadership in this field through continuous research. Beginning with the single conductor, grounded circuit cables with rubber insulation, adapted from telegraph service in the 1880's, there have been such outstanding contributions as twisted pairs with impregnated textile insulation and dry paper tape insulation, and finally, the most modern improvement in the form of paper pulp insulated and unit stranded cable.

Years ago the rapidly increasing number of telephone lines and the limitations of space wherein to run them created a major problem. Their enclosure in a pipe-like covering appeared to be a logical solution. As a result, the first lead covered multiple telephone cable was developed and installed. A number of advantages followed automatically. Some of the maintenance costs inherent in open wire construction were eliminated. Others were reduced—while the protection afforded resulted in making the wires available for practically uninterrupted service. These advantages were responsible for the continued development of lead covered cable, and as its benefits were fully recognized, it took its place in the telephone plant as a necessity.

This cable in its present form, whether for aerial use, in ducts underground, or for inside use, in its simplest and most usual form, requires for its manufacture three principal raw materials—copper for the wire or conductors; paper for their insulation and pure lead or an alloy of lead and antimony for the sheath.

CABLE ENGINEERING ESSENTIAL

Early in its manufacturing experience with Lead Covered Cable the Western Electric Company realized that such cables must be engineered, not simply built. Engineering is essential to make lead covered cable:

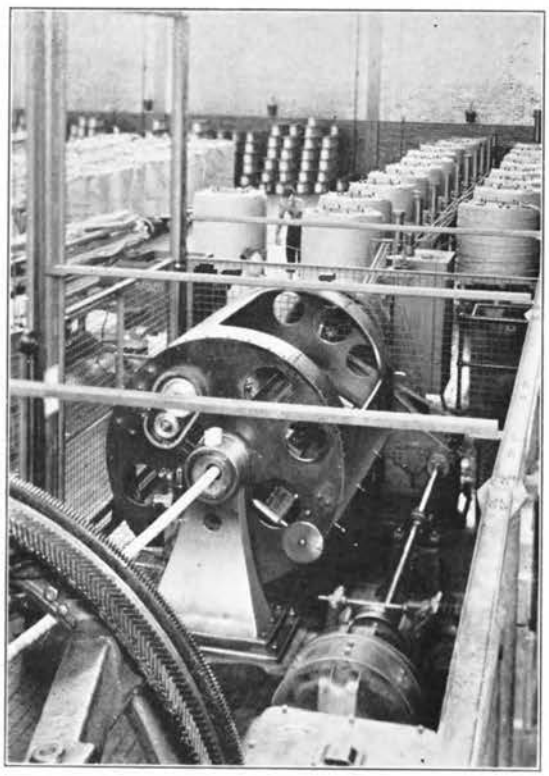
that will transmit currents with maximum efficiency.

that will prevent current in one line from interfering with the current in another.

TCI Library: www.telephonecollectors.info

LEAD COVERED CABLE—*Continued*

Engineers must select the requirements for good cable and work out the methods for determining if the materials and means of manufacture measure up to the requirements. The skill of the cable-makers directly affects the quality of the cable, and that skill must be of the highest order. The cable will meet service conditions and last a reasonable length of time:



Cabling Machine

—if the raw material is the most suitable;

—if the insulation of the conductor is uniform and if the insulated conductors are properly twisted into pairs to eliminate any audible cross talk that would interfere with the clear transmission of messages;

—if the cabling of the paired conductors is of the evenness necessary to assure flexibility and therefore economy of time and labor when handling the cable;

—if the ovens for drying out the cable are suitable;

—if the methods for handling the cores from oven to sheathing machines prevent moisture entering the cable en route;

—if the design of the cable is such as to insure ease of handling without tendency to buckle on account of too great softness.

ADVANTAGES

As a means to practically uninterrupted communication, Lead Covered Cable offers a number of conspicuous advantages, making for better service, better public relations and money economies.

Western Electric Lead Covered Cable possesses several advantages of material benefit to its users, among which are:

1. They make use of the most suitable designs and materials to secure and maintain the highest class of telephone transmission, as determined by many years of research work conducted by Bell Telephone Laboratories, and by constant tests in the field, in close cooperation with the largest users of telephone cable in the world.

2. The reliability of the Western Electric product is proven by the fact that more than half the telephone cable in use throughout the world is of Western Electric design.

3. Cables are manufactured by the Western Electric as an essential part of the telephone plant which must not only give the most efficient performance possible, but must maintain this efficiency through the greatest possible number of years. To accomplish this object, every part of telephone cable is designed not only to give the electrical qualities required, but to insure a maximum of mechanical ruggedness and protection against damage. As an example of this, a given mutual capacitance can be obtained in either a soft core or a hard core cable, the hard core cable being somewhat larger in

TCI Library: www.telephonecollectors.info

LEAD COVERED CABLE—*Continued*

diameter and containing a larger amount of insulating paper. The former, however, is bound to be soft or "mushy" to such an extent that it has a decided tendency to buckle when bent, and it is therefore more difficult to install than the harder core cable. Western Electric cables are designed to have satisfactory mechanical characteristics.

SOME ECONOMIES OF LEAD COVERED CABLE

Cable minimizes interruptions due to storms. Even with improved methods of pole line construction and high-grade line materials, a heavy sleet storm accompanied by a severe gale is more apt to cause trouble with open wire lines than with cable. Such storms are apt to be expensive, and at times some damage is inevitable; but even at the worst, the expense for repairs will generally be less with cable. There are no tangled masses of wires to be cleared, less labor is required during reconstruction, and less material is needed for replacement of damages. Moreover, broken poles frequently do not mean a broken cable or lines in trouble.

There are other expenses than for material, expenses not so easily figured.

First of all, "lines down" means interrupted service, and interrupted service cuts off revenue.

Secondly, "lines down" means dissatisfied customers. Aside from the fact that dissatisfied customers are a liability, the telephone industry has grown and prospered because it has realized that the interests of the public must be and are the interests of the telephone industry. Wherever enough lines are concentrated to make cable economically practicable, its use should be considered.

Finally, the use of cable reduces the ordinary expense of maintenance. Overhead wires in large groups are unwieldy from a maintenance point of view. When the lines are enclosed and protected by lead covered cable, whether aerial or underground, "opens," "crosses," and "tree-grounds" are minimized.

Thus from the standpoint of economy and utility, lead covered cable is advantageous. A variety of Western Electric Lead Covered Cables are available to meet the requirements imposed by the many ways in which it is used.

PRELIMINARIES

Before laying lead covered cable, it is only a safe and sensible precaution, unless the cable is in short lengths, to survey the proposed route of the cable to search for currents which might cause electrolysis. After a cable is laid, too, similar surveys should be made annually to locate any currents that changes in the character of the locality might have introduced. Railroad electrifications, trolley lines and rearrangements of power lines, can, any or all, be destructive agencies, if not noted and guarded against.

TRANSMISSION

The transmission efficiency of telephone cable, considered as a separate unit, depends principally upon its capacitance and conductor resistance. When telephone cable forms a portion of a completed telephone connection, the transmission efficiency of the telephone connection as affected by the cable portion depends somewhat on the relative position of the cable in that circuit and also on the type of other construction to which it is connected.

The following data are based upon average standard conditions, and may be used for approximate calculations. In the case of circuits involving several different types of construction, we recommend consulting our engineers.

The length of circuit which, when connected to short subscribers' loops, will cause a transmission loss of 30 db (units of transmission loss, called decibels) is considered about the maximum length over which commercial transmission can be secured.

TCI Library: www.telephonecollectors.info

LEAD COVERED CABLE—*Continued*

The following table shows the approximate average 1000 cycle transmission loss for several types of open wire lines and lead-covered cables and also the approximate maximum lengths of nonloaded circuit corresponding to about 30 db loss.

Kind of Circuit	Approx. Aver. 1000 Cycle Transmission Loss db per Mile	Approx. Maximum Length for Commercial Transmission
Open Wire		
No. 12 BWG BB Galvanized iron wire	.30	100 miles
No. 10 BWG BB Galvanized iron wire	.27	110 miles
No. 14 NBS or No. 12 AWG Hard drawn copper wire	.113	260 miles
No. 12 NBS Hard drawn copper wire	.075	400 miles
Lead Covered Cable		
No. 16 gauge—Type NH	.75	40 miles
No. 19 gauge—Type CNB	1.26	24 miles
No. 22 gauge—Type BPA / CSA	1.79	17 miles
No. 24 gauge—Type DSM	2.14	14 miles
No. 26 gauge—Type BST	2.67	11 miles

CAPACITANCE

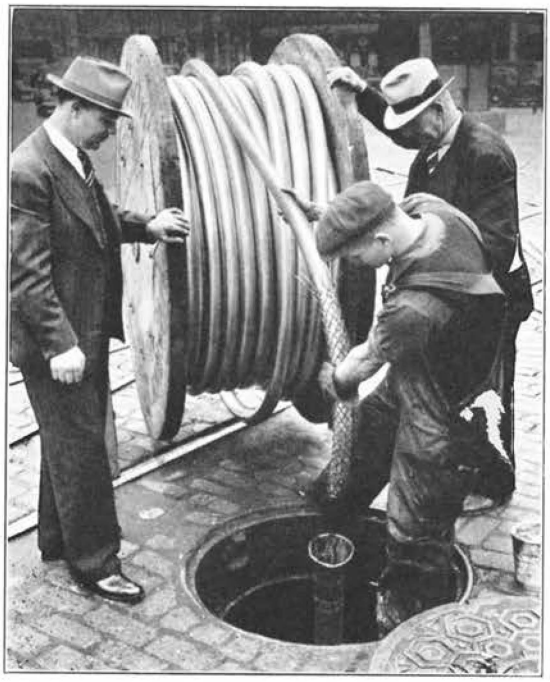
The capacitance of a cable circuit is important because it limits to a large extent the length of cable through which it is possible to transmit speech. The capacitance may be specified either as mutual, that is, the capacitance between the two wires of a pair; or as grounded, that is, the capacitance between a wire and all the other wires and the sheath. Mutual capacitance is preferable in defining the quality of the cable for telephone transmission, since the conductors are used in pairs as metallic circuits and seldom, if ever, singly as grounded lines. The grounded capacitance is about 1.6 times the mutual, but this ratio varies somewhat for different cables.

Capacitance may be measured by the D.C. charge method, the D.C. discharge method, or the A.C. method. The A.C. method, using a frequency of 800 cycles or higher, is preferable because it measures the true capacitance for the voice currents. The D.C. capacitance tends to be higher than the A.C. capacitance, and in specifying capacitance this fact should be recognized. The D.C. charge method is less subject to error due to improper manipulation of the testing equipment than the D.C. discharge method, and is therefore a more desirable testing procedure for D.C. testing.

Western Electric Cables are tested for mutual capacitance by the A.C. method, unless specifically requested otherwise.

TCI Library: www.telephonecollectors.info

LEAD COVERED CABLE—*Continued*



A 2121 Pair Cable Starts Underground

Types of Cable

Lead covered cables may be divided into three general classes as follows:

1. **Paper Insulated Cable for aerial or underground use. (Lead Covered or Lead Covered and Jute Protected or Lead Covered and Steel Tape Armored.)**
2. **Paper Insulated Cable, Submarine or Gully Type. (Lead Covered, Steel Wire Armored.)**
3. **Textile Insulated Cable.**

1. AERIAL OR UNDERGROUND CABLE

Lead Covered

Under the usual conditions of installation of telephone cables the same type of cable may be used for aerial construction or in ducts underground. The various types of lead covered cable for aerial or underground use are as follows: NH, CNB, CSA, BPA, DSM, and BST.

Jute Protected

There are many situations where cables buried directly in the ground would offer advantages over other forms of construction. The life of unprotected cable sheath may be very short depending upon the particular soil conditions. To meet this need the Western Electric Company have developed a type of cover for the cable sheath which effectively protects the sheath from soil corrosion. This protection consists of wrappings of paper and jute which have been thoroughly impregnated with preservative compound and which are thoroughly flooded with asphaltic compound while being applied to the cable. Cables having this type of covering are referred to as jute protected. Jute protected cables are about 0.2″ larger in overall diameter than the unprotected cables for the smaller sizes and about 0.3″ larger for full size cables. Any lead covered cable can be furnished jute protected if so noted on the order.

Tape Armored

In cases where somewhat more mechanical protection is desired or where some protection against low frequency induction from power lines is desired, a steel tape armor can be furnished. This type of sheath covering is similar to that used for the jute protected cables except for the addition of the steel tapes and a further covering of asphalt flooded jute. For the tape armored cable the increase in diameter varies with the size of the cable from about 0.3″ to about 0.6″. Any lead-covered cable can be furnished tape armored if so noted on the order.

Galvanized Tape Armored

The Western Electric Company can furnish galvanized tape armored cable for aerial use where some protection against low frequency induction from power lines is desired. If your condition necessitates this type of cable, write our nearest distributor giving full details and information and prices will be furnished.

TCI Library: www.telephonecollectors.info

LEAD COVERED CABLE—*Continued*

1. AERIAL OR UNDERGROUND CABLE (Continued)

Unit Stranded Cable—Paper Pulp Insulation

A new form of paper insulation has been developed by the Western Electric Company which is known as pulp insulation because of its method of application to the wire. The paper is made directly on the conductor in such a way as to form a continuous, seamless tube.

A new method of constructing cable cores, known as a multiple unit design, has also been developed by the Western Electric Company. With this type of stranding the pairs are first stranded in single units of about 50 or 100 pairs and these units are then stranded together to form the cable. Each unit is wrapped with a spaced binding of cotton thread colored to indicate the gauge of the conductors and the position of the units in the cable according to layers as shown in the diagrams for individual types.

This construction offers a distinct advantage in splicing in that the color groups are units and require practically no time for separating in preparation for splicing.

No. 26 gauge cables, coded as Type "BST", No. 24 gauge cables, coded as Type "DSM", and No. 22 gauge cables, coded as Type "CSA", are now regularly furnished with pulp insulation for all sizes and with the multiple unit design in sizes of 152 pair and larger.

Cables smaller than 152 pair are layer stranded.

Layer Stranded Cable

This is the core construction used for cables containing 16 and 19 gauge conductors, all fine gauge cables having strip paper insulation, and pulp insulated cables containing less than 150 pairs. Starting from a center of one or more pairs, the core is built up in concentric layers. The color groups do not coincide with complete layers.



1818 Pair Cable

The following table shows for No. 19 gauge and smaller the colors of insulation and arrangement by color groups in the layer stranded cables from the center outward:

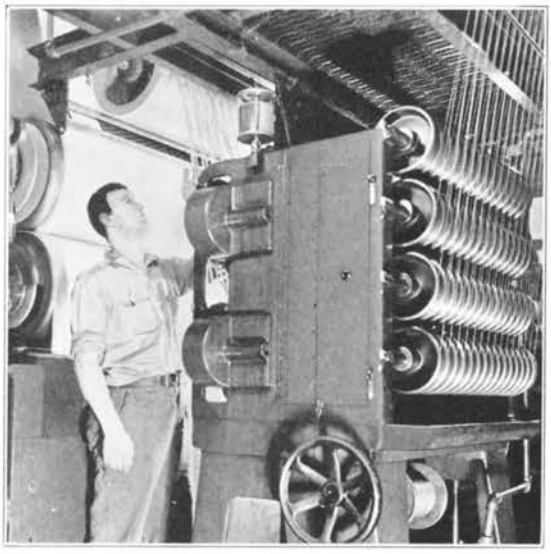
No. of Actual Pairs	Color Groups						Tracer Pairs	Location of Tracer Pairs
	Red White	Blue White	Orange White	Green White	Red Blue	Red Green	Red Orange	
6	5	—	—	—	—	—	1	In outer layer
11	10	—	—	—	—	—	1	
16	15	—	—	—	—	—	1	
26	25	—	—	—	—	—	1	
51	50	—	—	—	—	—	1	
76	75	—	—	—	—	—	1	
101	49	50	—	—	—	—	2	One in outer layer of first color group and one in outer layer of cable
152	50	50	50	—	—	—	2	
202	49	51	50	50	—	—	2	
303	49	51	50	51	50	50	2	
404	100	101	101	100	—	—	2	
455	100	101	101	100	50	—	2	
606	100	101	101	101	101	100	2	

TCI Library: www.telephonecollectors.info

LEAD COVERED CABLE—*Continued*

2. SUBMARINE AND GULLY TYPE CABLE, WIRE ARMORED

Submarine



Partial View of Paper Pulp Insulating Machine

Paper insulated submarine and gully type telephone cable may be divided into three general classes, depending upon the use for which they are intended.

1. High dielectric strength, tight core cable, designed for use in comparatively long lengths, where the cost of repairing a break in the cable will be less than the cost of an entirely new cable.
2. High dielectric strength, loose core cable, designed for use in comparatively short lengths, where high transmission efficiency and high dielectric strength are of importance; for example: a short crossing cable connecting important open wire.
3. Single paper insulated loose core cable designed for use in comparatively short lengths where so high a dielectric strength is not necessary; for example: a short crossing cable connecting land cables.

Either single or double armored cable can be furnished. In many cases, single armor gives sufficient mechanical protection. Double armor is used only in cases of extremely severe mechanical requirements. In still water with a mud bottom, single armor will be sufficient. With a rocky or uneven bottom, or with strong tides or currents, double armor should be considered.

Gully Type

There is also available a light wire armored cable for crossing gullies, small streams and swamps that may lie along the route of a buried cable. This cable provides greater mechanical strength than the tape armored cable and is lighter and less expensive than the standard wire armored submarine design. This cable has the same protection against soil corrosion as jute protected cable.

3. TEXTILE INSULATED CABLE

Paper insulated cables are usually terminated in buildings by splicing on a short piece of lead covered textile insulated cable. Commercial textile yarns are liable to contain soluble salts, which will cause electrolytic action when exposed to moist atmospheres and result in poor insulation and sometimes produce corrosion of the conductors. It has been found that by removing such impurities substantial improvements of the insulating properties of the textiles are obtained. Only purified textiles are used in Western Electric Cables.

The uses of the several types of textile insulated cables listed in the tables following are discussed briefly below.

Types "FA" and "GA" cables are generally used for terminating paper insulated lead covered cables by splicing directly to the paper insulated cable and terminating the textile insulated pairs. In Type "FA" cable all pairs, except a tracer pair, have the same colors of insulation. In Type "GA" cable each pair is distinguishable from every other by a color code. These two types of cable are made up of wires covered with two servings of silk and an outer serving of cotton.

Types "MFA" and "MGA" are similar to Types "FA" and "GA" respectively, except that the conductors are enameled. The enameled cables are intended for the same kinds of service as the other two types, but are used where the humidity may be quite high for rather long periods, as, for example, near the sea coast in warm climates.

Type "AUA" has the conductors covered with two servings of purified cotton coated with plasticized cellulose acetate lacquer. This cable can be installed without waxing exposed forms and

TCI Library: www.telephonecollectors.info

LEAD COVERED CABLE

TEXTILE INSULATED CABLE—Continued

is intended for use where the operation of waxing is objectionable. It should not be used for splicing directly to paper insulated cable for terminating that cable because of its relatively low insulation resistance but is satisfactory for use beyond the terminals where it can easily be disconnected if necessary for maintenance tests on the paper insulated cable. It replaces type "UA" cable. Type "NUA" cable is similar to "AUA" cable, except that the conductors are enameled, and has the same limitations of use.

Cables with wool insulated conductors were once used for terminating, but it has been found that the cables described above are equally satisfactory for this purpose and are less expensive and easier to handle.

Special Cables

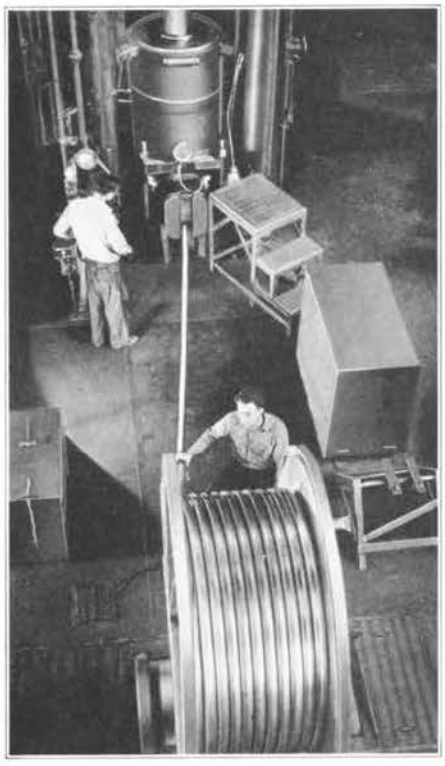
Special conditions often require cables with different characteristics from those which have been standardized and coded. Paper insulated cable, designed to withstand test potentials up to 1,500 volts A.C., is supplied for special circuits such as for telegraph or signal circuits. If your condition necessitates special cable, write our nearest distributor, giving full details and information, and price will be furnished.

Composite Cables

Composite cable, composed of conductors of two or more gauges can be furnished if desired. The combinations of pairs which will utilize the space within the lead sheath most economically are somewhat limited and our cable engineers will make recommendations along this line upon receipt of detail information as to the conditions to be met. For complete information consult your nearest distributor.

Quadded Cable

Paper and textile insulated quadded lead covered cable for toll telephone and telegraph purposes can be furnished if desired. Price information will be quoted on your specifications if available or our cable engineers will make recommendations as to its use upon receipt of detailed information as to the conditions to be met. Consult our nearest distributor.



Lead Press Sheathing Telephone Cable

REELS

Western Electric cables are shipped on substantial reels designed to withstand reasonable handling during the transportation and installation of the cables. The ends of the cables are fastened securely to the reels, and unarmored cable is protected by lags nailed around the periphery of the reel. The reels are made in a number of sizes, providing economical shipping packages for various sizes and lengths of cables.

GUARANTEE

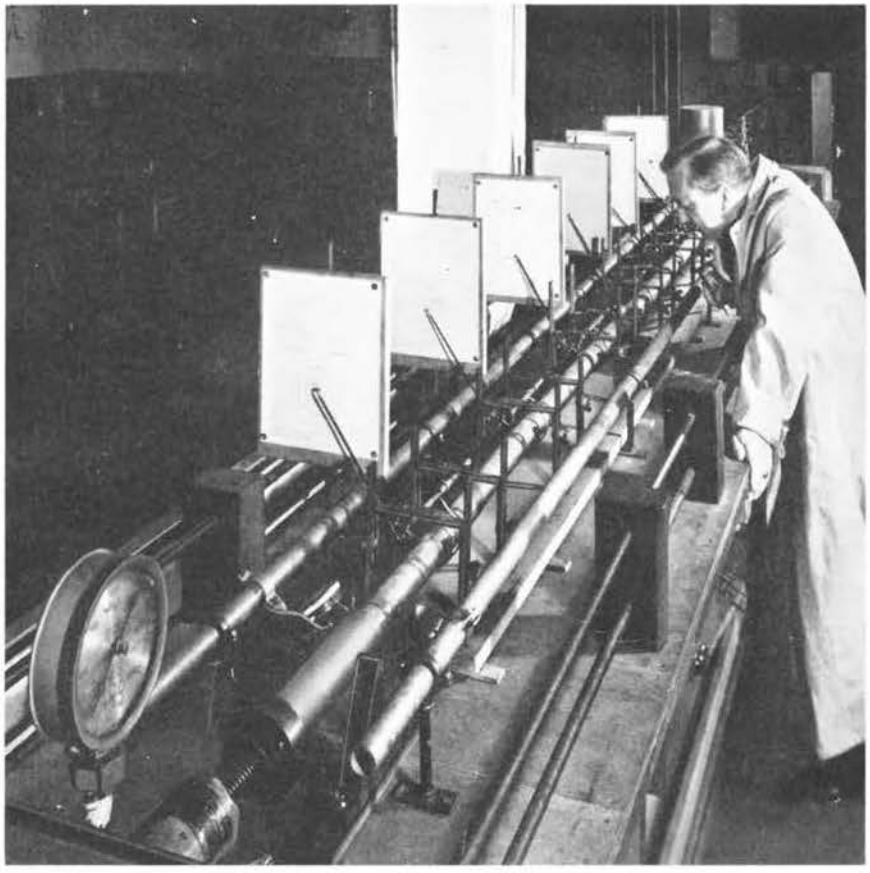
Extra pairs are placed in all cables containing conductors smaller than No. 16 gauge to take care of any pairs which may become defective. In the majority of cases all or part of the extra pairs will be good and may be used for additional circuits.

The coding of all cables is on the basis of the actual number of pairs in the cable. The actual and guaranteed number of pairs in the various sizes of standard cable are shown in the tabulation covering the various types of cable. The number of pairs indicated in the table are guaranteed to be free from opens, shorts, crosses, and grounds, and the capacitance and the conductor resistance are guaranteed not to increase nor the insulation resistance to decrease beyond the limits stated due to defective material or manufacture.

TCI Library: www.telephonecollectors.info

LEAD COVERED CABLE—*Continued*

For Aerial or Underground Use



Studying the Effect of Compression on Cable Sheath

Type "NH" Cable

(Paper-Ribbon Insulated)

Replaces Type "TH"

Sheath. Lead Antimony.

Conductors. No. 16 A.W.G. single dry paper tape insulation. Blue-orange pairs alternating with green-orange pairs, except for 2 orange-white tracer pairs, one in the center and one in the outside layer and a red-orange pair in each layer containing an odd number of pairs.

Mutual Capacitance. A.C. testing average any reel not exceeding .072 microfarad per mile of cable at 60 degrees Fahrenheit.

Conductor Resistance. Not exceeding 23 ohms per mile of cable at 68 degrees Fahrenheit. Any conductor.

Insulation Resistance. Not less than 500 megohm miles at 60 degrees Fahrenheit. Any conductor.

Dielectric Strength. Insulation between conductors capable of withstanding for two seconds an A.C. test potential whose maximum instantaneous value is 1000 volts. The insulation between conductors and sheath capable of withstanding a test with an A.C. potential whose maximum instantaneous value is 1400 volts.

Code No. and Number of Pairs	Number of Pairs Guaranteed	Thickness Sheath Inches	Mean Outside Diameter Inches	Approximate Weight Pounds per Foot	Convenient Number of Feet on Reels
NH26	26	.080	1.13	1.78	2000
NH51	51	.089	1.52	2.92	1500
NH101	101	.103	2.11	5.07	1000
NH152	152	.113	2.54	7.05	750

TCI Library: www.telephonecollectors.info

LEAD COVERED CABLE

For Aerial or Underground Use—*Continued*

Type "CNB" Cable

(Paper-Ribbon Insulated)

Replaces Types "ANB" and "BNB"

Sheath. Lead Antimony.

Conductors. No. 19 A.W.G. single dry paper tape insulation, with color groups depending upon size.

Mutual Capacitance. A.C. testing, average any reel not exceeding .090 microfarad per mile of cable at 60 degrees Fahrenheit.

Conductor Resistance. Not exceeding 46 ohms per mile of cable at 68 degrees Fahrenheit. Any conductor.

Insulation Resistance. Not less than 500 megohm miles at 60 degrees Fahrenheit. Any conductor.

Dielectric Strength. Insulation between conductors capable of withstanding for two seconds an A.C. test potential whose maximum instantaneous value is 700 volts. The insulation between conductors and sheath capable of withstanding a test with an A.C. potential whose maximum instantaneous value is 1400 volts.

Code No. and Number of Pairs	Number of Pairs Guaranteed	Thickness Sheath Inches	Mean Outside Diameter Inches	Approximate Weight Pounds per Foot	Convenient Number of Feet on Reels
CNB6	5	.063	.42	.41	2800
CNB11	10	.065	.52	.56	3000
CNB16	15	.067	.60	.70	4000
CNB26	25	.070	.72	.93	3000
CNB51	50	.075	.95	1.46	2500
CNB76	75	.080	1.14	1.99	2200
CNB101	100	.084	1.29	2.46	1700
CNB152	151	.090	1.56	3.38	1400
CNB202	201	.095	1.78	4.27	1400
CNB303	302	.104	2.15	5.97	900
CNB404	402	.112	2.47	7.68	700
CNB455	452	.115	2.61	8.48	650

TCI Library: www.telephonecollectors.info

LEAD COVERED CABLE

For Aerial or Underground Use—*Continued*

Type "CSA" Cable
(Paper Pulp Insulated)

Replaces Types "ANA", "ASA" and "BSA"

Sheath. Lead Antimony.

Conductors. No. 22 A.W.G. pulp insulation, with color groups depending upon size.

Stranding. Multiple-unit design 152 pairs and larger.

Mutual Capacitance. A.C. testing, average any reel not exceeding .090 microfarad per mile of cable at 60 degrees Fahrenheit.

Conductor Resistance. Not exceeding 92 ohms per mile of cable at 68 degrees Fahrenheit. Any conductor.

Insulation Resistance. Not less than 500 megohm miles at 60 degrees Fahrenheit. Any conductor.

Dielectric Strength. Insulation between conductors capable of withstanding for two seconds an A.C. test potential whose maximum instantaneous value is 500 volts. The insulation between conductors and sheath capable of withstanding a test with an A.C. potential whose maximum instantaneous value is 1400 volts.

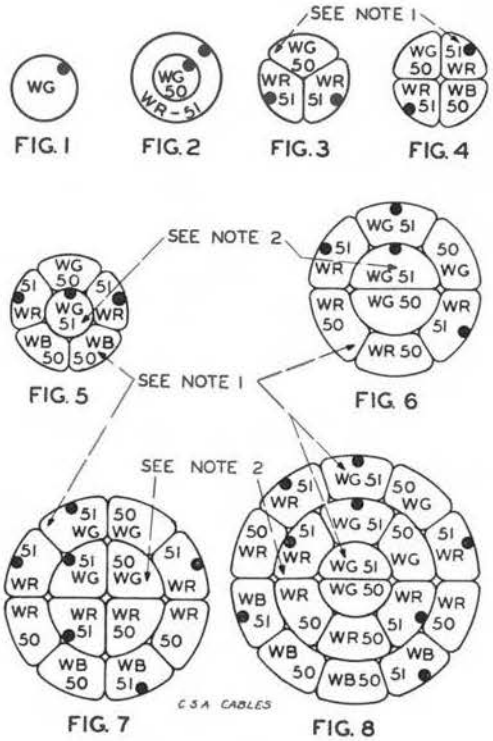


FIG. 1 FIG. 2 FIG. 3 FIG. 4 FIG. 5 FIG. 6 FIG. 7 FIG. 8

Key:
WG = White-Green
WB = White-Blue
WR = White-Red
● = Blue-Red Tracer Pair

Notes:
1. **Each unit of this layer has a white binder.**
2. **Each unit of this layer has a white-green binder.**
3. **Numbers are total pairs in a unit including one tracer pair where indicated.**

Code No. and Number of Pairs	Number of Pairs Guaranteed	Arrangement of Color Groups Fig. No.	Thickness Sheath Inches	Mean Outside Diameter Inches	Approximate Weight Pounds per Foot	Convenient Number of Feet on Reels
CSA11	10	1	.063	.42	.40	3500
CSA16	15	1	.064	.47	.48	3500
CSA26	25	1	.066	.57	.63	4200
CSA51	50	1	.070	.73	.95	3000
CSA76	75	1	.073	.86	1.23	2400
CSA101	100	2	.076	.98	1.51	3000
CSA152	151	3	.080	1.16	2.01	1700
CSA202	201	4	.084	1.32	2.51	1600
CSA303	301	5	.091	1.59	3.45	1400
CSA404	401	6	.095	1.78	4.27	1200
CSA606	602	7	.104	2.15	5.97	900
CSA909	903	8	.115	2.61	8.46	650

TCI Library: www.telephonecollectors.info

LEAD COVERED CABLE

For Aerial or Underground Use—*Continued*

Type "BPA" Cable

(Paper-Ribbon Insulated)

Replaces Type "APA"

Sheath. Lead Antimony.

Conductors. No. 22 A.W.G. double dry paper tape insulation, with color groups depending upon size.

Mutual Capacitance. A.C. testing, average any reel not exceeding .095 microfarad per mile of cable at 60 degrees Fahrenheit.

Conductor Resistance. Not exceeding 92 ohms per mile of cable at 68 degrees Fahrenheit. Any conductor.

Insulation Resistance. Not less than 500 megohm miles at 60 degrees Fahrenheit. Any conductor.

Dielectric Strength. Insulation between conductors capable of withstanding for two seconds an A.C. test potential whose maximum instantaneous value is 700 volts. The insulation between conductors and sheath capable of withstanding a test with an A.C. potential whose maximum instantaneous value is 1400 volts.

Code No. and Number of Pairs	Number of Pairs Guaranteed	Thickness Sheath Inches	Mean Outside Diameter Inches	Approximate Weight Pounds per Foot	Convenient Number of Feet on Reels
BPA6	5	.061	.36	.31	3500
BPA11	10	.063	.42	.40	3500
BPA16	15	.064	.47	.48	3500
BPA26	25	.066	.55	.62	3500
BPA51	50	.070	.73	.95	3500
BPA76	75	.073	.85	1.22	3500
BPA101	100	.076	.96	1.51	3000
BPA152	151	.080	1.14	2.01	2000
BPA202	201	.084	1.29	2.49	2000
BPA303	301	.090	1.56	3.42	1500
BPA404	401	.095	1.78	4.33	1500
BPA606	602	.105	2.18	6.14	1060

Type "BST" Cable

(Paper Pulp Insulated)

Replaces Type "ST" and "AST"

Sheath. Lead Antimony.

Conductors. No. 26 A.W.G. pulp insulation, with color groups depending upon size.

Stranding. Multiple-unit design 152 pairs and larger.

Mutual Capacitance. A.C. testing, average any reel not exceeding .085 microfarad per mile of cable at 60 degrees Fahrenheit.

Conductor Resistance. Not exceeding 230 ohms per mile of cable at 68 degrees Fahrenheit. Any conductor.

Insulation Resistance. Not less than 500 megohm miles at 60 degrees Fahrenheit. Any conductor.

Key:

WG = White-Green
WB = White-Blue
WR = White-Red
● = Blue-Red Tracer Pair

Notes:

1. **All units in the same layer have like colored binding strings.**
2. **Numbers are total pairs in group including one tracer pair where indicated.**

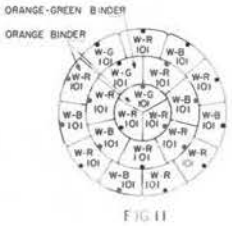
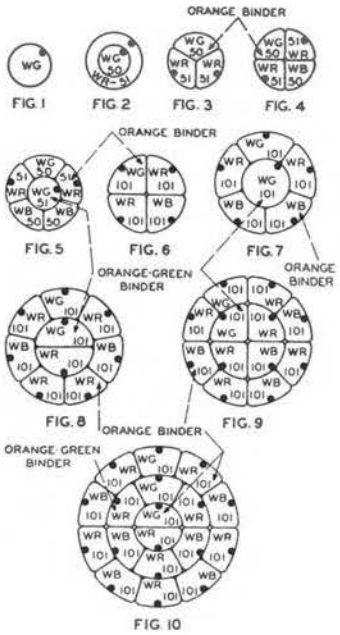


FIG. 11



TCI Library: www.telephonecollectors.info

LEAD COVERED CABLE

For Aerial or Underground Use

Type "BST" Cable—*Continued*

Dielectric Strength. Insulation between conductors capable of withstanding for two seconds an A.C. test potential whose maximum instantaneous value is 500 volts. The insulation between conductors and sheath capable of withstanding a test with an A.C. potential whose maximum instantaneous value is 1200 volts.

Code No. and Number of Pairs	Number of Pairs Guaranteed	Arrangement of Color Groups Fig. No.	Thickness Sheath Inches	Mean Outside Diameter Inches	Approximate Weight Pounds per Foot	Convenient Number of Feet on Reels
BST11	10	1	.060	.32	.27	3500
BST16	15	1	.061	.36	.31	3300
BST26	25	1	.063	.42	.40	4000
BST51	50	1	.065	.52	.55	4200
BST76	75	1	.067	.60	.69	3700
BST101	100	2	.069	.69	.84	3500
BST152	150	3	.072	.80	1.08	2400
BST202	200	4	.074	.90	1.30	2500
BST303	300	5	.078	1.08	1.74	1600
BST404	400	6	.082	1.21	2.16	1600
BST606	601	7	.087	1.46	2.90	1400
BST909	902	8	.094	1.75	4.00	1100
BST1212	1203	9	.100	2.00	5.11	900
BST1818	1806	10	.110	2.41	7.09	650
BST2121	2108	11	.115	2.61	8.15	650

Type "DSM" Cable

(Paper Pulp Insulated)

Replaces Types "NM", "SM", "ASM" and "CSM"

Sheath. Lead Antimony.

Conductors. No. 24 A.W.G. pulp insulation, with color groups depending upon size.

Stranding. Multiple-unit design 152 pairs and larger.

Mutual Capacitance. A.C. testing, average any reel not exceeding .090 microfarad per mile of cable, at 60 degrees Fahrenheit.

Conductor Resistance. Not exceeding 145 ohms per mile of cable, at 68 degrees Fahrenheit. Any conductor.

Key:

WG = White-Green **WR = White-Red**
WB = White-Blue **● = Blue-Red Tracer Pair**

Notes:

1. **All units in the same layer have like colored binding strings.**
2. **Numbers are total pairs in group including one tracer pair where indicated.**

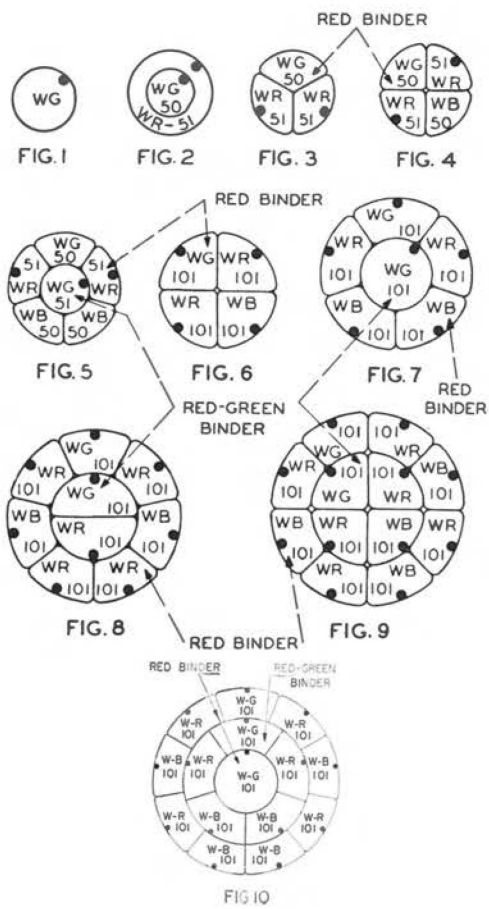


FIG 10

TCI Library: www.telephonecollectors.info

LEAD COVERED CABLE

For Aerial or Underground Use

Type "DSM" Cable—*Continued*

Insulation Resistance. Not less than 500 megohm miles, at 60 degrees Fahrenheit. Any conductor.

Dielectric Strength. Insulation between conductors capable of withstanding for two seconds an A.C. test potential whose maximum instantaneous value is 500 volts. The insulation between conductors and sheath capable of withstanding a test with an A.C. potential whose maximum instantaneous value is 1400 volts.

Code No. and Number of Pairs	Number of Pairs Guaranteed	Arrangement of Color Groups Fig. No.	Thickness Sheath Inches	Mean Outside Diameter Inches	Approximate Weight Pounds per Foot	Convenient Number of Feet on Reels
DSM11	10	1	.061	.36	.31	3300
DSM16	15	1	.062	.39	.36	2900
DSM26	25	1	.064	.47	.47	4500
DSM51	50	1	.067	.60	.70	4200
DSM76	75	1	.069	.70	.88	3000
DSM101	100	2	.071	.78	1.06	3000
DSM152	150	3	.075	.93	1.41	2800
DSM202	200	4	.078	1.05	1.73	2200
DSM303	300	5	.082	1.24	2.29	1600
DSM404	400	6	.087	1.42	2.92	1400
DSM606	601	7	.093	1.70	4.04	1100
DSM909	902	8	.101	2.05	5.56	900
DSM1212	1203	9	.109	2.34	7.13	650
DSM1515	1505	10	.115	2.61	8.64	650

For Inside Construction

Type "FA" Cable

(Textile Insulated)

Replaces Type "F"

Sheath. Pure Lead.

Conductors. No. 22 A.W.G. tinned, double silk and single cotton insulation, covering on each pair colored white and red white.

Tracer Pair. One in outer layer colored blue and white.

Insulation Resistance. Not less than 500 megohm miles, at 60 degrees Fahrenheit.

Conductor Resistance. Not exceeding 96 ohms per mile of cable, at 68 degrees Fahrenheit.

Dielectric Strength. Insulation between conductors capable of withstanding for two seconds an A.C. test potential whose maximum instantaneous value is 700 volts. The insulation between conductors and sheath capable of withstanding a test with an A.C. potential whose maximum instantaneous value is 1400 volts.

Code No. and Number of Pairs	Number of Pairs Guaranteed	Thickness Sheath Inches	Mean Outside Diameter Inches	Approximate Weight Pounds per Foot	Convenient Number of Feet on Reels
FA101	101	.063	1.00	1.42	2500
FA152	151	.063	1.19	1.86	1600
FA202	201	.094	1.41	2.93	1500
FA303	302	.125	1.75	4.68	1200
FA404	403	.125	1.97	5.62	1100
FA606	605	.125	2.38	7.45	700

TCI Library: www.telephonecollectors.info

LEAD COVERED CABLE

For Inside Construction—*Continued*

Type "GA" Cable
(Textile Insulated)

Replaces Type "G"

Sheath. Pure Lead.

Conductors. No. 22 A.W.G. tinned, double silk and single cotton insulation, colored in accordance with a standard color scheme so that each pair is distinguishable from other pairs in the cable.

Conductor Resistance. Not exceeding 96 ohms per mile of cable at 68 degrees Fahrenheit.

Insulation Resistance. Not less than 500 megohm miles, at 60 degrees Fahrenheit.

Dielectric Strength. Insulation between conductors capable of withstanding for two seconds an A.C. test potential whose maximum instantaneous value is 700 volts. The insulation between conductors and sheath capable of withstanding a test with an A.C. potential whose maximum instantaneous value is 1400 volts.

Code No. and Number of Pairs	Number of Pairs Guaranteed	Thickness Sheath Inches	Mean Outside Diameter Inches	Approximate Weight Pounds per Foot	Convenient Number of Feet on Reels
GA6	6	.047	.34	.25	3500
GA11	11	.047	.41	.32	3500
GA16	16	.047	.47	.39	3500
GA21	21	.047	.52	.45	3500
GA26	26	.047	.56	.51	3500
GA31	31	.047	.59	.56	3500
GA41	41	.047	.67	.67	3000
GA51	51	.063	.77	.94	2500
GA76	76	.063	.89	1.19	2500
GA101	101	.063	1.00	1.42	2500
GA152	151	.063	1.19	1.86	1600
GA202	201	.094	1.41	2.93	1500

Type "AUA" Cable
(Textile Insulated)

Sheath. Pure Lead.

Conductors. No. 22 A.W.G. tinned, double cotton insulation, coated with cellulose acetate lacquer, colored in accordance with a standard color scheme so that each pair is distinguishable from other pairs in the cable.

Conductor Resistance. Not exceeding 96 ohms per mile of cable at 68 degrees Fahrenheit.

Insulation Resistance. Not less than 10 megohm miles at 60 degrees Fahrenheit.

Dielectric Strength. Insulation between conductors capable of withstanding for two seconds an A.C. test potential whose maximum instantaneous value is 700 volts. The insulation between conductors and sheath capable of withstanding a test with an A.C. potential whose maximum instantaneous value is 1400 volts.

TCI Library: www.telephonecollectors.info

LEAD COVERED CABLE

For Inside Construction

Type "AUA" Cable—*Continued*

(Textile Insulated)

Code No. and Number of Pairs	Number of Pairs Guaranteed	Thickness Sheath Inches	Mean Outside Diameter Inches	Approximate Weight Pounds per Foot	Convenient Number of Feet on Reels
AUA6	6	.047	.34	.25	3500
AUA11	11	.047	.41	.32	3500
AUA16	16	.047	.47	.39	3500
AUA21	21	.047	.52	.45	3500
AUA26	26	.047	.56	.51	3500
AUA31	31	.047	.59	.56	3500
AUA41	41	.047	.67	.66	3000
AUA51	51	.063	.77	.94	2500
AUA76	76	.063	.89	1.19	2500
AUA101	101	.063	1.00	1.42	2500

Type "MFA" Cable

(Textile Insulated)

Sheath. Pure Lead.

Conductors. No. 22 A.W.G. tinned, enamel, double silk and single cotton insulation, covering on each pair colored white and red-white.

Tracer Pair. One in outer layer colored blue and white.

Insulation Resistance. Not less than 500 megohm miles at 60 degrees Fahrenheit.

Conductor Resistance. Not exceeding 96 ohms per mile of cable at 68 degrees Fahrenheit.

Dielectric Strength. Insulation between conductors capable of withstanding for two seconds an A.C. test potential whose maximum instantaneous value is 700 volts. The insulation between conductors and sheath capable of withstanding a test with an A.C. potential whose maximum instantaneous value is 1400 volts.

Code No. and Number of Pairs	Number of Pairs Guaranteed	Thickness Sheath Inches	Mean Outside Diameter Inches	Approximate Weight Pounds per Foot	Convenient Number of Feet on Reels
MFA101	101	.063	1.00	1.42	2500
MFA152	151	.063	1.19	1.86	1600
MFA202	201	.094	1.41	2.93	1500
MFA303	302	.125	1.75	4.68	1200
MFA404	403	.125	1.97	5.62	1100
MFA606	605	.125	2.38	7.45	700

TCI Library: www.telephonecollectors.info

LEAD COVERED CABLE

For Inside Construction—*Continued*

Type "MGA" Cable
(Textile Insulated)

Sheath. Pure Lead.

Conductors. No. 22 A.W.G. tinned, enamel, double silk and single cotton insulation, colored in accordance with a standard color scheme so that each pair is distinguishable from other pairs in the cable.

Conductor Resistance. Not exceeding 96 ohms per mile of cable, at 68 degrees Fahrenheit.

Insulation Resistance. Not less than 500 megohm miles at 60 degrees Fahrenheit.

Dielectric Strength. Insulation between conductors capable of withstanding for two seconds an A.C. test potential whose maximum instantaneous value is 700 volts. The insulation between conductors and sheath capable of withstanding a test with an A.C. potential whose maximum instantaneous value is 1400 volts.

Code No. and Number of Pairs	Number of Pairs Guaranteed	Thickness Sheath Inches	Mean Outside Diameter Inches	Approximate Weight Pounds per Foot	Convenient Number of Feet on Reels
MGA6	6	.047	.34	.25	3500
MGA11	11	.047	.41	.32	3500
MGA16	16	.047	.47	.39	3500
MGA21	21	.047	.52	.45	3500
MGA26	26	.047	.56	.51	3500
MGA31	31	.047	.59	.56	3500
MGA41	41	.047	.67	.67	3000
MGA51	51	.063	.77	.94	2500
MGA76	76	.063	.89	1.19	2500
MGA101	101	.063	1.00	1.42	2500
MGA152	151	.063	1.19	1.86	1600
MGA202	201	.094	1.41	2.93	1500

Type "NUA" Cable
(Textile Insulated)

Replaces Type "MUA"

Sheath. Pure Lead.

Conductors. No. 22 A.W.G. tinned, enamel, double cotton lacquered insulation, colored in accordance with standard color scheme so that each pair is distinguishable from other pairs in the cable.

Conductor Resistance. Not exceeding 96 ohms per mile of cable, at 68 degrees Fahrenheit.

Insulation Resistance. Not less than 20 megohm miles at 60 degrees Fahrenheit.

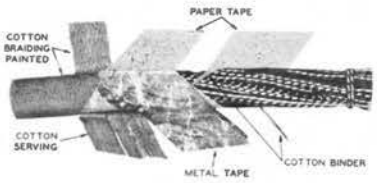
Dielectric Strength. Insulation between conductors capable of withstanding for two seconds an A.C. test potential whose maximum instantaneous value is 700 volts. The insulation between conductors and sheath capable of withstanding a test with an A.C. potential whose maximum instantaneous value is 1400 volts.

Code No. and Number of Pairs	Number of Pairs Guaranteed	Thickness Sheath Inches	Mean Outside Diameter Inches	Approximate Weight Pounds per Foot	Convenient Number of Feet on Reels
NUA6	6	.047	.34	.25	3500
NUA11	11	.047	.41	.32	3500
NUA16	16	.047	.47	.39	3500
NUA21	21	.047	.52	.45	3500
NUA26	26	.047	.56	.51	3500
NUA31	31	.047	.59	.56	3500
NUA41	41	.047	.67	.66	3000
NUA51	51	.063	.77	.94	2500

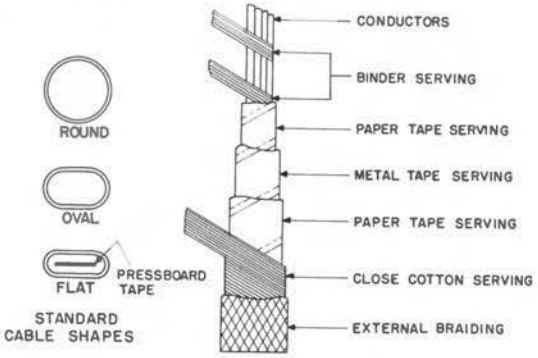
TCI Library: www.telephonecollectors.info

CABLE—SWITCHBOARD

"CL" Type



Switchboard Cable "CL" Type



Type "CL" Cable
Note: Binder Serving Not Used on Quadded Cable

The Western Electric "CL" Type switchboard cable, having tinned or tinned enameled, lacquered, conductors, represents the highest development in the art of switchboard cable manufacture. The "CL" type cable listed in the following tables consist of tinned copper conductors with two servings of silk and one serving of cotton impregnated with cellulose acetate. Cellulose acetate impregnated conductors are referred to in the tabulation as "lacquered" conductors. Included in the "CL" type cables are cables with tinned copper enameled conductors. These are identified by four digit code numbers—1016CL, 1024CL, etc. All "CL" cables except the quadded 500CL and 1500CL have an outer covering consisting of the following: The core of each cable is bound with a binder serving of cotton; a serving of paper tape; a serving of metal tape; and a second serving of paper tape. Over this is applied a close serving of cotton and a close braiding of cotton. The completed cable is painted with a gray cable paint. (See illustration.)

In quadded cable (500CL and 1500CL types) the cotton binder serving is omitted and a heavier first serving of paper tape is used.

The "CL" type switchboard cable is designed in three general shapes—flat, oval and round. In the following tabulations the larger dimensions for oval or flat cable represent the width and the smaller dimensions the thickness.

Tinned Conductors

Double Silk, Single Cotton Insulation, Lacquered

Code No.	Conductors	Pairs			Singles			Dimensions (Inches)	Shape	Replaces
		No.	Gauge	†Color	No.	Gauge	†Color			
16CL	63	20	22	1–20	20	22	1–20	.350 x .760	Oval	
24CL	43	20	22	1–20	—	—	—	.330 x .560	Oval	
50CL	33	10	22	1–10	10	22	1–10	13/32 Diam.	Round	6050
62CL	63	15 15	22 22	1–15 21–35	—	—	—	9/16 Diam.	Round	6062
66CL	103	40 5 5	22 22 22	1–40 121–125 141–145	—	—	—	.72 Diam.	Round	1066
69CL	208	20 20 20 20 20	22 22 22 22 22	1–20 1–20 1–20 1–20 1–20	—	—	—	.98 Diam.	Round	1069
70CL	83	20 20	22 22	1–20 141–160	—	—	—	15/32 x 13/16	Oval	

Note: Quantity shown under heading "Conductors" includes spares.
† The numbers listed refer to the color combinations shown under the heading "Colors of Insulation on Conductors", page 34.

TCI Library: www.telephonecollectors.info

CABLE—SWITCHBOARD

Type "CL"

TINNED CONDUCTORS—Continued

Double Silk, Single Cotton Insulation, Lacquered

Code No.	Conductors	Pairs			Singles			Dimensions (Inches)	Shape	Replaces
		No.	Gauge	†Color	No.	Gauge	†Color			
74CL	21	10	22	181–190	—	—	—	3/8 Diam.	Round	6074, 6079
97CL	132	64	22	1–64	—	—	—	.81 Diam.	Round	1097
100CL	83	20 20	24 24	1–20 141–160	—	—	—	.73 x .49	Oval	1100
103CL	42	20	24	1–20	—	—	—	.58 x .37	Oval	1103
106CL	103	20 20	22 22	1–20 141–160	20	22	1–20	11/16 Diam.	Round	6106
125CL	23	10	19	1–10	—	—	—	.52 Diam.	Round	1125
182CL	13	6	22	181–186	—	—	—	5/16 Diam.	Round	6182
183CL	53	10 10	22 22	1–10 141–150	10	22	1–10	17/32 Diam.	Round	6183
232CL	83	20 20	22 22	1–20 141–160	—	—	—	.350 x 1.570	Flat	—
236CL	63	20	24	1–20	20	24	1–20	.82 x .44	Flat	1236
239CL	103	20 20	22 22	1–20 161–180	20	22	1–20	.370 x 1.57	Flat	—
241CL	43	20	22	1–20	—	—	—	.33 x .76	Flat	—
242CL	63	20	22	1–20	20	22	1–20	.33 x 1.57	Flat	—
243CL	312	20 20 20 20 20	22 22 22 22 22	1–20 1–20 1–20 1–20 1–20	20 20 20 20 20	22 22 22 22 22	1–20 1–20 1–20 1–20 1–20	1.18 Diam.	Round	—

Note: Quantity shown under heading "Conductors" includes spares.

† The numbers listed refer to the color combinations shown under the heading "Colors of Insulation on Conductors", page 34.

TINNED ENAMELED CONDUCTORS

Double Silk, Single Cotton Insulation, Lacquered

Code No.	Conductors	Pairs			Singles			Dimensions (Inches)	Shape	Replaces
		No.	Gauge	†Color	No.	Gauge	†Color			
1016CL	63	20	22	1–20	20	22	1–20	.82 x .44	Oval	1016
1024CL	43	20	22	1–20	—	—	—	.59 x .45	Oval	1024
1050CL	33	10	22	1–10	10	22	1–10	.46 Diam.	Round	1050
1066CL	103	40 5 5	22 22 22	1–40 121–125 141–145	—	—	—	.77 Diam.	Round	1066

Note: Quantity shown under heading "Conductors" includes spares.

† The numbers listed refer to the color combinations shown under the heading "Colors of Insulation on Conductors", page 34.

TCI Library: www.telephonecollectors.info

CABLE—SWITCHBOARD

Type "CL"

TINNED ENAMELLED CONDUCTORS—Continued

Double Silk, Single Cotton Insulation, Lacquered

Code No.	Conductors	Pairs			Singles			Dimensions (Inches)	Shape	Replaces
		No.	Gauge	†Color	No.	Gauge	†Color			
1069CL	208	20	22	1–20	—	—	—	1.06 Diam.	Round	1069
		20	22	1–20						
		20	22	1–20						
		20	22	1–20						
		20	22	1–20						
1070CL	83	20	22	1–20	—	—	—	.82 x .55	Oval	1070
		20	22	141–160						
1074CL	21	10	22	181–190	—	—	—	.42 Diam.	Round	1074
1182CL	13	6	22	181–186	—	—	—	.32 Diam.	Round	1182
1475CL	12	*6	22	181–186	—	—	—	.37 Diam.	Round	1475
1476CL	24	*12	22	181–192	—	—	—	.50 Diam.	Round	1476

* Made up of shielded twisted pairs. The wires are twisted in pairs and a ground wire is laid longitudinally with the twisted pair. On each pair is a braided shield of copper wire. Intended for use in multi-channel carrier circuits.

Note: Quantity shown under heading "Conductors" includes spares.

† The numbers listed refer to the color combinations shown under the heading "Colors of Insulation on Conductors", page 34.

Toll Quadded Cable

TINNED CONDUCTORS

Double Silk, Single Cotton Insulation, Lacquered

Code No.	Conductors	No. of Quads	Gauge	†Quad Color	Dimensions (Inches)	Shape
500CL	8	2	22	1 & 2	9/32 Diam.	Round
501CL	16	4	22	1–4	13/32 Diam.	Round
502CL	32	8	22	1–8	1/2 Diam.	Round
503CL	40	10	22	1–10	9/16 Diam.	Round
504CL	52	12	22	1–12	19/32 Diam.	Round
505CL	68	16	22	1–16	11/16 Diam.	Round
506CL	84	20	22	1–20	23/32 Diam.	Round

Note: Quantity shown under heading "Conductors" includes spares.

† The numbers listed refer to the color combinations shown under the heading "Colors of Insulation on Conductors", page 34.

TINNED ENAMELED CONDUCTORS

Double Silk, Single Cotton Insulation, Lacquered

Code No.	Conductors	No. of Quads	Gauge	†Quad Color	Dimensions (Inches)	Shape
1500CL	8	2	22	1 & 2	9/32 Diam.	Round
1501CL	16	4	22	1–4	13/32 Diam.	Round
1502CL	32	8	22	1–8	1/2 Diam.	Round
1503CL	40	10	22	1–10	9/16 Diam.	Round
1504CL	52	12	22	1–12	19/32 Diam.	Round
1505CL	68	16	22	1–16	11/16 Diam.	Round
1506CL	84	20	22	1–20	23/32 Diam.	Round

Note: Quantity shown under heading "Conductors" includes spares.

† The numbers listed refer to the color combinations shown under the heading "Colors of Insulation on Conductors", page 34.

TCI Library: www.telephonecollectors.info

CABLE—SWITCHBOARD—*Continued*

"6000" Type



6084 Cable

The following switchboard cables, coded as "6000" type, employ tinned enameled conductors which are covered with two servings of cotton. The core of each cable is bound with a binder serving of cotton, a serving of paper tape, a serving of metal tape, and a second serving of paper tape. Over this is applied a close serving of cotton and a close braiding of cotton. The completed cable is painted with a gray cable paint.

Code No.	Conductors	Pairs			Singles			Dimensions (Inches)
		No.	Gauge	†Color	No.	Gauge	†Color	
6016	63	20	22	1–20	20	22	1–20	$^{49}/_{64}$ x $^{25}/_{64}$
6024	43	20	22	1–20	—	—	—	$^{37}/_{64}$ x $^{23}/_{64}$
6050	33	10	22	1–10	10	22	1–10	$^{33}/_{64}$ x $^{21}/_{64}$
6062	63	15	22	1–15	—	—	—	$^{43}/_{64}$ x $^{7}/_{16}$
		15	22	21–35				
*6066	103	40	22	1–40	—	—	—	$^{3}/_{4}$ dia.
		5	22	121–125				
		5	22	141–145				
*6069	205	100	22	1–100	—	—	—	$^{57}/_{64}$ dia.
6070	83	20	22	1–20	—	—	—	$^{49}/_{64}$ x $^{15}/_{32}$
		20	22	141–160				
*6074	21	—	—	—	20	22	1–20	$^{23}/_{64}$ dia.
6079	23	10	22	1–10	—	—	—	$^{29}/_{64}$ x $^{19}/_{64}$
6084	63	20	22	1–20	20	22	1–20	$1^{11}/_{32}$ x $^{23}/_{64}$
6097	132	64	22	1–64	—	—	—	$^{7}/_{8}$ x $^{5}/_{8}$
6100	83	20	24	1–20	—	—	—	$^{11}/_{16}$ x $^{15}/_{32}$
		20	24	141–160				
6102	103	20	24	1–20	20	24	21–40	$^{49}/_{64}$ x $^{31}/_{64}$
		20	24	141–160				
6103	42	20	24	1–20	—	—	—	$^{35}/_{64}$ x $^{23}/_{64}$
6106	103	20	22	1–20	20	22	21–40	$^{25}/_{32}$ x $^{35}/_{64}$
		20	22	141–160				
6125	23	10	19	1–10	—	—	—	$^{9}/_{16}$ x $^{11}/_{32}$
6182	13	6	22	(d)	—	—	—	$^{3}/_{8}$ x $^{1}/_{4}$
6183	53	10	22	1–10	10	22	21–30	$^{5}/_{8}$ x $^{13}/_{32}$
		10	22	141–150				
6191	93	20	22	1–20	30	22	21–50	$^{23}/_{32}$ x $^{33}/_{64}$
		10	22	121–130				
6196	43	20	22	(e)	—	—	—	$^{39}/_{64}$ x $^{23}/_{64}$
6201	63	20	22	(k)	20	22	1–20	$^{21}/_{32}$ x $^{7}/_{16}$
(y) 6205	39	12	22	1–12	12	22	21–32	$^{35}/_{64}$ x $^{23}/_{64}$
6222	103	10	24	121–130	20	24	41–60	$^{49}/_{64}$ x $^{1}/_{2}$
		10	24	151–160				
		10	24	41–50				
		10	24	71–80				
6227	83	20	24	1–20	—	—	—	$1^{19}/_{64}$ x $^{3}/_{8}$
		20	24	141–160				
6233	123	40	22	1–40	40	22	1–40	$^{7}/_{8}$ x $^{39}/_{64}$
6234	164	40	22	1–40	—	—	—	$^{31}/_{32}$ x $^{43}/_{64}$
		40	22	121–160				
*6235	205	40	22	1–40	40	22	1–40	$^{57}/_{64}$ dia.
		40	22	121–160				
(u) 6236	63	20	24	1–20	20	24	1–20	$^{3}/_{4}$ x $^{3}/_{8}$
(w) 6237	(x) 312	20	22	(v)	20	22	1–20	$1^{1}/_{16}$ dia.
		20	22	(v)	20	22	1–20	
		20	22	(v)	20	22	1–20	
		20	22	(v)	20	22	1–20	
		20	22	(v)	20	22	1–20	

* Round shaped cables. All other cables are oval or flat as indicated by the dimensions.
† The numbers listed refer to the color combinations shown under the heading "Colors of Insulation on Conductors", page 34.
(d) Blue, orange, green, brown, slate and blue-white paired with singles, colors No. 41-46.
(e) Nos. 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 141, 143, 145, 147, 149, 151, 153, 155, 157 and 159.
(k) Nos. 1, 22, 3, 24, 5, 26, 7, 28, 9, 30, 11, 32, 13, 34, 15, 36, 17, 38, 19, 40.
(u) Partially replaces No. 6120.
(v) Nos. 1, 22, 3, 24, 5, 26, 7, 28, 9, 30, 11, 32, 13, 34, 15, 36, 17, 38, 19, 40.
(w) May be used in place of 5 No. 6201 cables. Each group has a distinctive colored binder serving, brown, slate, blue, green and orange.
(x) One pair and one single may be defective.
(y) Replaces No. 6204.

Note: Quantity shown under heading "Conductors" includes spares.

TCI Library: www.telephonecollectors.info

CABLE—SWITCHBOARD—*Continued*

"1450" Type

The following cables have tinned enameled conductors which are covered with a single silk serving and a cotton braid. The core is bound with a binder serving of cotton and impregnated with wax. It is then covered with two paper tape servings, a close cotton serving and a close cotton braid. The completed cable is painted with a gray cable paint.

Code No.	Conductors	Pairs			Approx. Diam. (Inches)
		No.	Gauge	†Color	
1450	6	3	20	1a–3a	19/64
1451	12	6	20	1a–6a	25/64
1452	16	8	20	1a–8a	29/64
1453	22	11	20	1a–11a	31/64
1454	20	10	16	1–10	1/2
1455	3	—	20	(a)	13/64

(a) One triple having conductor colors as follows: Yellow, yellow-green and red-green.

† The numbers listed refer to the color combinations shown under the heading "Colors of Insulation on Conductors", page 34.

Inter-phone Cable

The conductors are provided with a single silk and single cotton insulation, which is colored in such a way that each pair and each single wire can be identified. The cable core is then impregnated with a wax compound and is covered with servings of paper and a heavy cotton braiding. In the case of lead covered cable a lead sheath .047″ thick is placed over the core instead of the cotton braiding.

Code No.	Conductors	Pairs			Singles			Covering	Approx. Diam. (Inches)
		No.	Gauge	†Color	No.	Gauge	†Color		
142B	8	—	—	—	8	22	1–8*	Brown Glazed Cotton	.32
161B	8	—	—	—	7	22	1–7	Cotton Braid Painted Gray	.28
161BS	8	—	—	—	7	22	1–7	Lead Sheath	.28
162B	12	—	—	—	11	22	1–11	Cotton Braid Painted Gray	.32
162BS	12	—	—	—	11	22	1–11	Lead Sheath	.31
164B	12	2	18	121–122	6	22	1–6	Cotton Braid Painted Gray	.35
164BS	12	2	18	121–122	6	22	1–6	Lead Sheath	.34
185B	4	—	—	—	4	22	1–4	Cotton Braid Painted Gray	.25
244B	22	8 2	22 18	1–8 121–122	—	—	—	Cotton Braid Painted Gray	.38
244BS	22	8 2	22 18	1–8 121–122	—	—	—	Lead Sheath	.41
245B	22	8 2	22 18	1–8 121–122	—	—	—	Brown Cotton Unpainted	.38
246B	34	14 2	22 18	1–14 121–122	—	—	—	Cotton Braid Painted Gray	.42
246BS	34	14 2	22 18	1–14 121–122	—	—	—	Lead Sheath	.45
247B	34	14 2	22 18	1–14 121–122	—	—	—	Brown Cotton Unpainted	.42
248B	42	18 2	22 18	1–18 121–122	—	—	—	Cotton Braid Painted Gray	.45
248BS	42	18 2	22 18	1–18 121–122	—	—	—	Lead Sheath	.48
249B	50	22 2	22 18	1–22 121–122	—	—	—	Cotton Braid Painted Gray	.48
249BS	50	22 2	22 18	1–22 121–122	—	—	—	Lead Sheath	.52

* Except that red tracer is omitted.

Note: Quantity shown under the heading "Conductors" includes spares.

† The numbers listed refer to the color combinations shown under the heading "Colors of Insulation on Conductors", page 34.

TCI Library: www.telephonecollectors.info

CABLE—SWITCHBOARD

Inter-phone Cable—*Continued*

Code No.	Conductors	Pairs No.	Pairs Gauge	Pairs †Color	Singles No.	Singles Gauge	Singles †Color	Covering	Approx. Diam. (Inches)
250B	58	26 2	22 18	1–26 121–122	—	—	—	Cotton Braid Painted Gray	.52
250BS	58	26 2	22 18	1–26 121–122	—	—	—	Lead Sheath	.55
251B	72	33 2	22 18	1–33 121–122	—	—	—	Cotton Braid Painted Gray	.56
251BS	72	33 2	22 18	1–33 121–122	—	—	—	Lead Sheath	.59

Note: Quantity shown under the heading "Conductors" includes spares.

† The numbers listed refer to the color combinations shown under the heading "Colors of Insulation on Conductors".

COLORS OF INSULATION ON CONDUCTORS

In all types of Western Electric switchboard cable, the outer insulation on each of the conductors is colored in accordance with a definite color scheme so that they may be easily identified. In our tabulation of switchboard cable on preceding pages under the heading of "Color," the various color combinations of the conductors are identified by the numbers shown, which refer to the following lists:

PAIRS

Combination No.	Colors of Insulation	
1	Blue	Paired with white
2	Orange	Paired with white
3	Green	Paired with white
4	Brown	Paired with white
5	Slate	Paired with white
6	Blue-white	Paired with white
7	Blue-orange	Paired with white
8	Blue-green	Paired with white
9	Blue-brown	Paired with white
10	Blue-slate	Paired with white
11	Orange-white	Paired with white
12	Orange-green	Paired with white
13	Orange-brown	Paired with white
14	Orange-slate	Paired with white
15	Green-white	Paired with white
16	Green-brown	Paired with white
17	Green-slate	Paired with white
18	Brown-white	Paired with white
19	Brown-slate	Paired with white
20	Slate-white	Paired with white
21	Blue	Paired with red
22	Orange	Paired with red
23	Green	Paired with red
24	Brown	Paired with red
25	Slate	Paired with red
26	Blue-white	Paired with red
27	Blue-orange	Paired with red
28	Blue-green	Paired with red
29	Blue-brown	Paired with red
30	Blue-slate	Paired with red
31	Orange-white	Paired with red
32	Orange-green	Paired with red
33	Orange-brown	Paired with red
34	Orange-slate	Paired with red
35	Green-white	Paired with red
36	Green-brown	Paired with red
37	Green-slate	Paired with red
38	Brown-white	Paired with red
39	Brown-slate	Paired with red
40	Slate-white	Paired with red
41	Blue	Paired with black
42	Orange	Paired with black
43	Green	Paired with black
44	Brown	Paired with black
45	Slate	Paired with black
46	Blue-white	Paired with black
47	Blue-orange	Paired with black
48	Blue-green	Paired with black
49	Blue-brown	Paired with black
50	Blue-slate	Paired with black
51	Orange-white	Paired with black
52	Orange-green	Paired with black
53	Orange-brown	Paired with black
54	Orange-slate	Paired with black
55	Green-white	Paired with black
56	Green-brown	Paired with black
57	Green-slate	Paired with black
58	Brown-white	Paired with black
59	Brown-slate	Paired with black
60	Slate-white	Paired with black
61	Blue	Paired with red-white
62	Orange	Paired with red-white
63	Green	Paired with red-white
64	Brown	Paired with red-white
65	Slate	Paired with red-white
66	Blue-white	Paired with red-white
67	Blue-orange	Paired with red-white
68	Blue-green	Paired with red-white
69	Blue-brown	Paired with red-white
70	Blue-slate	Paired with red-white
71	Orange-white	Paired with red-white
72	Orange-green	Paired with red-white
73	Orange-brown	Paired with red-white
74	Orange-slate	Paired with red-white
75	Green-white	Paired with red-white
76	Green-brown	Paired with red-white
77	Green-slate	Paired with red-white
78	Brown-white	Paired with red-white
79	Brown-slate	Paired with red-white
80	Slate-white	Paired with red-white
81	Blue	Paired with black-white
82	Orange	Paired with black-white
83	Green	Paired with black-white
84	Brown	Paired with black-white
85	Slate	Paired with black-white
86	Blue-white	Paired with black-white

TCI Library: www.telephonecollectors.info

CABLE—SWITCHBOARD

COLORS OF INSULATION ON CONDUCTORS—Continued

PAIRS

Combination No.	Colors of Insulation	
87	Blue-orange	Paired with black-white
88	Blue-green	Paired with black-white
89	Blue-brown	Paired with black-white
90	Blue-slate	Paired with black-white
91	Orange-white	Paired with black-white
92	Orange-green	Paired with black-white
93	Orange-brown	Paired with black-white
94	Orange-slate	Paired with black-white
95	Green-white	Paired with black-white
96	Green-brown	Paired with black-white
97	Green-slate	Paired with black-white
98	Brown-white	Paired with black-white
99	Brown-slate	Paired with black-white
100	Slate-white	Paired with black-white
101	Blue	Paired with red-black
102	Orange	Paired with red-black
103	Green	Paired with red-black
104	Brown	Paired with red-black
105	Slate	Paired with red-black
106	Blue-white	Paired with red-black
107	Blue-orange	Paired with red-black
108	Blue-green	Paired with red-black
109	Blue-brown	Paired with red-black
110	Blue-slate	Paired with red-black
111	Orange-white	Paired with red-black
112	Orange-green	Paired with red-black
113	Orange-brown	Paired with red-black
114	Orange-slate	Paired with red-black
115	Green-white	Paired with red-black
116	Green-brown	Paired with red-black
117	Green-slate	Paired with red-black
118	Brown-white	Paired with red-black
119	Brown-slate	Paired with red-black
120	Slate-white	Paired with red-black
121	Red-blue	Paired with white
122	Red-orange	Paired with white
123	Red-green	Paired with white
124	Red-brown	Paired with white
125	Red-slate	Paired with white
126	Red-blue-white	Paired with white
127	Red-blue-orange	Paired with white
128	Red-blue-green	Paired with white
129	Red-blue-brown	Paired with white
130	Red-blue-slate	Paired with white
131	Red-orange-white	Paired with white
132	Red-orange-green	Paired with white
133	Red-orange-brown	Paired with white
134	Red-orange-slate	Paired with white
135	Red-green-white	Paired with white
136	Red-green-brown	Paired with white
137	Red-green-slate	Paired with white
138	Red-brown-white	Paired with white
139	Red-brown-slate	Paired with white
140	Red-slate-white	Paired with white
141	Red-blue	Paired with red
142	Red-orange	Paired with red
143	Red-green	Paired with red
144	Red-brown	Paired with red
145	Red-slate	Paired with red
146	Red-blue-white	Paired with red
147	Red-blue-orange	Paired with red
148	Red-blue-green	Paired with red
149	Red-blue-brown	Paired with red
150	Red-blue-slate	Paired with red
151	Red-orange-white	Paired with red
152	Red-orange-green	Paired with red
153	Red-orange-brown	Paired with red
154	Red-orange-slate	Paired with red
155	Red-green-white	Paired with red
156	Red-green-brown	Paired with red
157	Red-green-slate	Paired with red
158	Red-brown-white	Paired with red
159	Red-brown-slate	Paired with red
160	Red-slate-white	Paired with red
161	Black-blue	Paired with red
162	Black-orange	Paired with red
163	Black-green	Paired with red
164	Black-brown	Paired with red
165	Black-slate	Paired with red
166	Black-blue-white	Paired with red
167	Black-blue-orange	Paired with red
168	Black-blue-green	Paired with red
169	Black-blue-brown	Paired with red
170	Black-blue-slate	Paired with red
171	Black-orange-white	Paired with red
172	Black-orange-green	Paired with red
173	Black-orange-brown	Paired with red
174	Black-orange-slate	Paired with red
175	Black-green-white	Paired with red
176	Black-green-brown	Paired with red
177	Black-green-slate	Paired with red
178	Black-brown-white	Paired with red
179	Black-brown-slate	Paired with red
180	Black-slate-white	Paired with red

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

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

PAIRS (With Braided Cotton Conductors)

1-A	Black	Paired with black-red
2-A	Red	Paired with red-green
3-A	Yellow	Paired with yellow-green
4-A	Brown	Paired with brown-red
5-A	Slate	Paired with slate-red
6-A	Black	Paired with red
7-A	Yellow	Paired with red
8-A	Brown	Paired with red
9-A	Slate	Paired with red
10-A	Black-red	Paired with red-green
11-A	Yellow-green	Paired with brown-red
12-A	Orange	Paired with red-orange

TCI Library: www.telephonecollectors.info

CABLE—SWITCHBOARD

COLORS OF INSULATION ON CONDUCTORS—Continued

SINGLES

Combination No.	Colors of Insulation	Combination No.	Colors of Insulation	Combination No.	Colors of Insulation
1	Red-blue	21	Black-blue	41	Red-black-blue
2	Red-orange	22	Black-orange	42	Red-black-orange
3	Red-green	23	Black-green	43	Red-black-green
4	Red-brown	24	Black-brown	44	Red-black-brown
5	Red-slate	25	Black-slate	45	Red-black-slate
6	Red-blue-white	26	Black-blue-white	46	Red-black-blue-white
7	Red-blue-orange	27	Black-blue-orange	47	Red-black-blue-orange
8	Red-blue-green	28	Black-blue-green	48	Red-black-blue-green
9	Red-blue-brown	29	Black-blue-brown	49	Red-black-blue-brown
10	Red-blue-slate	30	Black-blue-slate	50	Red-black-blue-slate
11	Red-orange-white	31	Black-orange-white	51	Red-black-orange-white
12	Red-orange-green	32	Black-orange-green	52	Red-black-orange-green
13	Red-orange-brown	33	Black-orange-brown	53	Red-black-orange-brown
14	Red-orange-slate	34	Black-orange-slate	54	Red-black-orange-slate
15	Red-green-white	35	Black-green-white	55	Red-black-green-white
16	Red-green-brown	36	Black-green-brown	56	Red-black-green-brown
17	Red-green-slate	37	Black-green-slate	57	Red-black-green-slate
18	Red-brown-white	38	Black-brown-white	58	Red-black-brown-white
19	Red-brown-slate	39	Black-brown-slate	59	Red-black-brown-slate
20	Red-slate-white	40	Black-slate-white	60	Red-black-slate-white

SPARE PAIRS

Combination No.	Colors of Insulation	
1	White	Paired with red
2	White	Paired with black
3	Red	Paired with black
4	Red-white	Paired with white
5	Red-white	Paired with red
6	Red-white	Paired with black
7	Black-white	Paired with white
8	Black-white	Paired with red
9	Black-white	Paired with black
10	Red-black	Paired with white
11	Red-black	Paired with red
12	Red-black	Paired with black

SPARE SINGLES

Combination No.	Colors of Insulation
1	Red-white
2	Black-white
3	Red-black
4	Red-black-white

GROUND WIRE

Combination No.	Color of Insulation
1	Black

QUADS

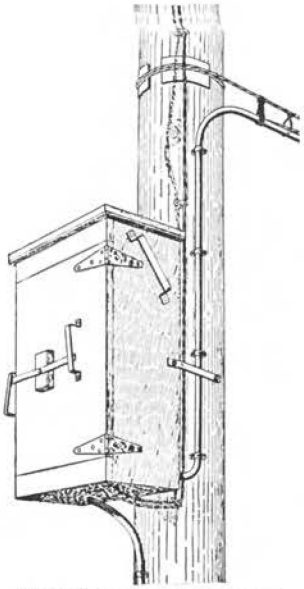
Quad No.	First Pair Color of Cotton		Second Pair *Color of Cotton	
		Paired With		Paired With
1	Blue	Blue-red	Blue-Nov. black-white	Blue-Nov. red-white
2	Orange	Orange-red	Orange-Nov. black-white	Orange-Nov. red-white
3	Green	Green-red	Green-Nov. black-white	Green-Nov. red-white
4	Brown	Brown-red	Brown-Nov.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

* Color listed as "Novelty Black" or "Novelty Red" consists of one ply of black or red yarn, respectively, twisted together with one ply of white yarn to form a single thread.

TCI Library: www.telephonecollectors.info

CABLE TERMINALS

General



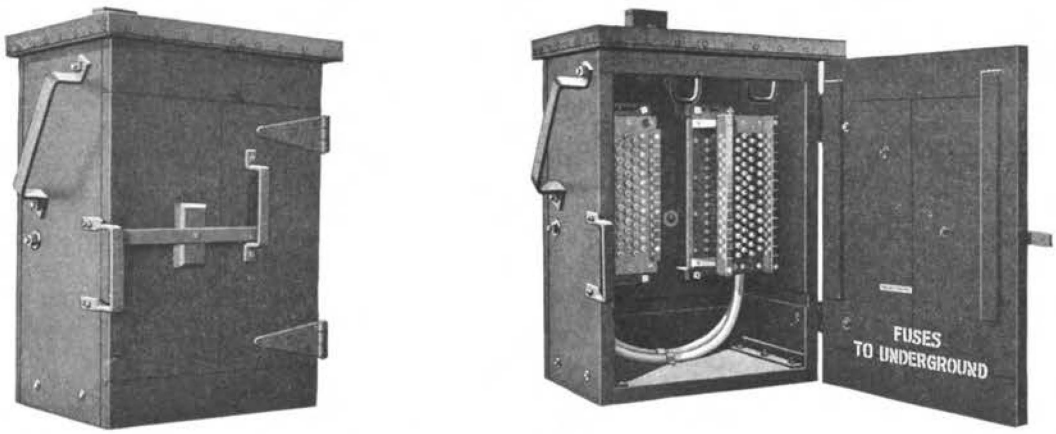
"B" Type Cable Terminal

Cable terminals used out-of-doors should include a means of effectively sealing the cable end in such a manner as to prevent the entrance of moisture into the cable core. Experience indicates that the most satisfactory results are obtained by the use of terminating chambers in which cable stubs are connected and sealed at the factory. It is then only necessary to splice the cable stub to the cable in the field and the usual rubber-covered wire pothead is avoided, thereby eliminating an expensive field operation. By this method, the connecting and potheading is accomplished in the factory with every facility for producing a perfect product and the best electrical and mechanical qualities are obtained.

Several styles of Western Electric cable terminals for out-door use may be obtained with cable stubs of No. 22 B. & S. gauge cable of suitable length, connected and potheaded in the terminals.

The selection of Cable Terminals for use at various points in the plant involves the provision of suitable protection against lightning and crosses with neighboring light and power circuits and also protection against the entrance of moisture into the cable core. Proper cross-connecting facilities should be provided where required and provision made for future changes and additions. The cable terminals, cable terminal boxes and accessory apparatus described in the succeeding pages offer these features in a number of combinations.

Type "B" Cable Terminals (Protected)



B26 Cable Terminal

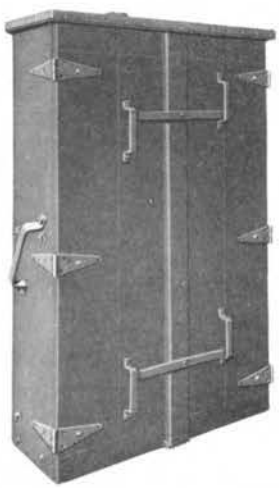
"B" Cable Terminals have been designed to supply a flexible form of terminal, adaptable for use at many points in a cable system, and having the highest electrical and mechanical qualities. Potheading in the field is eliminated through their use.

Each complete "B" Cable Terminal consists of a "B" Cable Terminal Box in which are assembled a cast iron "B" Fuse Chamber and a cast iron "B" Binding Post Chamber. These two items are fully described in connection with their separate listing. A cable stub is connected and potheaded in each chamber.

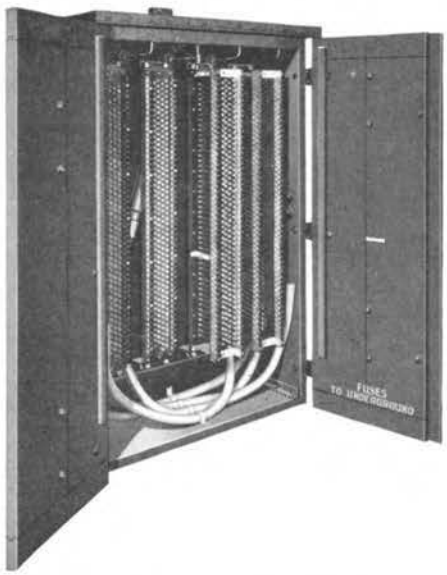
TCI Library: www.telephonecollectors.info

CABLE TERMINALS

Type "B" Cable Terminals (Protected)—*Continued*



B202 Cable Terminal. Closed View



B202 Cable Terminal. Open View

The boxes are substantially constructed of wood with a sheet zinc covering on the top and are finished with green pole paint. The bottom of the box is removable. Suitable space is provided in the lower part of the boxes for the splicing of the terminating cables to the cable stubs which are attached to the sealed chambers. Holes in the bottom of the terminal box permit bridle wires or drops to be connected to the cable terminal and, where necessary, the No. 83A Protector Mounting may be mounted nearby to supply lightning protection for these lines.

1. At the junction of underground and aerial cable, at locations where fuse protection is required no potheading in the field is necessary with a complete "B" Cable Terminal. This terminal is designed for cross-connecting and provides fuse mountings.

2. Where underground and aerial cables are joined, at locations where fuse protection is required and open or drop wires are also connected to the cable lines, a "B" Cable Terminal may be used for cross-connecting the cables and No. 83A Protector Mountings placed on the pole to provide open space cut-outs for the separate lines.

3. When open or drop wires are connected to an underground cable, at locations where fuse protection is required a partially equipped "B" Cable Terminal Box having a fuse chamber may be used and open space cut-outs inserted in the lines by means of the No. 83A Protector Mounting placed on the pole.

4. Aerial cable may be joined to open or drop lines by means of a "B" Cable Terminal Box in which a "B" binding post chamber is used. Lightning protection may be provided, if needed, by the use of a No. 83A Protector Mounting mounted on the pole.

5. When it is desired to place a cross-connecting terminal at the point where aerial cable branches, or to cross-connect long sections of aerial cable, a "B" Cable Terminal Box may be used and equipped with two "B" Binding Post Chambers. These combinations are covered in Type "BB" Cable Terminals.

TCI Library: www.telephonecollectors.info

CABLE TERMINALS

Type "B" Cable Terminals (Protected)—*Continued*

The listing of Type "B" Cable Terminals complete includes a terminal box, equipped with fuse chambers and binding post chambers, each of which is supplied with a cable stub attached and pot-headed, but do not include the No. 7T Fuses, two of which are needed for each pair of wires and they should be ordered separately. Fuse chambers and binding post chambers may be ordered as separate items and are listed and described under their proper headings.

The B26 Cable Terminal will terminate both a 26 pair underground cable and a 26 pair aerial cable and provides for cross-connection. The other sizes have similar capacity ratings.

Pole seats may be used with the two smaller sizes of "B" Cable Terminals and these together with balconies for the large terminals can be obtained.

Code No.	Capacity Pairs	Cable Terminal Box No.	Includes Equipped With
B26	26	B26	1 B26A Fuse Chamber and 1 B26A Binding Post Chamber
B51	51	B51	1 B51A Fuse Chamber and 1 B51A Binding Post Chamber
B76	76	B76	1 B76A Fuse Chamber and 1 B76A Binding Post Chamber
B101	101	B101	1 B101A Fuse Chamber and 1 B101A Binding Post Chamber
B152	152	B152	2 B76B Fuse Chamber and 2 B76B Binding Post Chamber
B202	202	B202	2 B101B Fuse Chamber and 2 B101B Binding Post Chamber
B304	304	B304	2 B76B Fuse Chamber and 2 B76B Binding Post Chamber 2 B76C Fuse Chamber and 2 B76C Binding Post Chamber
B404	404	B404	2 B101B Fuse Chamber and 2 B101B Binding Post Chamber 2 B101C Fuse Chamber and 2 B101C Binding Post Chamber

Note. "B" Fuse Chambers do not include the No. 7T Fuses which must be ordered separately. See description of "B" Fuse Chambers.

Type "BB" Cable Terminals (Unprotected)

The Type "BB" Cable Terminal was designed for use in cross-connecting long sections of aerial cable and at points where aerial cables branch. It is also used for cross-connection between aerial and underground cable at locations where fuse protection is not required. They consist of a Cable Terminal Box and Binding Post Chambers and are arranged with a splicing chamber at the bottom of the box for splices.

Code No.	Capacity Pairs	Cable Terminal Box No.	Includes Equipped With
BB26	26	BB26	1 B26A and 1 BB26A Binding Post Chambers
BB304	304	BB304	2 B76B and 2 BB76B Binding Post Chambers 2 B76C and 2 BB76C Binding Post Chambers
BB404	404	BB404	2 B101B and 2 BB101B Binding Post Chambers 2 B101C and 2 BB101C Binding Post Chambers

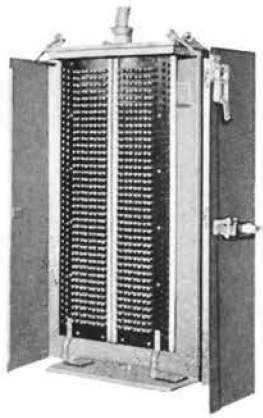
TCI Library: www.telephonecollectors.info

CABLE TERMINALS—*Continued*

Type "BD" Cable Terminals (Unprotected)



Type "BD" Cable Terminal (Closed View)



Type "BD" Cable Terminal (Open View)

The Type "BD" Cable Terminal was designed for use in furnishing cross-connecting facilities at the junction of feeder cables. It consists of a metal sealing chamber having an insulating panel equipped with terminal posts, screws and washers, a cable stub connected to the binding posts inside the sealing chamber, and a galvanized metal box with hinged doors.

The cable stub furnished is 10′ long and has the same number of No. 22 gauge conductors as there are pairs of binding posts, thus providing for "in" and "out" connections.

Holes are provided in the bottom of the box for bringing in wires.

Code No.	Number of Pairs of Conductors	Replaces	Overall Dimensions (Inches) Height	Width	Depth
BD102	102	BB51	29¼	10⅜16	8½
BD202	202	BB76 & BB101	46⅞	10⅜16	8½
BD304	304	BB152	39½	16⅜16	9¼
BD404	404	BB202	48⅜8	16⅜16	9¼

Type "F" Cable Terminals (Unprotected)



"F" Type Cable Terminal



"F" Type Cable Terminal (Open)



"F" Type Cable Terminal (Side View) Showing Mounting Brackets

This type Cable Terminal is intended to provide a moisture-proof seal for lead covered cables terminated on outside walls or poles. They consist essentially of a metal sealing chamber having an insulating panel equipped with binding posts, nuts and washers. The Cable Terminal is equipped with a galvanized slip cover and detachable metal mounting plate. The terminals may be mounted with the stubs out of the top or out of the bottom of the mounting.

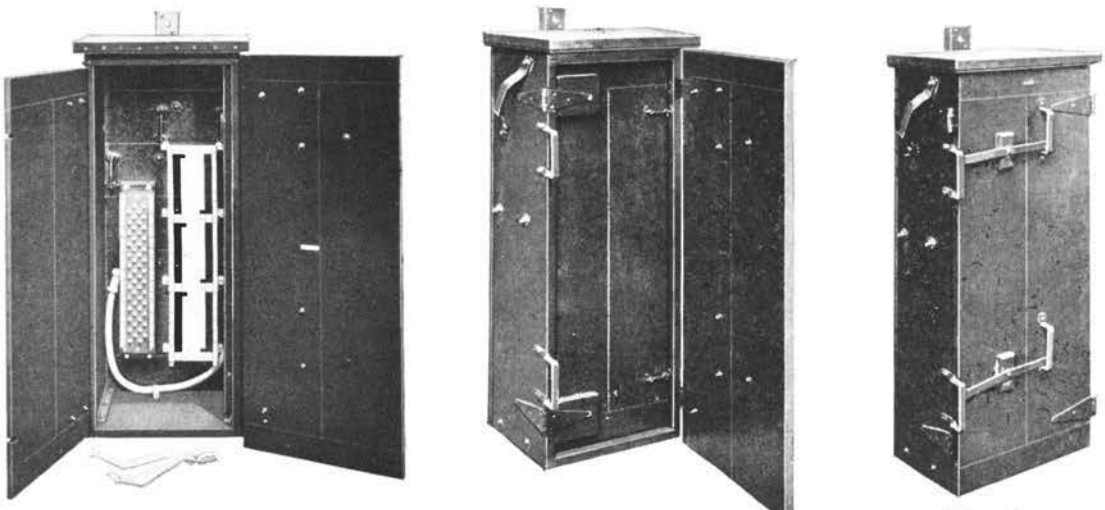
The "F" Type Cable Terminals are equipped with a 5½′ cable stub projecting from the top of the terminal. They can be furnished, however, when specified, equipped with a 10′ or 12′ cable stub (out of top only) or an 8′ cable stub (out of top or bottom, as specified).

Cable Terminal	Number of Pairs of Conductors Arranged for	Overall Dimensions (Inches) Height	Width	Depth
F10	10	8½	7½	4⅝16
F16	16	10¹⁵⁄16	7½	4⅝16
F26	26	15½	7½	4⅝16

TCI Library: www.telephonecollectors.info

CABLE TERMINALS—*Continued*

Type "EA" Cable Terminals



(Open) Outer Door (Open) (Closed)

No. EA-26 Cable Terminal

The EA Type Cable Terminal is intended for use on toll lines at the junction of aerial or underground cables and open wire lines.

The EA-26 and EA-51 Cable Terminals provide open space cut-out protection for 26 pairs and 51 pairs of wires, respectively. Consists of an assembly of apparatus as follows:

Type	Capacity Pairs	Includes	Overall Dimensions (Inches) Height	Width	Depth
EA-26	26	1 E-26 Cable Terminal Box 1 E-26 Binding Post Chamber 1 87-A Protector Mounting	50 1/2	20 11/32	17 1/16
EA-51	51	1 E-51 Cable Terminal Box 1 E-51 Binding Post Chamber 2 87-A Protector Mountings	55 5/32	34 3/8	15 5/16

Note. 84A protector mounting and 26 and 30 protector blocks are required for use in the EA Type Cable Terminals but must be ordered separately.

Type "LA" Cable Terminals (Protected)

Protected Cable Terminals intended to provide a moisture-proof seal for lead covered cables terminating in buildings. Arranged for cross-connections in terminal.

"LA" Type Cable Terminals consist of an assembly of apparatus as follows:

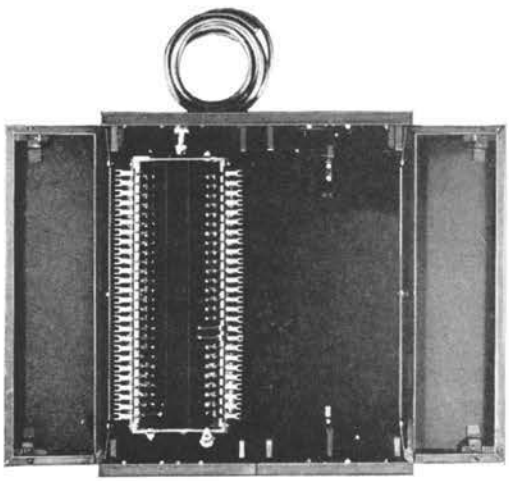
Type	Capacity Pairs	Includes	Overall Dimensions (Inches) Height	Width	Depth
LA-16	16	1 LA-16 Fuse Chamber 1 No. 84A Backboard 1 L-16 Cable Terminal Section 1 LA-16 Cable Terminal Section 2 M-16 Cable Terminal Sections	21 3/4	29 1/4	8 9/16

Type "LA" listing continued on page 42.

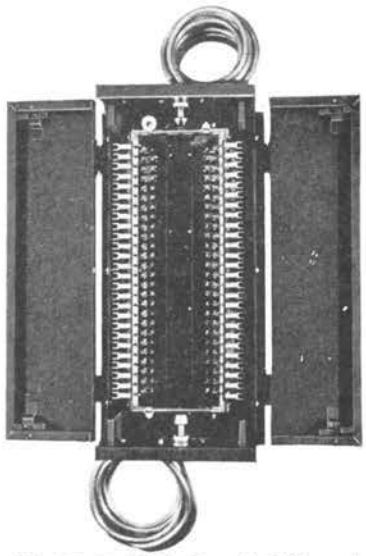
TCI Library: www.telephonecollectors.info

CABLE TERMINALS

Type "LA" Cable Terminals (Protected)—*Continued*



No. LA-26 Cable Terminal (Open)



No. LB-26 Cable Terminal (Open)

Type	Capacity Pairs	Includes	Overall Dimensions (Inches) Height	Width	Depth
LA-26	26	1 LA-26 Fuse Chamber 1 No. 84B Backboard 1 L-26 Cable Terminal Section 1 LA-26 Cable Terminal Section 2 M-26 Cable Terminal Sections	29 3/8	29 1/4	8 9/16
LA-51	51	1 LA-51 Fuse Chamber 1 No. 84C Backboard 1 L-51 Cable Terminal Section 1 LA-51 Cable Terminal Section 2 M-51 Cable Terminal Sections	48 7/8	29 1/4	8 9/16

Type "LB" Cable Terminals (Protected)

Protected Cable Terminals intended to provide a moisture-proof seal for lead covered cables terminating in buildings. Not arranged for cross-connections in terminal.

"LB" Type Cable Terminals consist of an assembly of apparatus as follows:

Type	Capacity Pairs	Includes	Overall Dimensions (Inches) Height	Width	Depth
LB-16	16	1 LB-16 Fuse Chamber 1 L-16 Cable Terminal Section 2 M-16 Cable Terminal Sections	21 3/4	14 1/8	8 9/16
LB-26	26	1 LB-26 Fuse Chamber 1 L-26 Cable Terminal Section 2 M-26 Cable Terminal Sections	29 3/8	14 1/8	8 9/16
LB-51	51	1 LB-51 Fuse Chamber 1 L-51 Cable Terminal Section 2 M-51 Cable Terminal Sections	48 7/8	14 1/8	8 9/16

TCI Library: www.telephonecollectors.info

CABLE TERMINALS—*Continued*

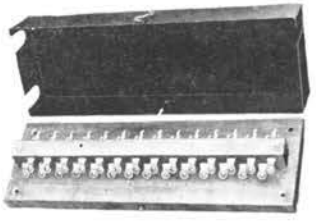
Type "LC" Cable Terminals (Protected)

Protected Cable Terminals intended to provide a moisture-proof seal for lead covered cables terminating in buildings. Not arranged for cross-connections in terminal.

"LC" Type Cable Terminals consist of an assembly of apparatus as follows:

Type	Capacity Pairs	Includes	Overall Dimensions (Inches) Height	Width	Depth
LC-11	11	1 LA-11 Fuse Chamber 1 L-11 Cable Terminal Section 2 M-11 Cable Terminal Sections	16¼	14⅛	8 9/16
LC-16	16	1 LA-16 Fuse Chamber 1 L-16 Cable Terminal Section 2 M-16 Cable Terminal Sections	21¾	14⅛	8 9/16
LC-26	26	1 LA-26 Fuse Chamber 1 L-26 Cable Terminal Section 2 M-26 Cable Terminal Sections	29⅜	14⅛	8 9/16
LC-51	51	1 LA-51 Fuse Chamber 1 L-51 Cable Terminal Section 1 M-51 Cable Terminal Section	48⅞	14⅛	8 9/16

No. 12 Type Cable Terminals (Unprotected)



No. 12A Cable Terminal

The No. 12 Type Cable Terminal is for interior distribution, and consists of a wooden base and a black finished metal cover. They are equipped with terminals having soldering connections at one end and screw connections at the other. Cable forms may be brought in from either end.

Code No.	Capacity Pairs	Overall Dimensions (Inches)
12A	13	11 61/64 x 4 3/64 x 1 51/64
12B	23	11 61/64 x 4 3/64 x 2 51/64
12C	33	11 61/64 x 4 3/64 x 3 51/64

Type "B" Cable Terminal Boxes

The Type "B" Cable Terminal Boxes are arranged to mount "B" type fuse chambers and "B" type binding post chambers, and when so equipped form the "B" type Cable Terminals.

These boxes are arranged for mounting on poles, braces being furnished for attaching to poles and the boxes being provided with bolts for attaching the other end of the braces. The B-76, B-101, B-152, B-202, B-303 and B-404 boxes are provided with bolts for attaching a pole balcony. The bottom of the box is removable and on the B-304 and B-404 the door in front of the cable splicing chamber is also removable with the bottom. Ten holes ½" in diameter are drilled in the bottom of the box for bringing in drop wires. The holes for bringing in the cables must be drilled by the splicer as required to meet service conditions. Distributing rings are provided for holding cross-connecting wires.

The exterior of the box is painted with green cable box paint unless otherwise specified.

TCI Library: www.telephonecollectors.info

CABLE TERMINALS

Type "B" Cable Terminal Boxes—*Continued*

Code No.	Used With Type "B" Cable Terminals	Overall Dimensions (Inches) Height	Width	Depth
B26	B26	28 1/32	21 3/4	15 5/16
B51	B51	36 31/32	22 3/4	15 5/16
B76	B76	45 7/32	22 3/4	15 5/16
B101	B101	54 13/32	22 3/4	15 5/16
B152	B152	46 7/32	36 3/4	15 5/16
B202	B202	55 5/32	36 3/4	15 5/16
B304	B304	91 1/2	38 1/4	15 15/16
B404	B404	109 1/4	38 1/4	15 15/16

Type "BB" Cable Terminal Boxes

Type "BB" Cable Terminal Boxes are arranged to mount "B" and "BB" type binding post chambers and, when so equipped, form "BB" Type Cable Terminals.

The BB51 and BB76 boxes are also used to mount short circuiting relay protectors. The "BB" Type Cable Terminal Boxes are arranged for mounting on poles, braces being furnished for attaching to the poles and the boxes. The boxes are provided with bolts for attaching the braces. The BB76, BB304 and BB404 are provided with bolts for attaching a pole balcony. The bottom of the box is removable and on the BB304 and BB404 boxes the door in front of the cable splicing chamber is also removable with the bottom. Ten holes ½″ in diameter are drilled in the bottom of the box for use in bringing in drop wires. Holes for cable entrance are to be drilled by the splicer to meet service conditions. Distributing rings are provided for holding cross-connecting wires.

The exterior of the box is painted with green cable box paint unless otherwise specified.

Code No.	Used With Type "BB" Cable Terminals	Overall Dimensions (Inches) Height	Width	Depth
BB26	BB26	28 1/32	21 3/4	15 5/16
BB51	BB51	36 31/32	22 3/4	15 5/16
BB76	BB76	45 1/32	22 3/4	15 5/16
BB304	BB304	91 15/16	38 1/4	15 15/16
BB404	BB404	109 13/16	38 1/4	15 15/16

Type E26 and E51 Cable Terminal Boxes

The E26 Cable Terminal Box consists of a wooden cable terminal box having a double door and arranged to mount one E26 binding post chamber and one No. 87A protector mounting. When equipped with an E26 binding post chamber and a No. 87A protector mounting it forms the EA26 cable terminal. Arranged for mounting on poles. Braces are provided for bracing the box to the pole and are arranged to be attached to the sides of the box by means of bolts and nuts which are furnished. The EA26 cable terminal is provided with distributing rings for holding cross connecting wires. Finished with green cable box paint unless otherwise specified.

The dimensions are the same as the EA26 Cable Terminal.

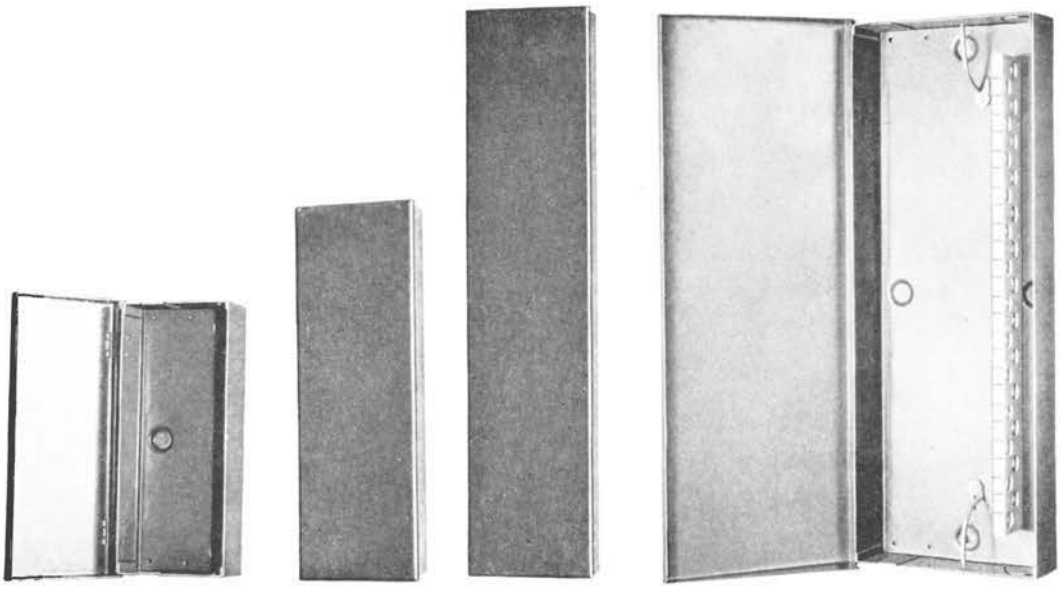
The E51 Cable Terminal Box is the same as the E26 Cable Terminal Box, except arranged to mount an E51 binding post chamber and two No. 87A protector mountings. It is provided with distributing rings for holding cross connecting wires. When so equipped it forms the EA51 cable terminal.

The dimensions are the same as the EA51 Cable Terminal.

TCI Library: www.telephonecollectors.info

CABLE TERMINALS—*Continued*

Type "GA", "GB" and "GC" Cable Terminal Boxes



GA 11 GA 16 GA 26 GB 26

The "GA", "GB" and "GC" Type Cable Terminal Boxes consist of a sheet metal box having a hinged cover. Knockouts are provided in both ends of the boxes for cable and wires. Screws are provided with the boxes for mounting binding post chambers and adapters.

Type "GA" Cable Terminal Boxes

Intended for use in housing binding post chambers or adapters for connecting blocks. Provided with one 8A Distributing Ring and screws for mounting a binding post chamber or adapter and the distributing ring.

Type	Arranged For	Overall Dimensions (Inches) Height	Width	Depth
GA11	1 G11 Binding Post Chamber or 1 No. 102B Adapter	10 3/16	4 1/8	2 1/2
GA16	1 G16 Binding Post Chamber or 1 No. 102C Adapter	13 5/16	4 1/8	2 1/2
GA26	1 G26 Binding Post Chamber or 1 No. 102D Adapter	19 9/16	4 1/8	2 1/2

Type "GB" Cable Terminal Boxes

Intended for use in housing binding post chambers or adapters for connecting blocks. Provides a more flexible wiring arrangement than the "GA" Type Box. The "GB" Type Box is provided with a fanning strip and two No. 8A distributing rings.

Type	Arranged For	Overall Dimensions (Inches) Height	Width	Depth
GB11	1 G11 Binding Post Chamber or 1 No. 102B Adapter	10 3/16	6 27/32	2 1/2
GB16	1 G16 Binding Post Chamber or 1 No. 102C Adapter	13 5/16	6 27/32	2 1/2
GB26	1 G26 Binding Post Chamber or 1 No. 102D Adapter	19 9/16	7 5/16	2 1/2

TCI Library: www.telephonecollectors.info

CABLE TERMINALS

Cable Terminal Boxes—*Continued*

Type "GC" Cable Terminal Boxes

Intended for use in housing binding post chambers or adapters for connecting blocks. Provided with one No. 8A distributing ring.

Type	Arranged For	Overall Dimensions (Inches) Height	Width	Depth
GC32	2 G11 or G16 Binding Post Chambers or 2 No. 102B or C Adapters or combination of any two	15 1/32	8 15/32	2 7/16
GC52	2 G16 or G26 Binding Post Chambers or 2 No. 102C or D Adapters or combination of any two	21 9/32	8 15/32	2 1/2
GC102	2 G26 or G51 Binding Post Chambers or 2 No. 102D Adapters	21 5/16	12 1/4	2 1/2

Type "H" Cable Terminal Sections

The "H" Type Cable Terminal Sections consist of a sheet metal intermediate section provided with a door. The top and bottom details are slotted for the cable entrance. Knockouts for wires are provided in these details. Screws are provided for mounting binding post chambers and bolts and nuts for fastening sections together. These cable terminal sections are finished in olive green unless otherwise specified. Available in oak or walnut finishes.



H303 Cable Terminal Section equipped with H Type Binding Post Chamber and 2 J303 Cable Terminal Sections (Door Removed)

Type	Use	Overall Dimensions (Inches) Height	Width	Depth
H102	To provide cross connecting facilities in P.B.X. installations. Intended to house either 2 H51 Binding Post Chambers or 2 82D Backboards or 1 H51 Binding Post Chamber and 1 82D Backboard. 2 J102 Cable Terminal Sections are required to close the ends of one or a group of H102 Sections.	29 1/8	14 1/2	5 13/16
H202	Intended for housing either 1 or 2 H51, H76 or H101 Binding Post Chambers or No. 82A Backboards. 2 J202 Cable Terminal Sections are required to close the ends of one or a group of H202 Sections.	49 7/8	14 1/2	5 13/16
H303	Intended for housing either 1 H303 Binding Post Chamber or 1 82B Backboard. 2 J303 Cable Terminal Sections are required to close the ends of one or a group of H303 Sections.	68	10 1/2	6 11/16

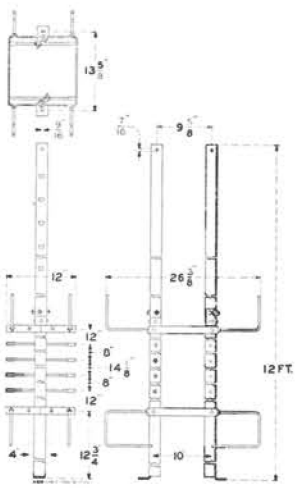
TCI Library: www.telephonecollectors.info

CABLE TERMINALS—*Continued*

Type "J" Cable Terminal Sections

The "J" Type Cable Terminal Sections consist of a sheet metal end section arranged for closing the ends of one or a group of "H" Type Cable Terminal Sections. Provided with bolts and nuts for fastening to intermediate "H" type sections. A latch is provided at each end for locking the section in a closed position. These cable terminal sections are finished in olive green unless otherwise specified. Available in oak or walnut finishes.

Type	Arranged for	Overall Dimensions (Inches) Height	Width	Depth
J102	Closing the sides of one or a group of H102 cable terminal sections.	29¼	5⅞	1 3/16
J202	Closing the ends of one or a group of H202 cable terminal sections.	50	5⅞	1 3/16
J303	Closing the ends of one or a group of H303 cable terminal sections.	68⅛	6¾	1 3/16



Dimensional Drawing of K606 Cable Terminal Section

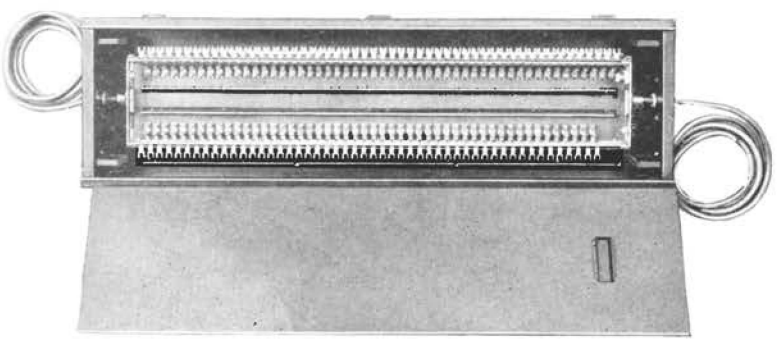
TYPE K-606 CABLE TERMINAL SECTIONS

The K606 Cable Terminal Section was designed to support H303 Binding Post Chambers and their associated cables or No. 82B Backboards. Two No. 82C Backboards are required to cover the ends of one or a group of K606 Sections.

The K606 Cable Terminal Section consists of a metal framework for supporting Binding Post Chambers and Backboards. It is provided with distributing rings and rods for supporting wires and also facilities for attaching standard cable hooks. The overall dimensions are 12′ x 2′ 2⅜″ x 1′.

Provided with sleeves, bolts and nuts for fastening sections together; also screws for mounting binding post chambers.

Type "L" Cable Terminal Sections



LB51 Cable Terminal consisting of L51 Cable Terminal Section Equipped with Two M51 Cable Terminal Sections and One LB51 Fuse Chamber

The "L" Type Cable Terminal Sections consist of a sheet metal intermediate section provided with a door. Knockouts are provided in the top and bottom details for bringing in wires. Screws for mounting fuse chambers or backboards and bolts and nuts for fastening sections together are furnished with each section. These cable terminal sections are finished in olive green unless otherwise specified. Available in oak or walnut finishes.

TCI Library: www.telephonecollectors.info

CABLE TERMINALS

Type "L" Cable Terminal Sections—*Continued*

Type	Use	Overall Dimensions (Inches) Height	Width	Depth
L11	Intended for housing 1 LA11 Fuse Chamber 2 M11 Cable Terminal Sections are required to close the ends of one or a group of L11 Sections.	18½	12⅛	8 7/16
L16	Intended for housing either 1 LA16 or LB16 Fuse Chamber or 1 No. 83A Backboard 2 M16 Cable Terminal Sections are required to close the ends of one or a group of L16 Sections.	21¼	12⅛	8 7/16
L26	Intended for housing either 1 LA26 or LB26 Fuse Chamber or 1 No. 83B Backboard 2 M26 Cable Terminal Sections are required to close the ends of one or a group of L26 Sections.	28¾	12⅛	8 7/16
L51	Intended for housing either 1 LA51 or LB51 Fuse Chamber or 1 No. 83C Backboard 2 M51 Cable Terminal Sections are required to close the ends of one or a group of L51 Sections.	48¼	12⅛	8 7/16

Type "LA" Cable Terminal Sections

The "LA" Type Cable Terminal Sections consist of a sheet metal intermediate section provided with a door. Knockouts are provided in the top and bottom details for bringing in wires. Screws for mounting fuse chambers or backboards and bolts and nuts for fastening sections together are furnished with each section. These cable terminal sections are finished in olive green unless otherwise specified. Available in oak or walnut finishes.

Type	Use	Overall Dimensions (Inches) Height	Width	Depth
LA16	Intended for housing 1 No. 84A Backboard 2 M16 Cable Terminal Sections are required to close the ends of one or a group of LA16 Sections.	21¼	15⅛	8 7/16
LA26	Intended for housing 1 No. 84B Backboard 2 M26 Cable Terminal Sections are required to close the ends of one or a group of LA26 Sections.	28¾	15⅛	8 7/16
LA51	Intended for housing 1 No. 84C Backboard 2 M51 Cable Terminal Sections are required to close the ends of one or a group of LA51 Sections.	48¼	15⅛	8 7/16

TCI Library: www.telephonecollectors.info

CABLE TERMINALS—*Continued*

Type "M" Cable Terminal Sections

The "M" Type Cable Terminal Sections consist of a sheet metal end section arranged for closing the ends of one or a group of intermediate sections. Provided with bolts and nuts for fastening to intermediate sections. These cable terminal sections are finished in olive green unless otherwise specified. Available in oak or walnut finishes.

Type	Use	Overall Dimensions (Inches) Height	Width	Depth
M11	At ends of one or a group of L11 Cable Terminal Sections	17¼	7 13/16	1 5/16
M16	At ends of one or a group of L16 Cable Terminal Sections	20¼	7 13/16	1 5/16
M26	At ends of one or a group of L26 Cable Terminal Sections	27¼	7 13/16	1 5/16
M51	At ends of one or a group of L51 Cable Terminal Sections	47¼	7 13/16	1 5/16

Type "B" Binding Post Chambers

These sealed cable terminating chambers are designed primarily for use in the "B" Type Cable Terminals for terminating aerial cable, and consist in each case of a cast iron case having an insulating face plate in which binding posts are mounted. Fanning strips are provided upon the face plate for leading off the cross-connecting wires. The iron case is finished in black and is supplied with a No. 22 B. & S. Gauge Cable Stub, which is connected in the Chamber and pot-headed.

Code No.	Length of Cable Stub (Inches)	Used with Type "B" Terminal
B26A	25	B26
B51A	33	B51
B76A	36	B76
B76B	50	B152 or B304 (lower)
B76C	88	B304 (upper)
B101A	42	B101
B101B	55	B202 or B404 (lower)
B101C	100	B404 (upper)



B101B Binding Post Chamber

TCI Library: www.telephonecollectors.info

CABLE TERMINALS—*Continued*

Type "BB" Binding Post Chambers

The Type "BB" Binding Post Chambers are intended for use as a part of "BB" Type Cable Terminals, but can be furnished separately for mounting in "BB" Type Cable Terminal Boxes.

They consist of a cast iron chamber provided with a hard rubber panel with binding posts and a cable stub connected to the binding posts inside of a sealed chamber. Fanning strips are provided for leading off the cross-connecting wires.

Cable stubs consist of a lead covered cable having the number of pairs and length as listed below:

Code No.	Number of Pairs	Length of Cable Stub (Inches)	Cable Terminal Used With
BB26A	26	27	BB26
BB51A	51	35	BB51
BB76A	76	38	BB76
BB76B	76	52	BB152 or BB304 (lower)
BB76C	76	90	BB304 (upper)
BB101A	101	44	BB101
BB101B	101	57	BB202 or BB404 (lower)
BB101C	104	102	BB404 (upper)



BB101A Binding Post Chamber



E51 Binding Post Chamber

Type "E" Binding Post Chambers

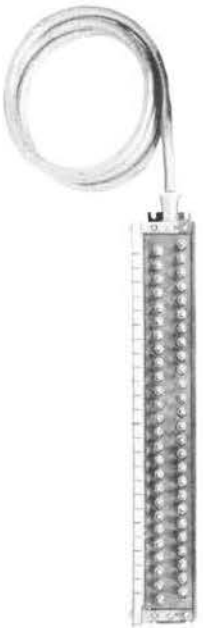
The "E" Type Binding Post Chamber consists of a cast iron chamber provided with an insulated panel with binding posts and a cable stub connected to the binding posts inside of a sealed chamber.

Code No.	Cable Stub	Length of Cable Stub (Inches)	Used with Type "E" Terminal
E26	26 pair 19 gauge lead covered	33	EA26
E51	51 pair 19 gauge lead covered	54	EA51

TCI Library: www.telephonecollectors.info

CABLE TERMINALS—*Continued*

Type "G" Binding Post Chambers



G-26 Binding Post Chamber

The "G" Type Binding Post Chamber is intended to provide a moisture-proof seal for lead covered cables terminating in buildings. Arranged to mount in "GA", "GB" and "GC" Type Cable Terminal Boxes.

Consists of a sheet metal sealing chamber having an insulating panel equipped with binding posts, nuts and washers. Equipped with a 6′, 12′ or 25′ cable stub. Furnished equipped with a 6′ cable stub unless otherwise specified.

The "G" Type Binding Post Chamber can be furnished without a cable stub connected if desired. It can also be obtained in pairs, one chamber connected at each end of a 50′ cable stub when so specified in the order.

Code No.	No. of Pairs of Binding Posts	Mounts in Cable Terminal Box
G-11	11	GA-11 GB-11 GC-32
G-16	16	GA-16 GB-16 GC-32 GC-52
G-26	26	GA-26 GB-26 GC-52
G-51	51	GC-102

Type "H" Binding Post Chambers



H-303 Binding Post Chamber

The "H" Type Binding Post Chamber is intended to provide a moisture-proof seal for lead covered cables terminating in buildings.

Each consists of a sheet metal sealing chamber having an insulating panel equipped with binding posts, nuts and washers.

The following binding post chambers are furnished either with a 12′ cable stub or without a cable stub. Equipped with a cable stub unless otherwise specified.

Code No.	Use	No. of Pairs of Binding Posts	Overall Dimensions (Inches) Length	Width	Depth
H-51	Intended to mount in an H-202 cable terminal section	51	21 7/8	4 1/4	3 25/32
H-76	Intended to mount in an H-202 cable terminal section	76	29 3/8	4 1/4	3 25/32
H-101	Intended to mount in an H-202 cable terminal section	101	37 1/2	4 1/4	3 25/32
H-303	Intended to mount in either an H-303 or K-606 cable terminal section	303	55 3/8	6 5/8	4 17/32

TCI Library: www.telephonecollectors.info

CABLE TERMINALS—*Continued*



B101B Fuse Chamber (with No. 7T Fuses in place)

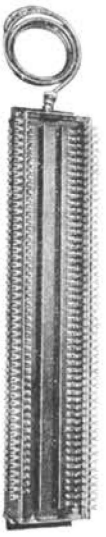
Type "B" Fuse Chambers

Primarily for use in the Type "B" Cable Terminals for terminating underground cable. These chambers consist of a cast iron box, finished black and having an insulating face plate provided with threaded posts. Fuses are mounted by screwing one end of the fuse to the binding posts on the chamber face and are held in place at their outer ends by means of a suitable drilled supporting plate of insulating material. This construction effects a substantial saving in the box space required for the installation of the fuse equipment. Fanning strips are mounted on the fuse support plate.

The code numbers given in the table below include the iron fuse chamber complete with threaded posts, fuse support, fanning strips and with a 22 B. & S. Gauge Cable Stub connected and potheaded.

Code No.	Number of Pairs	Length of Cable Stub (Inches)	Used with Type "B" Terminal
B26A	26	25	B26
B51A	51	33	B51
B76A	76	36	B76
B76B	76	50	B152 or B304 (lower)
B76C	76	88	B304 (upper)
B101A	101	42	B101
B101B	101	55	B202 or B404 (lower)
B101C	101	100	B404 (upper)

Note. The "B" Type Fuse Chambers do not include the fuses, two of which are required for each line. For example, the B26 Fuse Chamber requires 52 No. 7T Fuses, the B51 Fuse Chamber 102 No. 7T Fuses, etc. The required number of fuses should be ordered separately.



LA51 Fuse Chamber

Type "LA" and "LB" Fuse Chambers

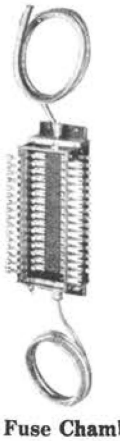
The "LA" and "LB" Type Fuse Chambers are intended to provide a moisture-proof seal for exposed lead covered cables terminating in buildings.

Each consists essentially of a sealing chamber having a wooden back, metal ends, and sides and face plate made of insulating material. Arranged for but not equipped with Nos. 26 and 27 protector blocks and Nos. 7A and 60D or 60E fuses.

Recommended in place of No. 1079AP Protectors.

"LA" Type: Furnished equipped with a 10′ cable stub, type "BST" cable.

"LB" Type: Furnished equipped with two 10′ cable stubs, type "BST" cable.



LB16 Fuse Chamber

Code No.	No. of Pairs	Use	Part of Cable Terminal	Overall Dimensions (Ins.) Height	Width	Depth
LA11	11	In L11 Cable Terminal Section	LC11	14 1/8	10 1/16	5 7/8
LA16	16	In L16 Cable Terminal Section	LA16	17 1/8	10 1/16	5 7/8
LA26	26	In L26 Cable Terminal Section	LA26	24 5/8	10 1/16	5 7/8
LA51	51	In L51 Cable Terminal Section	LA51	44 1/8	10 1/16	5 7/8
LB16	16	In L16 Cable Terminal Section	LB16	17 1/8	10 1/16	5 7/8
LB26	26	In L26 Cable Terminal Section	LB26	24 5/8	10 1/16	5 7/8
LB51	51	In L51 Cable Terminal Section	LB51	44 1/8	10 1/16	5 7/8

TCI Library: www.telephonecollectors.info

CABLE TERMINALS—*Continued*

Type 102 Adapters



102 Type Adapters
(Nos. 11, 16, 26)

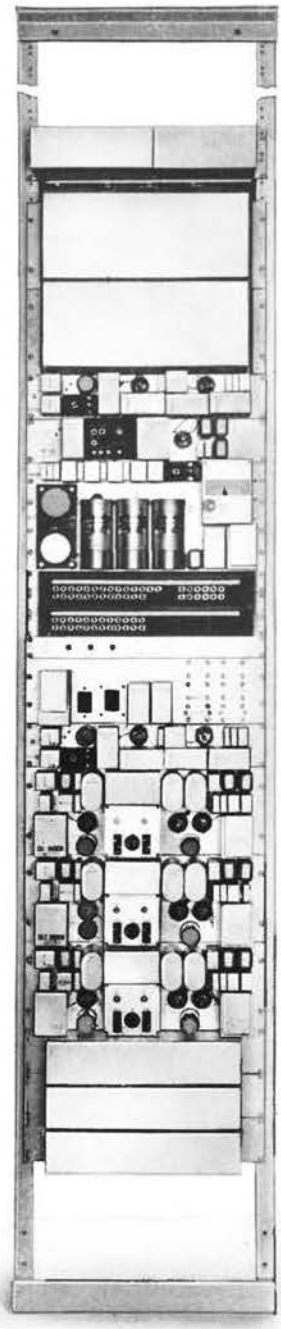
The 102 Type Adapters are intended for mounting No. 30 or No. 31 type connecting blocks in "GA", "GB" and "GC" type cable terminal boxes.

Consists of formed sheet metal mounting plates equipped with fanning strips, mounting screws and nuts for attaching No. 30 or No. 31 type connecting blocks and a mounting screw for attaching a cable clamp.

Code No.	Mounts in Cable Terminal Box	Overall Dimensions (Inches) Length	Width	Depth
102B	GA11 GB11 GC32	$9\frac{11}{16}$	$2\frac{23}{32}$	$1\frac{7}{8}$
102C	GA16 GB16 GC32 GC52	$12\frac{13}{16}$	$2\frac{23}{32}$	$1\frac{7}{8}$
102D	GA26 GB26 GC52 GC102	$19\frac{1}{16}$	$2\frac{23}{32}$	$1\frac{7}{8}$

CARRIER TELEPHONE EQUIPMENT

Type "C" Carrier Telephone System



C5 Carrier Terminal

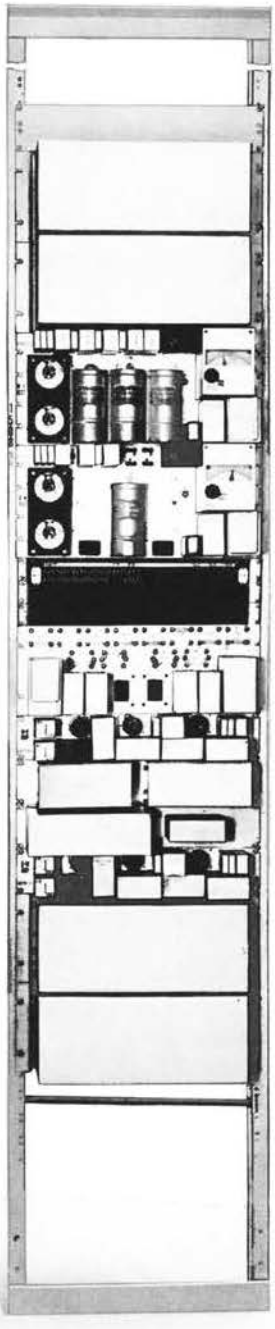
GENERAL

The Type C Carrier Telephone System is a multi-channel carrier system operating at a frequency range of from 6 to 29 kilocycles. It provides facilities for superimposing three additional telephone circuits upon an existing open wire voice frequency telephone circuit.

The C5 Carrier Telephone Terminal is used at each end of a Type C Carrier Telephone System and the C1 Carrier Telephone Repeater is used at intermediate points of such a system to amplify the three carrier channels.

The C5 Carrier Terminal and the C1 Repeater include the latest development in the field of carrier telephony gained through wide experience in designing earlier terminals and repeaters, and offer a distinct improvement in such communication equipment. Among these improvements are the use of copper oxide varistors for modulators and demodulators, feedback amplifiers, heater type pentode vacuum tubes and improved band filters.

The economical selection of a carrier telephone system depends upon such factors as length of circuit, number of circuits required initially, rate of growth, size and physical condition of pole line, length of entrance and intermediate cable, protection to service, crosstalk requirements and cost of alternative methods of supplying facilities of equal transmission values. These factors will influence the application of carrier systems to a considerable extent in specific cases so that any general information relative to the length of a system can serve only as a general indication of the field covered by a carrier system. Where the total length of entrance and intermediate



C1 Repeater

TCI Library: www.telephonecollectors.info

CARRIER TELEPHONE EQUIPMENT

Type "C" Carrier Telephone System—*Continued*

cable involved is relatively short, a type C system employing two C5 terminals without repeaters can be operated under average conditions over lines up to about 150 to 200 miles in length. By using intermediate C1 carrier telephone repeaters and spacing them approximately 200 miles apart, the length of such a system can be extended almost indefinitely provided the transmission and crosstalk characteristics of the line are satisfactory.

When repeaters are not employed the type C system can be arranged to operate with either manual or automatic regulation of the circuit net losses. When one or more repeaters are required, the latter arrangement is always utilized. The 2B carrier pilot channel equipment is employed for this purpose. This equipment is an integral part of the C1 repeater but is optional with the C5 terminal.

Different frequency bands are employed for each direction of transmission. In one direction the three channels are grouped in the frequency range from 6 to 16 kc. and in the opposite direction the group of frequencies from 17.5 to 29 kc. is used. Single sideband transmission is employed, the carrier frequencies and unwanted sidebands being suppressed by means of filters.

With the aid of the equalizing equipment provided, each channel of the type C system is capable of transmitting an overall frequency band of from 250 to 2750 cycles which is relatively free from distortion. Circuit net losses up to 0 db can be obtained. In general, the noise in each carrier channel should be appreciably less than that in the voice frequency circuit on which the carrier system is superimposed with the C5 system.

RINGING

The C5 terminal is designed to operate with 1000 cycle ringer equipment. Any standard 1000 cycle terminal or intermediate ringer can be used. For a small installation of one or two terminals, the use of Western Electric 1000 cycle Ringer Oscillator equipment is recommended. Three of these units are required for each C5 terminal, one being used for each channel. The ringing equipment is not an integral part of the terminal and should be ordered as a separate item.

POWER SUPPLY

The C5 terminal and the C1 repeater may be operated from either 24 and 130 volt office batteries or by the addition of suitable power supply equipment from a 105 to 125 volt, 50-60 cycle alternating current source. In the battery operated case about 6 watts of 55 volt, 50-60 cycle power is also required for the repeater, and a like amount for a terminal if the 2B carrier pilot channel equipment is employed.

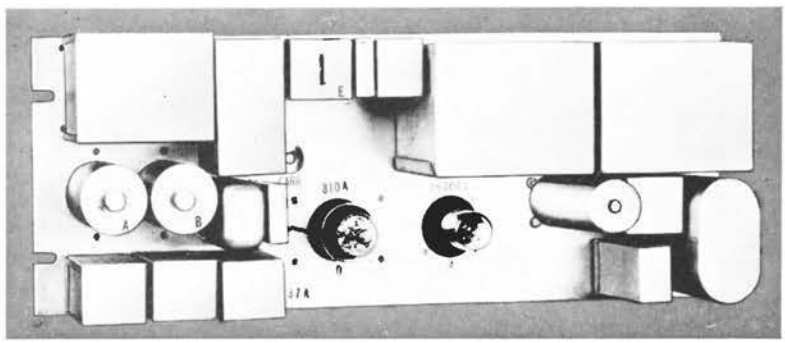
The C5 terminal or the C1 repeater can be obtained complete on one relay rack bay. This bay may be 8′-8″, 10′-6″ or 11′-6″ in height. Additional relay rack space may, however, be required for the associated equipment required, according to the installation.

For further information concerning the C5 Carrier Telephone System, please consult your nearest distributor.

TCI Library: www.telephonecollectors.info

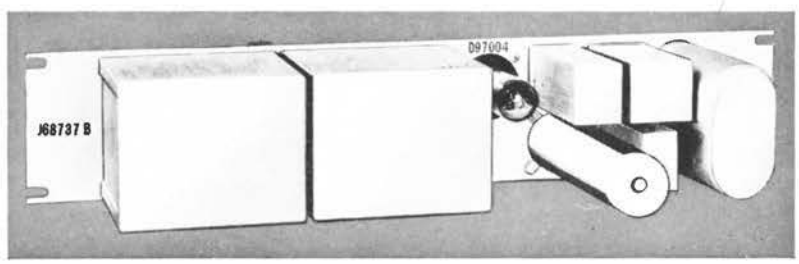
CARRIER TELEPHONE EQUIPMENT—*Continued*

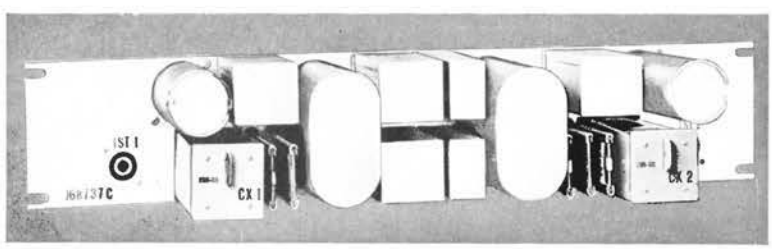
G1 Type



Active Terminal

Inert Terminal





Composite Set and Signaling Panel

G1 TYPE CARRIER TELEPHONE EQUIPMENT

The Western Electric G1 Carrier Telephone System is a relatively simple and inexpensive single-channel system. The equipment is small in size and has been arranged for operation from an A.C. supply of 105-125 volts, 50-60 cycles.

The carrier frequency employed by the G1 system is 10.3 kc. It is generated by a vacuum-tube oscillator at one terminal only, which is called the active terminal. Both the upper and lower side-bands are transmitted over the line and the carrier is transmitted along with them for use in modulation and demodulation at the distant terminal which is called the inert terminal because it contains no vacuum-tube apparatus and requires no power supply. Transmission in the reverse direction is accomplished in the same way except for the fact that a phase corrector is required at the inert terminal.

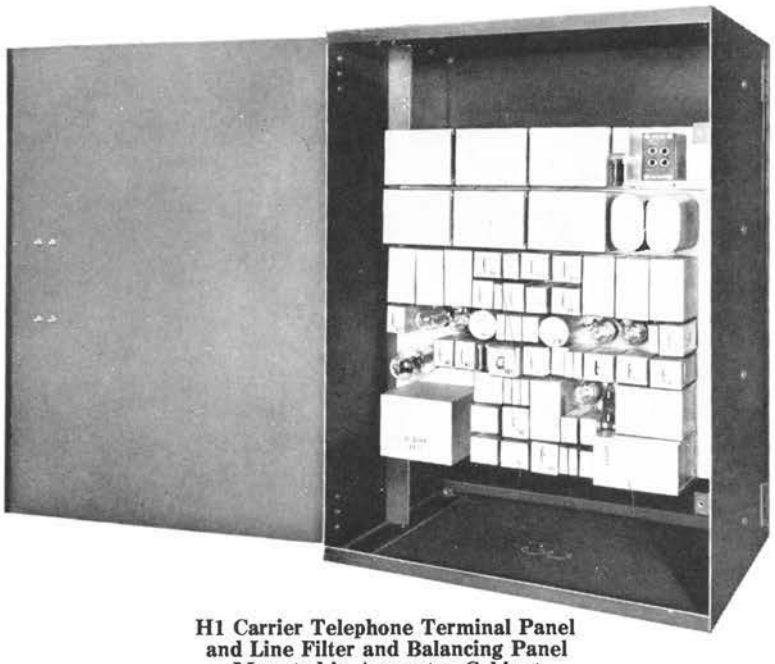
For ringdown operation 20 cycle signaling is employed on a simplex basis. For cases where this is not feasible a simple composite set is available which provides two signaling paths, one for the carrier circuit and one for the voice circuit on which the carrier is superimposed.

For further information concerning the G1 Type Carrier Telephone Equipment, please consult your nearest distributor.

TCI Library: www.telephonecollectors.info

CARRIER TELEPHONE EQUIPMENT

H1 Type



H1 Carrier Telephone Terminal Panel and Line Filter and Balancing Panel Mounted in Apparatus Cabinet

H1 Carrier Telephone Terminal, Repeater, and Carrier Line Equipment

The H1 Carrier Telephone System is a single channel system for use on open wire lines. It operates in the frequency range from about 4 to 10 kilocycles, employing the same carrier frequency (7150 cycles) for both directions of transmission. The carrier frequency is generated locally at each terminal and only the side bands are passed over the circuit. The upper side band is used for transmission in the east-west direction, while the lower side band is used for transmission in the west-east direction.

The H1 carrier equipment includes provision for operation on a ring down basis and can be applied on a line without the loss of any existing service. It is suitable for use as a permanent installation, and also for temporary or emergency circuits. Typical applications are on the telephone lines of telephone, railroad, power, oil and pipe line companies where long distance telephone facilities are required.

The power supply may be either 105 to 125 volt, 50 to 60 cycle, single phase alternating current or the regular central office filament, signal and plate battery potentials.

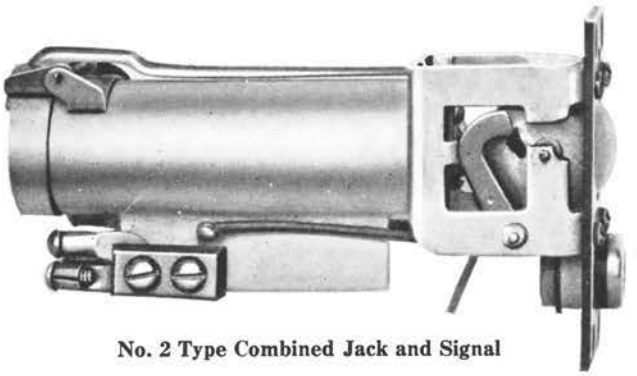
This system, without an intermediate repeater, finds its widest application on open wire circuits of about 50 to 250 miles in length, and, with one or two intermediate repeaters, is applicable on circuits up to as much as 600 or 700 miles in length, depending on factors such as the gauge of the open wire conductors, the amount of intermediate cable in the line, the number of bridged way stations, etc.

For further information concerning the H1 Carrier Telephone System, please consult your nearest distributor.

TCI Library: www.telephonecollectors.info

COMBINED JACKS AND SIGNALS

Ball Type



No. 2 Type Combined Jack and Signal

The ball type is used in multiple magneto switchboards where an electrically operated and mechanically restored combined jack and signal is required. It has a spherical target (black and red) and when in normal position the black half is visible. When operated, the red half shows. The target is restored by the insertion of the plug.

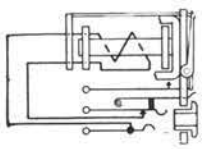
Will mount singly on 1⅛" horizontal and 2¼" vertical centers on No. 80B signal mounting and five per strip on 1$\frac{3}{16}$" horizontal and 1¾" vertical centers on No. 81D, E or F signal mountings. The mounting desired should be specified on the order. Furnished unnumbered, unless otherwise specified.

Code No.	Approximate Resistance (Ohms)	Used with Plug No.	Description
2C	240	47	Equipped with night bell contact which is closed when target is in operated position. Has single cut-off jack and is intended for use with non-multiple magneto switchboards. When plug is inserted one end of coil winding is disconnected from the line.
4C	240	110	Has night bell contact same as No. 2 Type. Jack arranged with local contact for cutting off signal and is intended for use with multiple magneto switchboards. When plug is inserted one end of coil winding is disconnected from the line.
6C	240	47	Same as No. 2 Type, except that it has on its armature a relay contact which is made only during the time ringing current flows through the coil. This permits of code signals being received by a bell or buzzer, wired in series with the contact. Has a single cut-off jack intended for use with non-multiple magneto switchboards. When plug is inserted, one end of coil is disconnected from the line.
7C	240	47	Intended for use with non-multiple magneto party lines where selective central office signaling is desired. One side of signal winding brought out to separate terminal for connecting to ground. Has a single cut-off jack. When plug is inserted one end of coil winding is disconnected from the line.

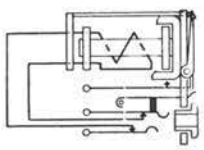
TCI Library: www.telephonecollectors.info

COMBINED JACKS AND SIGNALS—*Continued*

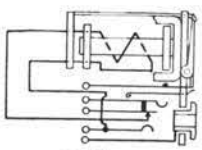
Shutter Type



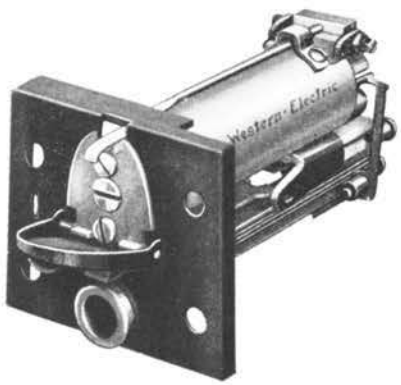
22 Type



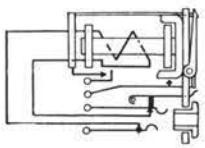
23 Type



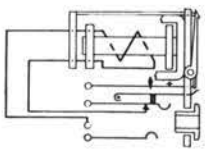
24 Type



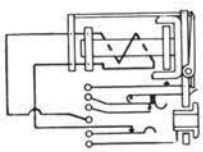
No. 22 Type on No. 92B Mounting
Signal Operated



26 Type



27 Type



31 Type

The Shutter Type combined jack and signal is used as a magneto line signal in switchboards where it is desirable to have the jack closely associated with its signal. This arrangement increases the ease and rapidity of operation. The signal is electrically operated and restored mechanically when the plug is inserted in the jack by the operator. Will mount singly on $1\frac{1}{8}$″ horizontal and $2\frac{1}{4}$″ vertical centers on No. 92B or 92C signal mountings, five per strip on $1\frac{3}{16}$″ horizontal and $1\frac{3}{4}$″ vertical centers on 89B, C or D signal mountings, and 10 per strip on mounting centers 1.109″ horizontal and 1.78″ vertical on 101C signal mountings, as specified below. The mounting desired should be specified on the order. Furnished unnumbered, unless otherwise specified. Extra number plates (metal) numbered from 0 to 499 are furnished as desired and should be ordered as P-113032 specifying the numbers required.

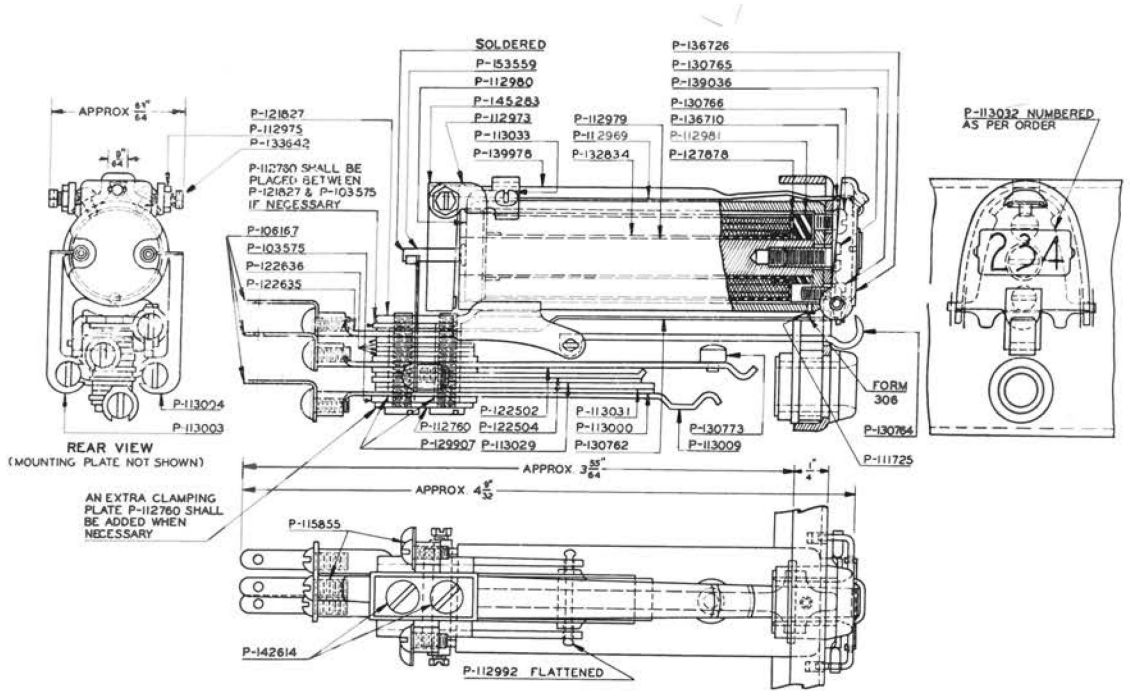
Code No.	Approximate Resistance (Ohms)	Used with Plug No.	Description	Ordinarily Used with Mountings No.
22C	350	47	Equipped with night bell contact, which is closed when shutter is in operated position. Has single cut-off jack and is intended for use with Non-multiple Magneto Switchboards. When plug is inserted, one end of coil winding is disconnected from the line.	89B or 92B
23C	350	47	Same as the No. 22 Type, except has double cut-off jacks. Intended for use with Non-multiple Magneto Switchboards. When the plug is inserted, both ends of coil winding are disconnected from the line.	89B 89D or 92B
24C	350	110	Has night bell contact, same as the No. 22 Type. Jack arranged with local contact for cutting off signal and is intended for use with Multiple Magneto Switchboards. When plug is inserted, one end of coil winding is disconnected from the line.	89C 92C or 101C

TCI Library: www.telephonecollectors.info

COMBINED JACKS AND SIGNALS

Shutter Type—*Continued*

Code No.	Approximate Resistance (Ohms)	Used with Plug No.	Description	Ordinarily Used with Mountings No.
26C	350	47	Same as No. 22 Type except that it has on its armature a relay contact, which is made only during the time ringing current flows through the coil. This permits of code signals being received by a bell or buzzer wired in series with the contact. Has a single cut-off jack. Intended for use with Non-multiple Magneto Switchboards. When plug is inserted one end of coil winding is disconnected from the line.	89B or 92B
27C	350	47	Intended for use with Non-multiple Magneto party lines where selective central office signaling is desired. One side of single winding brought out to separate terminal for connecting to ground. Has a single cut-off jack. When plug is inserted one end of coil winding is disconnected from the line.	89B or 92B
31C	350	110	Equipped with night bell contact. Has double cut-off jacks. Intended for use with Multiple, Non-multiple Magneto or Convertible Switchboards. When the plug is inserted, both ends of coil winding are disconnected from the line. Sleeve is brought out to terminal in rear.	89C 92C or 101C



22C COMBINED JACK & SIGNAL

TCI Library: www.telephonecollectors.info

No. 22C Combined Jack and Signal

STOCK LIST

INDIVIDUAL PARTS

Piece Part	No. Req.	Material	Name
P-103575	4	Hard Rubber	Insulator
P-112760	Appr. 3	Steel	Clamping Plate
P-136710	1	Steel	Shutter Hinge Plate
P-139036	1	Steel	Fil. H.M. Screw
P-112973	1	Brass	Pivot Support
P-112975	2	Brass	Hexagon Nut
P-112992	1	Brass	Pin
P-113000	1	Brass	Spacer
P-113003	1	Brass	Terminal (Right)
P-113004	1	Brass	Terminal (Left)
P-113009	1	Nickel Silver	Tip Spring
P-113029	1	Hard Rubber	Insulator
P-113031	1	Brass	Terminal
P-113032	As per order	Nickel Silver	Number Plate
P-113033	2	Brass	R.H.M. Screw
P-115855	5	Brass	R.H.M. Screw
P-142614	2	Steel	Fil. H.M. Screw
P-122502	1	Nickel Silver	Ring Spring
P-122504	1	Brass	Contact Spring
P-122635	1	Nickel Silver	Terminal
P-122636	4	Steel	Plate
P-129907	2	Hard Rubber	Bushing
P-136726	1	Brass	Shutter
P-130764	1	Nickel Silver	Restoring Lever
P-130765	1	Steel	Fil. H.M. Screw
P-130766	1	Steel	Fil. H.M. Screw
P-130773	1	Hard Rubber	Separator
P-133642	2	Bronze	Pivot Screw

PARTIAL ASSEMBLIES

P-121917	1		Shell
P-139981	1		Armature and Hook
P-130763	1		Contact Spring
P-135359	1		Coil

PARTS USED IN PARTIAL ASSEMBLIES

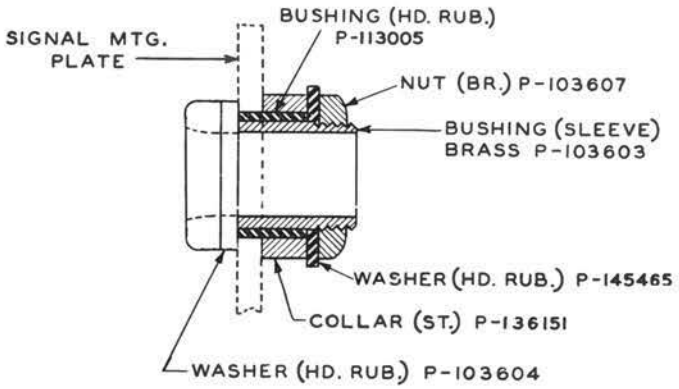
P-47755	As Req.		No. 36 B.E.C.C. Wire
P-314815	As Req.		Tinned Copper Wire
P-111725	1	No. 1 Cont. Metal	Contact Point
P-112969	1	Iron	Shell
P-139978	1	Brass	Hook
P-112979	1	Iron	Core
P-112980	1	Fibre	Rear Spool Head
P-112981	1	Fibre	Front Spool Head
P-153559	2	Brass	Terminal
P-112983	1		Rear Spool Head Assem.
P-121827	1	Steel	Spring Mtg. Bracket
P-121916	1		Shell Assem.
P-126912	2 and As Req.	Paper	Splice Insulator
P-127878	2	Paper	Washer
P-127879	1	Paper	Washer
P-139979	1		Armature Assem.
P-140477	1	Iron	Armature Blank
P-130762	1	Nickel Silver	Contact Spring
P-132831	1		Spool Assem.
P-132834	1	Paper	Core Insulator
P-145283	1	Iron	Armature

SHIPPED LOOSE

P-106167	3	Brass	Terminal

TCI Library: www.telephonecollectors.info

COMBINED JACKS AND SIGNALS—*Continued*



Replacing Jack Sleeve for Combined Jacks and Signals

The above illustration outlines the parts necessary for replacing the sleeve assembly of the Combined Jacks and Signals.

TCI Library: www.telephonecollectors.info

CONDENSERS

GENERAL

Western Electric telephone condensers are of the tinfoil and paper type. The paper dielectric used in separating the tinfoil plates is prepared under rigid specifications from specially selected stock and its high and uniform quality contributes materially to the excellence of the product obtained. The following features of these condensers should be noted:

1. High and Constant Insulation Resistance. Not only are the tinfoil and paper units treated with a high grade paraffin wax, but the case in which the units are assembled is entirely filled with waterproofing compound and sealed, thus effectively preventing the entrance of moisture.

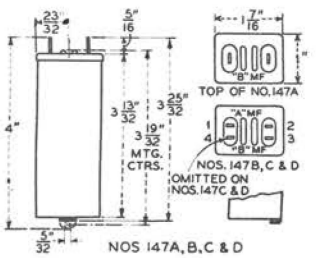
2. High Dielectric Strength. Each individual condenser is tested to the voltage given in the tables below.

3. Standard in Size and Shape. As all these condensers are rectangular in shape, they may be readily mounted occupying a minimum amount of space.

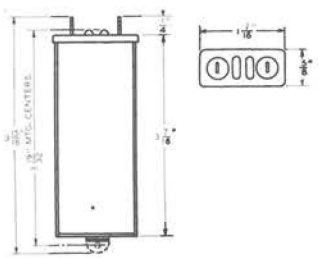
4. Durable Terminals. The terminal lugs are mounted on insulating bases, which, when assembled in the condenser are completely covered with moisture-proofing compound. The tinfoil plates are connected to the terminals by annealed flat leads which are also immersed in compound. Bending and heating of the terminals, such as may occur in installing and wiring, will not loosen the connection at the plate.

Condensers—Unmounted Type

These condensers are of the tinfoil and paper type. The paper dielectric used in separating the tinfoil plates is prepared under rigid specifications from specially selected stock and its high and uniform quality contributes materially to the excellence of the product obtained.



No. 147 Type



No. 149 Type

The Nos. 147 and 149 Type Condensers are equipped with mounting tabs at lower edge of condenser and may be mounted by means of this tab and a mounting strap.

Safe continuously applied voltage either D.C. or effective A.C. at 60 cycles or less and of an approximate sine wave, is 180 volts.

If No. 147 Type Condenser when substituted must fill space of No. 21 Type, order should specify P-409555 Adapter, and for the No. 149 Type Condenser, specify P-409556 Adapter.

Code No.	Capacity M.F. Stamped At Max.	A	B	Min.	Voltage Tested On	Used in Sets
147A	2.50	..	2.00	2.00	500 D.C.	General, 311A, 1312A, 1314A Sets. Replaces Nos. 21D, E and L Condensers.
147B	1.25	1.00	..	1.00	500 D.C.	General. Replaces No. 21BG Condenser.
	1.25	..	1.00	1.00		
*147C	1.25	1.00	..	1.00	500 D.C.	Composite. Replaces No. 21AD Condenser.
	1.25	..	1.00	1.00		
*147D	1.25	1.00	..	1.00	500 D.C.	Coil Racks. Replaces No. 21N Condenser.
	.62	..	.5	.5		

* Values stamped at "A" are measured between terminals 1 and 2, values stamped at "B" are measured between terminals 1 and 3.

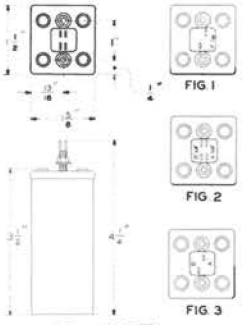
TCI Library: www.telephonecollectors.info

CONDENSERS

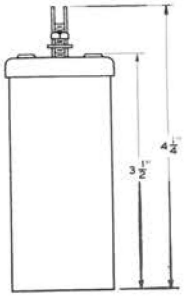
Unmounted Type—*Continued*

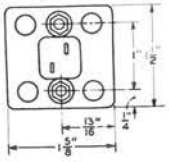
Code No.	Capacity M.F. Max.	Stamped On Condenser	Min.	Voltage Tested On	Remarks
149A	1.25	1.00	1.00	500 D.C.	Replaces Nos. 21F, K and BW Condensers.
149B	.62	.5	.50	500 D.C.	Replaces Nos. 21AC and AS Condensers.
149C	.13	.1	.10	500 D.C.	Replaces No. 21R Condenser.
149D	.80	.65	.65	500 D.C.	Replaces No. 21BF Condenser.
149E	1.25	1.00	1.00	500 D.C.	Replaces No. 21W Condenser. Consists of 149A Condenser having two 8″ flexible leads each equipped with a No. 125 Cord Tip.
149F	.80	.65	.65	500 D.C.	Consists of a 149D Condenser having two 6″ flexible leads each equipped with a No. 125 Cord Tip.

Mounting Plate Type

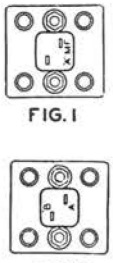


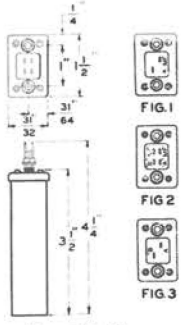
No. 137 Type



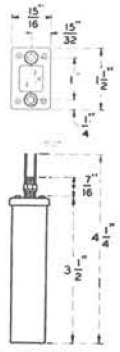


No. 138 Type

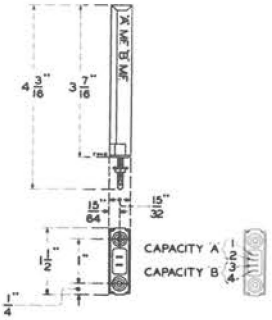




No. 139 Type

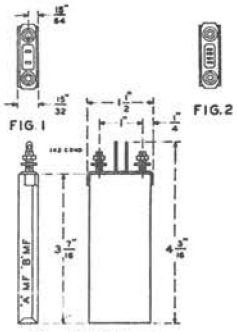


No. 140 Type



No. 141 Type

(Front View of Nos. 141C, E, F, G and H)



No. 142 Type

The following condensers are for use on relay type mounting plates:

The No. 137 Type Condensers require No. 24 Type Brackets when mounted in place of the No. 57 or similar type condensers. Arranged to mount on 1¾″ x 1¾″ mounting centers. Safe continuously applied voltage, 200 D.C. or 180 effective A.C. at 60 cycles or less and of an approximate sine wave.

The No. 138 Type Condensers require No. 24 Type Brackets when mounted in place of No. 57 Type Condensers, and No. 27A Brackets when mounted in place of the Nos. 21AA, AU, BE, QA, QB, QC, QD, QE, QF, QG and QH Condensers. Furnished with two nuts and washers for mounting. Arranged to mount on 1¾″ vertical and horizontal centers on mounting plates. Safe continuously applied voltage either D.C. or effective A.C. at 60 cycles or less and of an approximate sine wave, is 300 volts.

TCI Library: www.telephonecollectors.info

Condensers—Mounting Plate Type—*Continued*

The No. 139 Type Condensers require No. 24 Type Brackets when mounted in place of No. 57 or similar Type Condensers. Furnished with two nuts and washers for mounting. Arranged to mount on 1″ horizontal, and 1¾″ vertical centers. Safe continuously applied voltage, 200 D.C. or 180 effective A.C. at 60 cycles or less and of an approximate sine wave.

The No. 140 Type Condensers are arranged to mount on 1″ horizontal and 1¾″ vertical centers on mounting plates. Furnished with two nuts and washers for mounting. If the 140 Type Condenser must have the same mounting arrangement as 21AK Condenser, use 27 type brackets. Safe continuously applied voltage either D.C. or effective A.C. at 60 cycles or less and of an approximate sine wave, is 300 volts.

The No. 141 Type Condensers require No. 24 Type Brackets when mounted in place of No. 57 or similar Type Condensers. Arranged to mount on ½″ horizontal and 1¾″ vertical centers. Furnished with two nuts and washers for mounting. Safe continuously applied voltage 200 D.C. or 180 effective A.C. at 60 cycles or less and of an approximate sine wave.

If the No. 141H Condenser must fill the space of the No. 21 Type Condensers, order should specify P-409556 Adapter.

If the No. 141J Condenser must fill the space of the No. 21S Condenser, order should specify two P-127145 Adapters.

If the No. 141QF Condenser must mount in the same position as the No. 21AM Condenser, order should specify two P-127145 Adapters.

The No. 142 Type Condensers require one No. 27A Bracket when mounted in place of the No. 21 or similar Type Condensers. Require two No. 24 Type Brackets when mounted in place of No. 57 or similar Type Condensers. Arranged to mount on ½″ horizontal and 1¾″ vertical centers. Furnished with two nuts and washers for mounting. Safe continuously applied voltage, either D.C. or effective A.C. at 60 cycles or less and of an approximate sine wave, is 300 volts.

Code No.	Fig. No.	Capacity M.F. Stamped On Condenser At Min.	A	B	Max.	Tested On Voltage	Remarks
137A	1	4.00	4.00	—	5.00	500 D.C.	—
†137B	2	4.00 / .02	4.00 / —	— / .02	5.00 / .03	500 D.C.	—
†137C	2	2.00 / 2.00	2.00 / —	— / 2.00	2.50 / 2.50	500 D.C.	—
†137D	2	4.00 / .05	4.00 / —	— / .05	5.00 / .06	500 D.C.	—
137QA	3	4.28	4.28	4.36	4.36	500 D.C.	—
138A	1	1.00	1.00	—	1.25	1000 A.C.	Replaces No. 21AA Condenser except for "Additions and Maintenance Only". Replaces No. 57AF Condenser.
138B	—	1.25	1.25	—	1.57	1000 A.C.	Used in Railway Sets.
138QA	2	1.07	1.07	1.09	1.09	1000 A.C.	Two No. 138QA each with two No. 24B Brackets, replace No. 125A Condenser.
138QB	2	1.04	1.04	1.12	1.12	1000 A.C.	Two No. 138QB each with two No. 24B Brackets, replace No. 125B Condenser.
139A	1	2.00	2.00	—	2.50	500 D.C.	Replaces No. 57A and No. 90B Condensers.
†139B	2	2.00 / .02	2.00 / —	— / .02	2.50 / .03	500 D.C.	Replaces No. 90D Condenser.
†139C	2	1.00 / 1.00	1.00 / —	— / 1.00	1.25 / 1.25	500 D.C.	Replaces No. 21BE and No. 90A Condensers.
†139D	2	2.00 / .05	2.00 / —	— / .05	2.50 / .06	500 D.C.	—
139E	2	1.20 / 1.20	1.20 / —	— / 1.20	1.50 / 1.50	500 D.C.	—
139QA	3	2.14	2.14	2.18	2.18	500 D.C.	Replaces No. 90C Condenser.
139QB	3	2.10	2.10	2.16	2.16	500 D.C.	Replaces No. 90E Condenser.
139QC	3	2.16	2.16	2.22	2.22	500 D.C.	—
139QD	3	2.08	2.08	2.24	2.24	500 D.C.	—
139QE	3	2.04	2.04	2.16	2.16	500 D.C.	—

TCI Library: www.telephonecollectors.info

Condensers—Mounting Plate Type—*Continued*

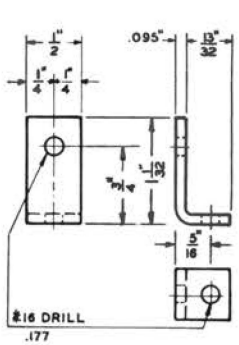
Code No.	Fig. No.	Capacity M.F. Min.	Stamped On Condenser At A	Stamped On Condenser At B	Capacity M.F. Max.	Tested On Voltage	Remarks
139QF	3	2.16	2.16	2.28	2.28	500 D.C.	—
†139QG	2	2.16 .02	2.16 —	— .02	2.28 .03	500 D.C.	—
†139QH	2	1.05 1.00	1.05 —	— 1.00	1.08 1.25	500 D.C.	—
140B	—	.62	.50	—	.50	1000 A.C.	Replaces No. 21AK and No. 90F Condensers.
140C	—	.62	.50	—	.50	1000 A.C.	For use where high insulation resistance is required.
140E	—	.125	.125	—	.160	1000 A.C.	—
141A	2	1.00	1.00	—	1.25	500 D.C.	Replaces No. 57B and No. 89H Condensers.
141B	—	.50	.50	—	.625	500 D.C.	Replaces No. 89F Condenser.
*141C	—	.50 .50	.50 —	— .50	.625 .625	500 D.C.	Replaces No. 89G Condenser.
141D	—	.25	.25	—	.32	500 D.C.	Replaces No. 89E Condenser.
*141E	—	.25 .25	.25 —	— .25	.32 .32	500 D.C.	—
*141F	—	.50 .25	.50 —	— .25	.625 .32	500 D.C.	—
*141G	—	.125 .065	.125 —	— .075	.16 .085	500 D.C.	—
*141H	—	.02 .02	.02 —	— .02	.03 .03	500 D.C.	Replaces No. 89B Condenser.
141J	—	.125	.125	—	.16	500 D.C.	—
141K	—	.10	.10	—	.135	500 D.C.	Replaces No. 89L Condenser.
141L	—	.065	.075	—	.085	500 D.C.	Replaces No. 89U and AE Condensers.
141M	—	.04	.05	—	.06	500 D.C.	Replaces No. 89C Condenser.
141N	—	.02	.02	—	.03	500 D.C.	Replaces No. 89A Condenser.
141P	—	.004	.005	—	.006	500 D.C.	Replaces No. 89M Condenser.
141R	—	.010	.01	.01	.013	500 D.C.	—
141QA	—	1.07	1.07	1.09	1.09	500 D.C.	Replaces No. 89P Condenser.
141QB	—	1.05	1.05	1.08	1.08	500 D.C.	—
141QC	—	1.08	1.08	1.11	1.11	500 D.C.	Replaces No. 89N Condenser.
141QD	—	1.04	1.04	1.12	1.12	500 D.C.	—
141QE	—	1.02	1.02	1.08	1.08	500 D.C.	—
141QF	—	1.08	1.08	1.14	1.14	500 D.C.	Replaces No. 89T Condenser.
141QG	—	.535	.535	.545	.545	500 D.C.	Replaces No. 89S Condenser.
141QH	—	.525	.525	.54	.54	500 D.C.	—
141QJ	—	.54	.54	.555	.555	500 D.C.	Replaces No. 89R Condenser.
141QL	—	.51	.51	.54	.54	500 D.C.	—
141QM	—	.54	.54	.57	.57	500 D.C.	—
141QN	—	.265	.265	.275	.275	500 D.C.	—
141QP	—	.26	.26	.28	.28	500 D.C.	—
141QR	—	.25	.25	.27	.27	500 D.C.	—
141QS	—	.27	.27	.29	.29	500 D.C.	—
141QU	—	.10	.10	.11	.11	500 D.C.	—
141QW	—	.11	.11	.12	.12	500 D.C.	—
142B	1	.25	.25	—	.32	1000 A.C.	Replaces Nos. 21H, Y and AL Condensers.
142C	1	.10	.10	—	.125	1000 A.C.	Replaces No. 21H.
142D	1	.05	.05	—	.06	1000 A.C.	—
142E	2	.02 .02	.02 —	— .02	.03 .03	1000 A.C.	—
142F	2	.005 .005	.005 —	— .005	.0065 .0065	1000 A.C.	—

† Consists of two separate condensers insulated but not shielded from each other. These condensers should not be used bridged off or across two separate transmission circuits and should not be used in the same circuit where the effect of the capacity between the separate units will be detrimental to the transmission.

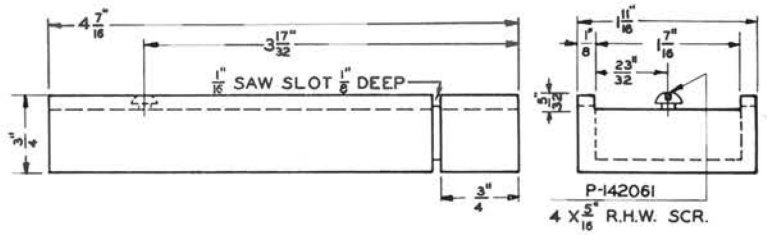
* Values stamped at "A" are measured between terminals 1 and 2 and values at "B" are measured between terminals 3 and 4. Consists of two separate condensers insulated but not shielded from each other. These condensers should not be used bridged off or across two separate transmission circuits and should not be used in the same circuit where the effect of the capacity between separate units will be detrimental to transmission.

TCI Library: www.telephonecollectors.info

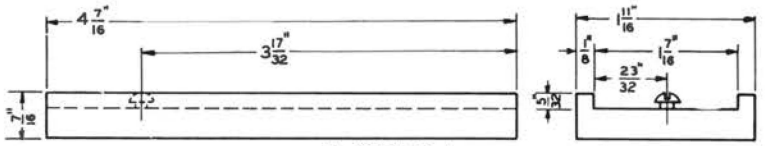
Condenser Adapters



P-127145



P-409555-1



P-409556-1

P-127145—Galvanized iron, overall dimensions $1\frac{1}{32}$" x $\frac{1}{2}$".

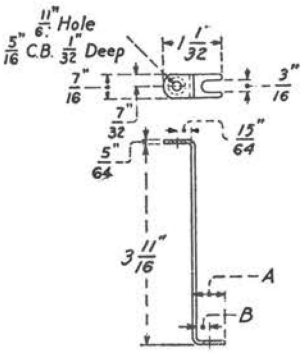
P-409555—Wood, overall dimensions $4\frac{7}{16}$" x $1\frac{11}{16}$".

P-409556—Wood, overall dimensions $4\frac{7}{16}$" x $1\frac{11}{16}$".

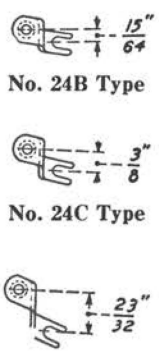
Condenser Brackets



No. 24 Type



No. 24A Type



No. 24B Type

No. 24C Type

No. 24D Type



No. 27 Type

The No. 24 Type Condenser Brackets are intended to mount stud mounted condensers ($3\frac{1}{2}$" or less in height) in place of lug mounted condensers, where mounting plates are drilled for condensers having the mounting lugs located on the center line of the condenser or off center as indicated below.

24A—Steel, aluminum finish, overall dimensions $3\frac{11}{16}$" x $\frac{7}{16}$" x $1\frac{1}{32}$".

24B—Steel offset, aluminum finish, overall dimensions $3\frac{11}{16}$" x $\frac{7}{16}$" x $1\frac{1}{32}$".

24C—Steel offset, aluminum finish, overall dimensions $3\frac{11}{16}$" x $\frac{7}{16}$" x $1\frac{1}{32}$".

24D—Steel offset, aluminum finish, overall dimensions $3\frac{11}{16}$" x $\frac{7}{16}$" x $1\frac{1}{32}$".

The 27 Type Brackets are intended to mount stud mounted condensers when used to replace strap mounted condensers.

TCI Library: www.telephonecollectors.info

Condenser Brackets—*Continued*

27A—Steel, aluminum finish, overall dimensions $1\frac{1}{2}$" x $1\frac{1}{8}$" x 1".

27B—Steel, aluminum finish, overall dimensions $1\frac{1}{2}$" x $1\frac{15}{16}$" x 1".

27C—Steel, aluminum finish, overall dimensions $1\frac{1}{2}$" x $3\frac{1}{4}$" x 1".

27D—Steel, aluminum finish, overall dimensions $1\frac{1}{2}$" x $2\frac{7}{16}$" x 1".

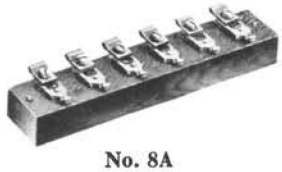
Condenser Straps

P43065—A straight galvanized iron strap, overall dimensions $4\frac{15}{16}$" x $\frac{1}{2}$".

P43121—A galvanized iron clamp, overall dimensions $5\frac{5}{16}$" x $\frac{9}{16}$".

P48022—A straight galvanized iron strap for mounting two condensers, overall dimensions $9\frac{5}{8}$" x $\frac{1}{2}$".

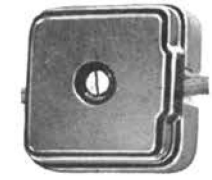
CONNECTING BLOCKS



No. 8A



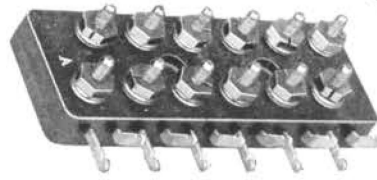
No. 12E



No. 42A



No. 11A



No. 31A



No. 30A



No. 42A
Cover off

Code No.	No. of Connectors	Descriptions	Size of Base (Inches) Length	Width	Thickness	Material Base
8A	6	One screw and cord tip terminal on each connector.	5	1	$\frac{5}{8}$	Ebonized wood
11A (a) 11B (b) 11C	2 2 2	Two screw terminals on each connector. Opposite terminals are electrically connected.	$1\frac{5}{32}$	$1\frac{5}{32}$	$\frac{9}{16}$	Composition
12E (c) 12F	3 3	Two screw terminals on each connector. Has 3 slots in under side of base. Opposite terminals are electrically connected. Replaces Nos. 12C and D.	$1\frac{11}{16}$	$1\frac{3}{8}$	$\frac{9}{16}$	Composition
18A	15	Adapted to mount on mounting plates of No. 823 or similar type and arranged to engage with the guide posts of the associated relay and hold the relay in position by spring tension. For use with 209A and 209FA Relays.	$2\frac{31}{64}$	$2\frac{1}{32}$	$1\frac{25}{32}$	.....

TCI Library: www.telephonecollectors.info

CONNECTING BLOCKS—*Continued*

Code No.	No. of Connectors	Descriptions	Size of Base (Inches) Length	Width	Thickness	Material Base
18B	8	Same as 18A except for use with No. 215A and 209FB Relays.	$2\frac{31}{64}$	$2\frac{1}{32}$	$1\frac{25}{32}$	.....
18F	10	Same as 18A except for use with No. 228A and 228B Relays.	$2\frac{31}{64}$	$2\frac{1}{32}$	$1\frac{25}{32}$	.....
26B	4	For use with No. 218B Relays. Adapted to mount on mounting plates $\frac{7}{32}$" thick.	$3\frac{1}{8}$	$1\frac{1}{64}$	$2\frac{11}{16}$	.....
29A	2	Provided with two metal sleeves arranged at one end to be attached to an L4G or L4H cord and at the other end to connect to No. 29 cord tips by means of plug connections. For use on L4G and L4H cords to permit chief operator to plug in with a supervisor by the use of a receiver and an R2AL cord.	1	$\frac{19}{32}$	$\frac{9}{32}$	Composition
30A	12	Binding posts have lock nuts, with posts spun over to prevent loss of lock nuts. Intended for use with 15 Type fanning strips.	$4\frac{3}{16}$	$1\frac{1}{2}$	$\frac{1}{2}$	Composition
30B	22		$7\frac{5}{16}$	$1\frac{1}{2}$	$\frac{1}{2}$	Composition
30C	32		$10\frac{7}{16}$	$1\frac{1}{2}$	$\frac{1}{2}$	Composition
30D	52		$16\frac{11}{16}$	$1\frac{1}{2}$	$\frac{1}{2}$	Composition
31A	12	Each connector has one lock nut binding post and one soldering terminal, brought out on the side. Intended for use with 15 Type fanning strips.	$4\frac{3}{16}$	$1\frac{1}{2}$	$\frac{1}{2}$	Composition
31B	22		$7\frac{5}{16}$	$1\frac{1}{2}$	$\frac{1}{2}$	Composition
31C	32		$10\frac{7}{16}$	$1\frac{1}{2}$	$\frac{1}{2}$	Composition
31D	52		$16\frac{11}{16}$	$1\frac{1}{2}$	$\frac{1}{2}$	Composition
33A	2	For use in providing a source of battery and ground for testing purposes at distributing frames, and in rear of switchboards. Arranged to be clamped on the side of the base of terminal strips and are adapted for bases either $\frac{5}{8}$" or $\frac{3}{4}$". Engraved "24 V."	$2\frac{13}{32}$	$\frac{9}{16}$	$\frac{19}{32}$	Composition
33B	2	Same as No. 33A except engraved "48 V."	$2\frac{13}{32}$	$\frac{9}{16}$	$\frac{19}{32}$	Composition
35A	16	For grouping together the cord circuits of adjacent positions in No. 511 PBX Switchboard. Consists of a "B1" Type Key Base and mounting stud assembly. Arranged for mounting in a universal type keyshelf with "B" type keys and "B" type key spaces. Consists of 8 pairs of terminals.	$4\frac{9}{16}$	$1\frac{1}{32}$	....	.....
42A-4	4	For use with combined handset mountings for fastening the handset mounting cord and the inside wire. Has a removable metal cover. Color, ivory.	$1\frac{15}{16}$	$1\frac{15}{16}$	$\frac{15}{32}$	Composition
42A-9	4	Same as 42A-4 except color, brown.	$1\frac{15}{16}$	$1\frac{15}{16}$	$\frac{15}{32}$	Composition

(a) The No. 11B consists of a No. 11A equipped with a black finished metal cover.

(b) The No. 11C is the same as No. 11B except that the under-surface of the top of the cover is provided with an insulating strip to protect the terminals from short circuits.

(c) The No. 12F consists of a No. 12E equipped with a black finished metal cover.

TCI Library: www.telephonecollectors.info

CORDS

General



Cord Binding Machines

Western Electric telephone cords are the result of more than fifty years experience in the manufacture of telephone apparatus. They are of the same high quality that has characterized all Western Electric telephone equipment and caused it to be recognized as standard by the leading telephone authorities throughout the world.

CODING

So that a cord may be easily identified as to its application in the telephone field, the following letter-number-letter codes have been assigned, which have the following significance.

The first character of the code, a letter, designates principle use as follows:

D—Desk Stand Cord (includes handset mounting cords and switch cords used between the switchhook and the base of desk stands).

H—Handset Cord (cords connected directly to handsets).

L—Operator's Telephone Set Cord.

M—Miscellaneous Cords, which are not classified under the other designations.

P—Patching Cord (distinguished from switchboard cords by being arranged for a plug at each end).

R—Receiver Cord.

S—Switchboard Cord (distinguished from patching cords by having one end arranged for connecting to a switchboard).

T—Transmitter Cord.

W—Test Cord (includes cords used with test sets and in connection with central office testing).

The second character of the code, a number, corresponds to the number of conductors.

TCI Library: www.telephonecollectors.info

CORDS

CODING—Continued

The third and fourth characters of the code, a letter or letters, have no special significance and are arbitrarily assigned to indicate variation in physical structure, such as insulation, cord tips, etc.

In some cases where a cord is furnished in various colors, a dash number is added to designate the color; for example, D3H-9 indicates a brown cord and D3H-5 a gray cord.

Switchboard Cords

CONSTRUCTION

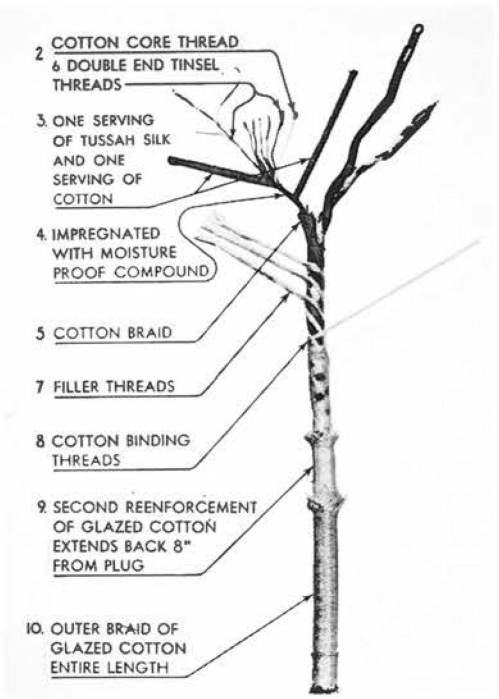
The description of the steps taken in the manufacture of these tinsel cords which is given below, will show the care exercised in producing superior cords which are suitable for all classes of switchboard service. These steps are as follows:

1. Two metal ribbons are wound around a strong cotton thread to form a tinsel thread. This tinsel thread is of special manufacture and made under the Western Electric Company's own rigid specifications. The characteristic most strongly emphasized is freedom from noise after long service.

2. Six of the above tinsel threads are wound around a strong cotton twine to form a conductor, thus giving the conductor great flexibility.

3. Each conductor is covered with an inner serving (wrapping) of purified spun Tussah silk and an outer serving of purified cotton applied in the opposite direction.

4. These silk insulated conductors are then impregnated with an asphaltic moisture-proofing compound. This compound is flexible, does not harden with age, and minimizes corrosion.



5. After this moisture-proofing is applied each conductor is further insulated and protected by means of a cotton braiding.

6. Two or three of these conductors are then twisted together to form the body of the cord.

7. In order that the external surface of the cord may be smooth, the spaces between the twisted conductors are filled with cotton twine.

8. The body of the cord is then given a tight serving of cotton to hold the conductors firmly in place.

9. The plug end of the cord is suitably reinforced to allow for the severe bending and handling which occurs at this point.

10. An outside braiding of glazed cotton is then applied over the entire length of the cord.

Long experience in actual service has shown that this is the most satisfactory method of switchboard cord construction yet devised, not only as regards wearing qualities, but also as to electrical and operating features.

TCI Library: www.telephonecollectors.info

CORDS

Switchboard Cords—*Continued*

ADVANTAGES

Under actual service conditions the following features of this type of cord have been proven conclusively:

1. Extremely long life.

2. The moisture-proofing feature makes their use possible in damp and humid climates for long periods without the necessity of making frequent changes.

Dampness from the operator's hands has practically no effect on these cords.

3. The resistance of each conductor is approximately 1 ohm (6 ft. cord).

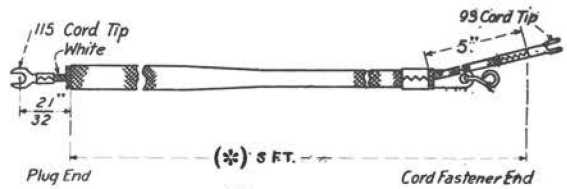
4. The current carrying capacity of each conductor is 3 amperes which is much greater than is ever necessary in telephone service.

5. Cords having either slate, red, green or black braiding can be supplied. If no color is specified, however, slate cords will be furnished.

In ordering cords specify length desired. Lengths shown on illustrations are stock lengths.

If cords are desired equipped with the plugs listed, that fact should be mentioned in the order and the code number of the plug should be specified.

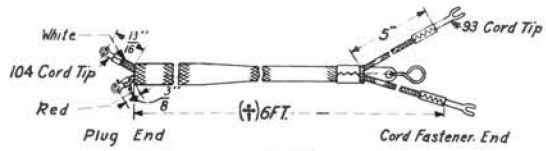
MOISTURE-PROOFED



S1A

Code S1A **1 Conductor**

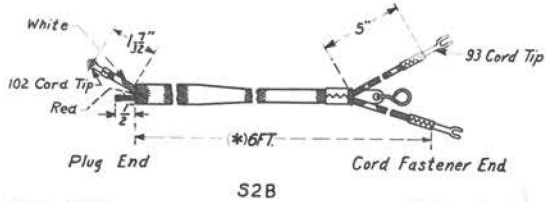
(*) 4 ft. cords can be furnished when specified.
Arranged for 116 Plug.
Replaces 511.



S2A

Code S2A **2 Conductors**

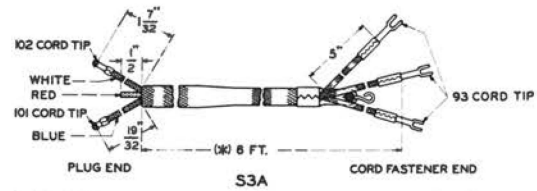
(†) 3 ft., 4 ft. or 8 ft. cords can be furnished when specified.
Arranged for 27, 32, 47, 53 and 65 Plugs.
Replaces 493.



S2B

Code S2B **2 Conductors**

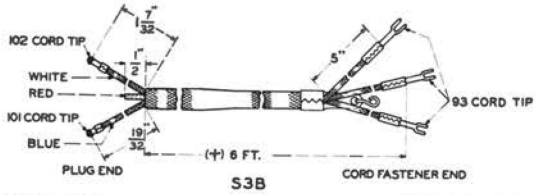
(*) 4 ft. or 8 ft. cords can be furnished when specified.
Arranged for 110 Plug.
Finished for tip and sleeve connections.
Replaces 635.



S3A

Code S3A **3 Conductors**

(*) 2½ ft. or 8 ft. cords can be furnished when specified.
Arranged for 109 Plug.
Replaces 447 and S3E.



S3B

Code S3B **3 Conductors**

(†) 4 ft., 5 ft., or 8 ft. cords can be furnished when specified.
Arranged for 110 Plug.
Replaces 448.

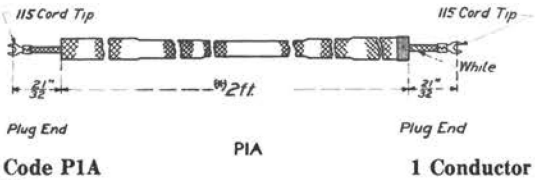
TCI Library: www.telephonecollectors.info

CORDS—*Continued*

Patching Cords

MOISTURE-PROOFED

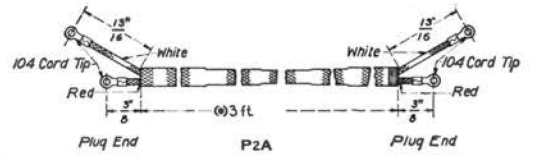
The construction of patching cords is the same as that of switchboard cords except that they are arranged for a plug at each end.



P1A

Code P1A **1 Conductor**

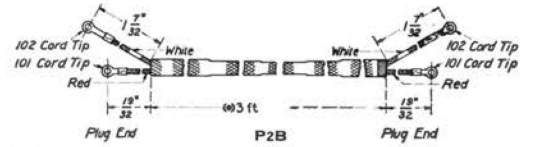
Slate.
(*) 1 ft., 4 ft. or 6 ft. cords can be furnished when specified.
Arranged for 116 Plug.
Replaces 510.



P2A

Code P2A **2 Conductors**

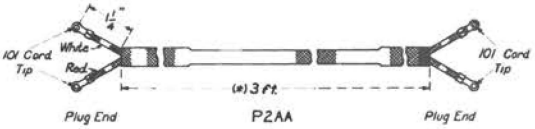
Red.
(*) 1 ft., 2 ft., 4 ft. or 6 ft. cords can be furnished when specified.
Arranged for 47 Plug.
Replaces 516.



P2B

Code P2B **2 Conductors**

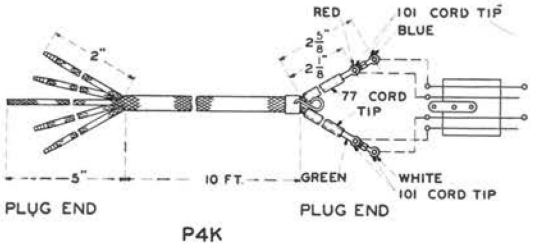
Green.
(*) 1 ft., 2 ft., 4 ft. or 6 ft. cords can be furnished when specified.
Arranged for 110 Plug.
Replaces 515.



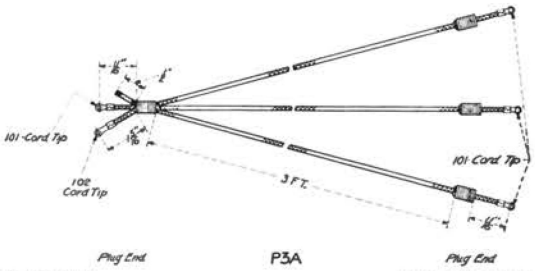
P2AA

Code P2AA **2 Conductors**

Slate.
(*) 1 ft., 2 ft., 4 ft. or 6 ft. cords can be furnished when specified.
Arranged for two 241 Plugs (tip connections).
Replaces 855.



P4K

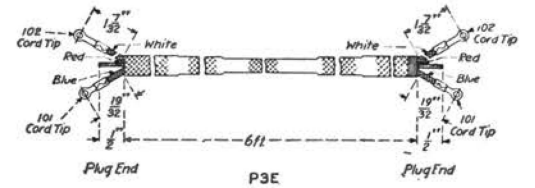


P3A

Code P3A **3 Conductors**

(Not Moisture-Proofed)

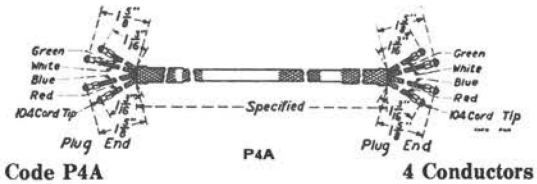
Brown, with green tracer. Intended for use in emergency plugging-up to make a line busy.
Arranged for 110 Plug.
Note: One end of cord arranged for connections to the tip, ring and sleeve of a single plug and the other end for connections to the rings of three plugs.



P3E

Code P3E **3 Conductors**

Slate.
Arranged for 110 Plug.
Replaces 728.



P4A

Code P4A **4 Conductors**

Slate.
Black cords will be furnished when specified.
Standard Length: 2 ft., 4 ft. and 6 ft. cords will be furnished when specified.
Arranged for 154 Plug.
When ordered equipped with plug the white and green conductors will be connected to the notched side of the plug.
Replaces 659.

Code P4K **4 Conductors**

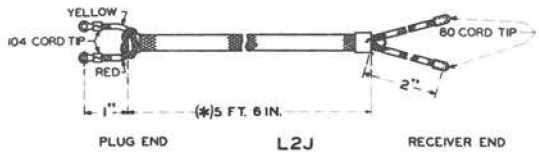
Black.
Standard length: 10 ft.
Arranged for Plugs 240B, 240C and 289A.
When ordered equipped with Plugs No. 289A Plug will be connected as indicated.
On No. 240 Type Plugs the terminal nearest to the head of the clamping screw will be considered as Terminal 1 and connections made as follows:
No. 240B—red, blue, green and white conductors to Terminals 3, 5, 1 and 2, respectively.
No. 240C—green, white, red and blue conductors to Terminals 7, 8, 6 and 5, respectively.

TCI Library: www.telephonecollectors.info

CORDS—*Continued*

Operator's Telephone Set Cords

The following cords are standard for regular operator's telephone set use. The conductors are composed of the same high grade tinsel described under switchboard cord construction on page 71 unless otherwise specified. The individual conductors are insulated with two braidings of purified cotton. The required number of conductors are covered with a final braiding of brown mercerized cotton as specified below:

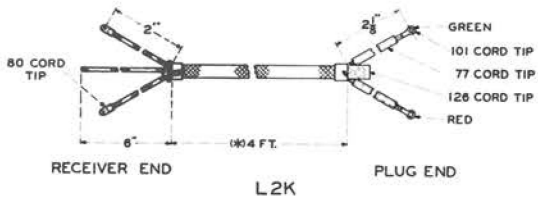


Code L2J **2 Conductors**

(*) 4 ft. cords can be furnished when specified.

Arranged for 528 Receiver and 148 or 273A-3 Plug.

Recommended in place of L2F.



Code L2K **2 Conductors**

(*) 5 ft. 6 in. cords can be obtained when specified.

Arranged for 289A Plug.

Intended for use as an operator's head receiver cord at No. 9 and No. 105 switchboards using the No. 232 Transmitter.



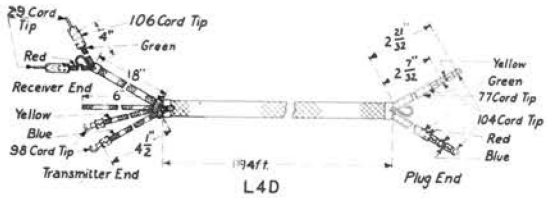
Code L4B **4 Conductors**

(*) 6 ft. and 10 ft. cords can be furnished when specified.

Arranged for 137 or similar type Plug, 128 Receiver and 234 Transmitter.

Replaces 87.

Note: Shanks of 98 Cord Tips insulated.



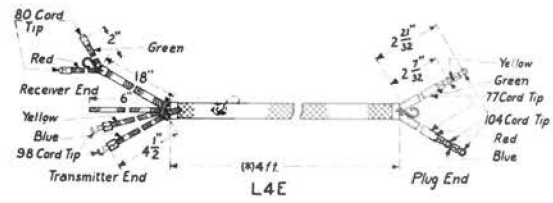
Code L4D **4 Conductors**

(*) 6 ft. or 10 ft. cords can be furnished when specified.

Arranged for 137 or similar type Plug, 128 Receiver and 234 Transmitter.

Replaces 748.

Note: Shanks of 98 Cord Tips insulated.



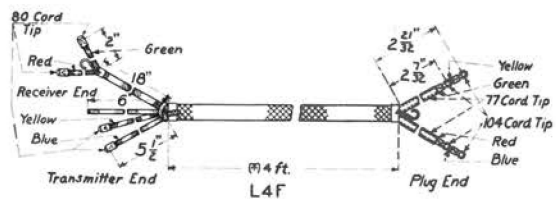
Code L4E **4 Conductors**

(*) 6 ft. or 10 ft. cords can be furnished when specified.

Arranged for 137 or similar type Plug, 528 Receiver and 234 Transmitter.

Replaces 848.

Note: Shanks of 98 Cord Tips insulated.

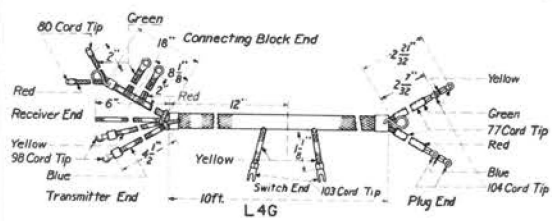


Code L4F **4 Conductors**

(*) 6 ft. or 10 ft. cords can be furnished when specified.

Arranged for 137 or similar type Plug, 528 Receiver and 396A Transmitter.

Corresponding cord for use with 289A Plug is L4R.



Code L4G **4 Conductors**

Shanks of the 98 Cord Tips are insulated.

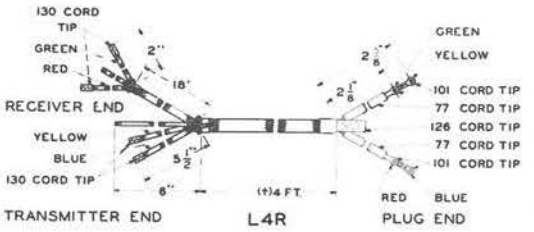
Arranged for 525 Receiver, 234 Transmitter and 137 or similar type Plug.

Arranged for a 29A Connecting Block and a Cutler-Hammer No. 7050 switch. The connecting block permits a chief operator to plug in and listen with a supervisor by the use of a receiver and R2AL cord. The switch opens the supervisor's transmitter circuit.

TCI Library: www.telephonecollectors.info

CORDS

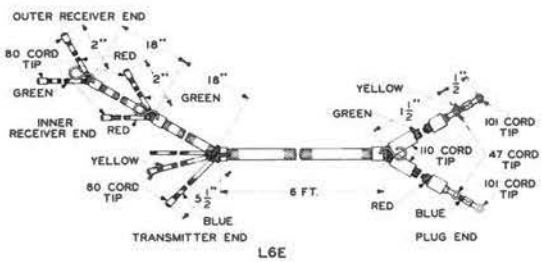
Operator's Telephone Set Cords—*Continued*



Code L4R **4 Conductors**

(†) 6 ft. and 10 ft. cords can be furnished when specified.

Arranged for 528 Receiver, 396A Transmitter and 289A Plug.



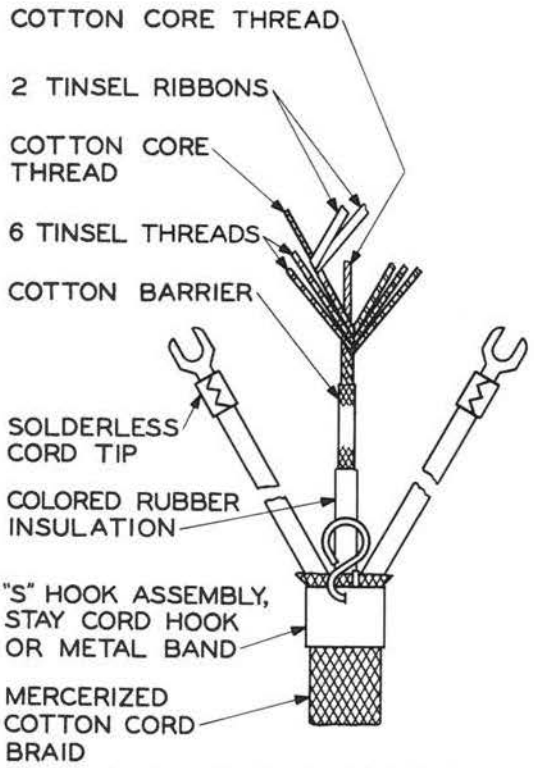
Code L6E **6 Conductors**

Intended for use as operator's parallel double head receiver and breast transmitter cord.

Arranged for two No. 528 Receivers, 396A Transmitter and 289A Plug.

The shanks of the 98 Cord Tips are insulated.

Standard Rubber Insulated Tinsel Cords



Construction of Rubber Insulated Cords

Rubber insulated tinsel cords are designed for general station use and include desk stand, handset and handset mounting cords, cords for the combined telephone sets, receiver cords, transmitter cords and some of the test cords.

These cords have tinsel conductors of a similar construction to the switchboard cords. The conductors are covered by a knitted or braided barrier or purified cotton and insulated with the new non-corrosive rubber compounds, unless otherwise specified. The conductors are distinguished by the use of different colored rubber compounds, and double tracer colors are indicated by the use of four longitudinal ridges along the length of the conductor of the same color as the base color of the conductor. In the case of some test cords or other cords where the free conductors may be subjected to severe mechanical abuse, outer conductor braids are used.

In general the conductors are laid parallel and covered by a mercerized cotton cord braid which, in the case of many of the cords coded in the "D" or "H" series, may be obtained in several different colors other than the standard brown. Test cords generally have black cotton cord braids, frequently of glazed cotton.

Rubber Jacketed Station Cords

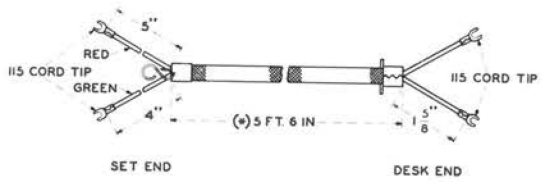
Rubber jacketed station cords are designed for use at stations where the service conditions are unusually severe from the standpoint of mechanical abuse or where excessively severe moisture conditions exist or exposure to chemical fumes or solutions is to be expected. They are also recommended for use at public coin collector stations. These cords employ the standard colored rubber insulated tinsel conductors which are twisted together, the spaces between the conductors are filled with cotton thread and the whole is bound with a close binder serving (wrapping) of multiple end cotton and covered by a tough rubber jacket.

TCI Library: www.telephonecollectors.info

CORDS—*Continued*

Desk Stand Cords

(INCLUDING HAND SET MOUNTING CORDS AND SWITCH CORDS USED BETWEEN THE SWITCH HOOK AND THE BASE OF DESK STANDS)

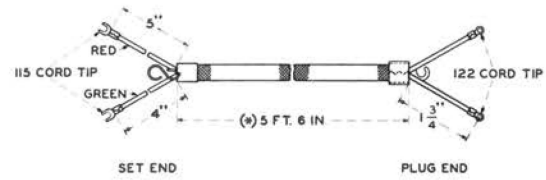


Code D2D Type **2 Conductors**

(*) 9 ft., 13 ft. and 25 ft. cords can be furnished when specified.

Intended for use with the Nos. 302 and 305 Type Telephone Sets.

Code	Color	Code	Color
D2D- 4	Ivory	D2D-16	Old Rose
D2D- 8	Silver	D2D-18	Dark Blue
D2D- 9	Brown	D2D-19	Gray-Green
D2D-12	Dark Gold	D2D-20	Pekin Red



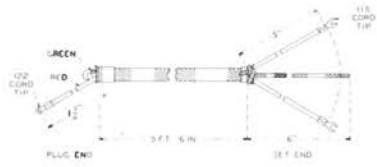
Code D2E Type **2 Conductors**

(*) 9 ft., 13 ft. and 25 ft. cords can be furnished when specified.

Intended for use with a 302 and 305 Type Telephone Set.

Intended for use in place of the corresponding D2D type cord when a cord arranged for use with a 273A Plug is required.

Code	Color	Code	Color
D2E- 4	Ivory	D2E-16	Old Rose
D2E- 8	Silver	D2E-18	Dark Blue
D2E- 9	Brown	D2E-19	Gray-Green
D2E-12	Dark Gold	D2E-20	Pekin Red



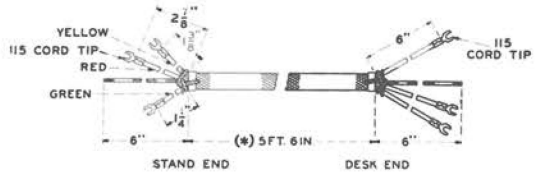
Code D2H **2 Conductors**

Brown.

Intended for use with portable Subscriber Sets.

Arranged for 273 Plug.

Replaces 545 Cord.



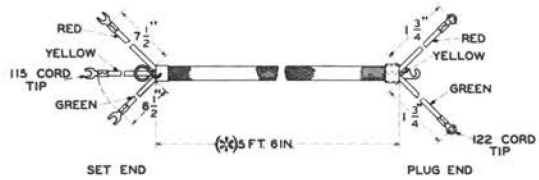
Code D3AB **3 Conductors**

Brown.

(*) 9 ft., 13 ft. and 25 ft. cords can be furnished when specified.

Intended for use with the 40P Transmitter Arm.

Replaces 409, 541 and 550 Cords.



Code D3AD Type **3 Conductors**

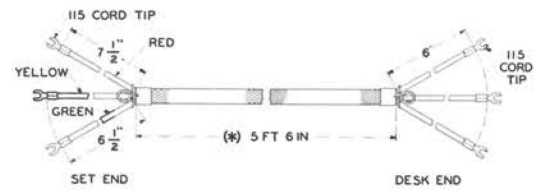
(*) 9 ft., 13 ft. and 25 ft. cords can be furnished when specified.

Intended for use in connection with plug and jack service on the 302 Type Telephone Sets.

Plug end arranged for connection to 273A Plug.

Replaces D3Y.

Code	Color	Code	Color
D3AD- 4	Ivory	D3AD-16	Old Rose
D3AD- 8	Silver	D3AD-18	Dark Blue
D3AD- 9	Brown	D3AD-19	Gray-Green
D3AD-12	Dark Gold	D3AD-20	Pekin Red



Code D3AK Type **3 Conductors**

(*) 9 ft., 13 ft. and 25 ft. cords can be furnished when specified.

Intended for use with 20AL, 20CM, 40AL, 40CM 51AL, 51CM and 52AB Desk Stands, and B1 or D1 Type Handset Mountings.

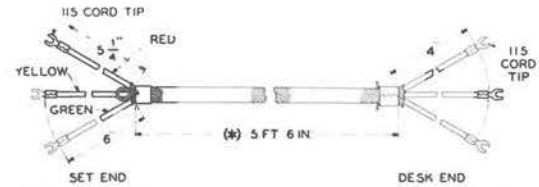
Replaces D3H.

Code	Color	Code	Color
D3AK- 4	Ivory	D3AK-16	Old Rose
D3AK- 8	Silver	D3AK-18	Dark Blue
D3AK- 9	Brown	D3AK-19	Gray-Green
D3AK-12	Dark Gold	D3AK-20	Pekin Red

TCI Library: www.telephonecollectors.info

CORDS

Desk Stand Cords—*Continued*

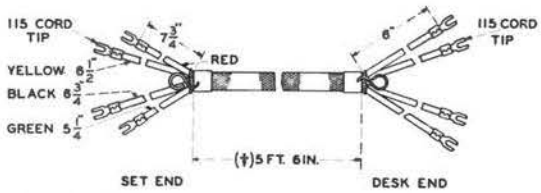


Code D3AL Type **3 Conductors**

(*) 9 ft., 13 ft. and 25 ft. cords can be furnished when specified.

Intended for use with 302E, F, G and H and 304B, C and D Type Telephone Sets.

Code	Color	Code	Color
D3AL- 4	Ivory	D3AL-16	Old Rose
D3AL- 8	Silver	D3AL-18	Dark Blue
D3AL- 9	Brown	D3AL-19	Gray-Green
D3AL-12	Dark Gold	D3AL-20	Pekin Red



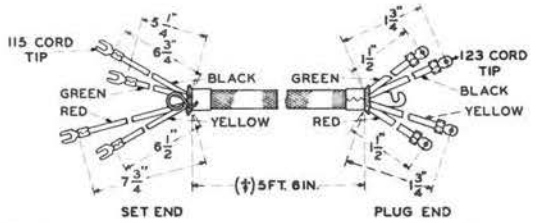
Code D4U Type **4 Conductors**

(†) 9 ft., 13 ft. and 25 ft. cords can be furnished when specified.

Intended for use with D1, D7 and D8 Type Handset Mountings and with 120AL, 140AL, 151AL and 152AB Desk Stands.

Replaces D4N and D4S.

Code	Color	Code	Color
D4U- 4	Ivory	D4U-16	Old Rose
D4U- 8	Silver	D4U-18	Dark Blue
D4U- 9	Brown	D4U-19	Gray-Green
D4U-12	Dark Gold	D4U-20	Pekin Red



Code D4W Type **4 Conductors**

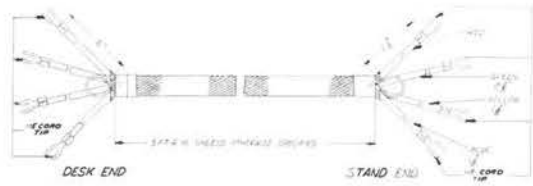
(†) 9 ft., 13 ft. and 25 ft. cords can be furnished when specified.

Intended for use with 202 Type Hand Telephone Sets.

Plug end arranged for 283A Type Plug.

Replaces the D4T.

Code	Color	Code	Color
D4W- 4	Ivory	D4W-16	Old Rose
D4W- 8	Silver	D4W-18	Dark Blue
D4W- 9	Brown	D4W-19	Gray-Green
D4W-12	Dark Gold	D4W-20	Pekin Red

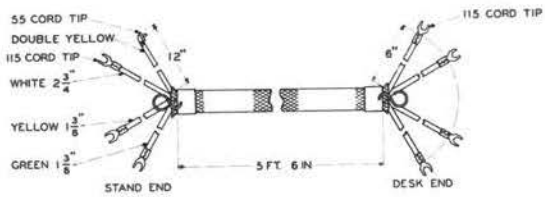


Code D4AC **4 Conductors**

Brown.

Intended for use with 1020E Transmitter Arms, 1042BR and other Desk Stands.

Replaces D4E and D4G.

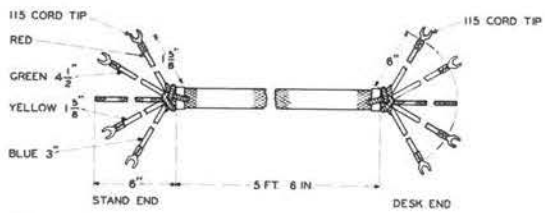


Code D4AD **4 Conductors**

Brown.

Intended for use with 20AH and 40AH Desk Stands.

Replaces D4D Cords.



Code D4AE **4 Conductors**

Brown.

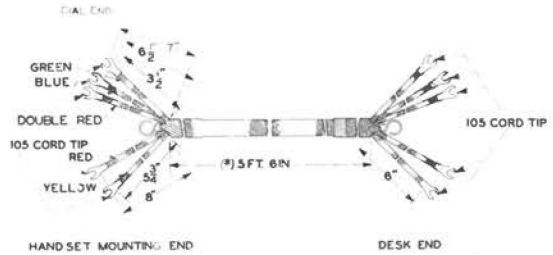
Intended for use with Desk Stands and Transmitter Arms.

Replaces 231 and 416 Cords.

TCI Library: www.telephonecollectors.info

CORDS

Desk Stand Cords—*Continued*



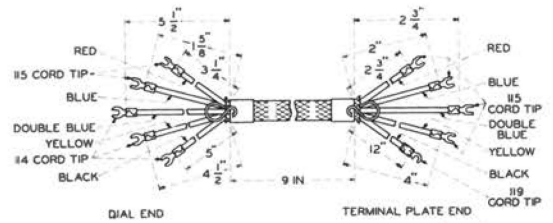
Code D5J Type **5 Conductors**

(*) 9 ft., 13ft. and 25 ft. cords can be furnished when specified.

Intended for use with D2, D3 and similar Type Hand Set Mountings and with 40CN, 51R and 51CN Desk Stands.

Replaces D5F Type.

Code	Color
D5J- 4	Ivory
D5J- 8	Silver
D5J- 9	Brown
D5J-12	Dark Gold

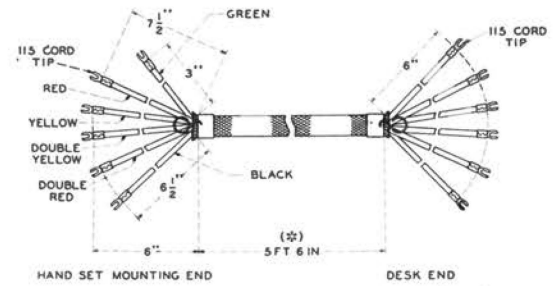


Code D5R **5 Conductors**

Brown.

Dial Cord.

Replaces D5B and D5L.



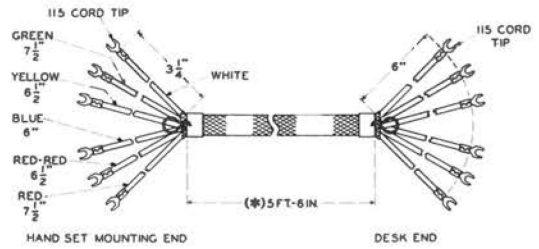
Code D6J **6 Conductors**

(*) 9 ft., 13 ft. and 25 ft. cords can be furnished when specified.

Intended for use with 203 Type Hand Telephone Sets and No. 151C Desk Stand.

Replaces D6H Cord.

Code	Color
D6J- 4	Ivory
D6J- 8	Silver
D6J- 9	Brown
D6J-12	Dark Gold
D6J-16	Old Rose
D6J-18	Dark Blue
D6J-19	Gray-Green
D6J-20	Pekin Red



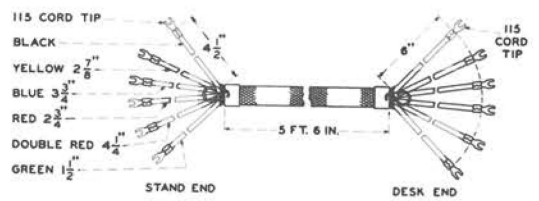
Code D6L **6 Conductors**

(*) 9 ft., 13 ft. and 25 ft. cords can be furnished when specified.

Intended for use with 206 and 207 Type Hand Telephone Sets and 50CN, 151S and 151AL Desk Stands.

Replaces D6D Type.

Code	Color
D6L- 4	Ivory
D6L- 8	Silver
D6L- 9	Brown
D6L-12	Dark Gold
D6L-16	Old Rose
D6L-18	Dark Blue
D6L-19	Gray-Green
D6L-20	Pekin Red

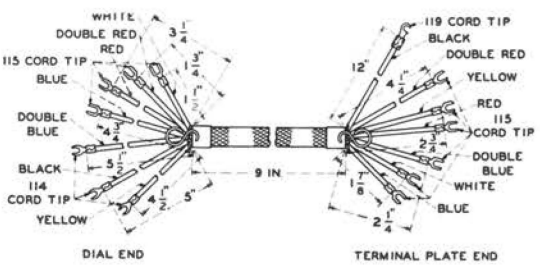


Code D6M **6 Conductors**

Brown.

Intended for use with 151R Desk Stand.

Replaces D6G.



Code D7M **7 Conductors**

Brown.

Intended for use with 151C and 151R Desk Stands.

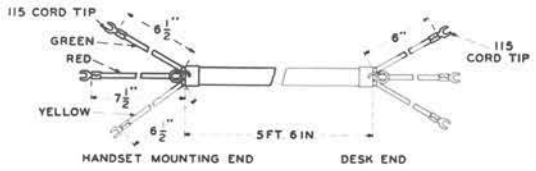
Replaces D7E and D7F.

TCI Library: www.telephonecollectors.info

CORDS

Desk Stand Cords—*Continued*

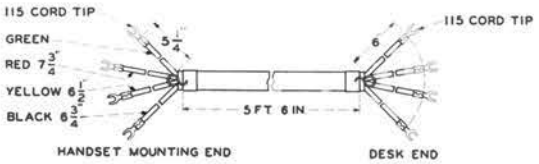
The following cords have bare rubber insulated conductors covered by a rubber jacket.



Code D3AA **3 Conductors**

Brown.

Intended for use in place of the D3AK where service conditions are unusually severe.



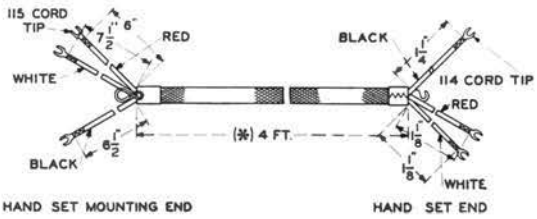
Code D4AB **4 Conductors**

Brown.

Intended for use at stations where the service conditions are unusually severe due to moisture or mechanical abuse.

Handset Cords

(Cords Connected Directly to Handset)



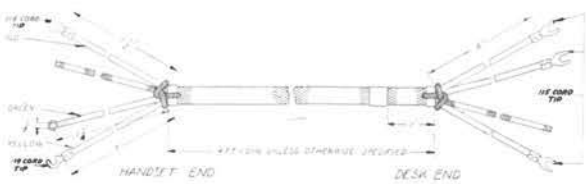
Code H3C Type **3 Conductors**

(*) 9 ft. cords can be furnished when specified. H3C-9 may be obtained 1 ft. long when specified.

Intended for use with E1B, E1D, E1E and F1A Type Handsets.

Replaces H3B type.

Code	Color
H3C- 4	Ivory
H3C- 8	Silver
H3C- 9	Brown
H3C-12	Dark Gold
H3C-16	Old Rose
H3C-18	Dark Blue
H3C-19	Gray-Green
H3C-20	Pekin Red

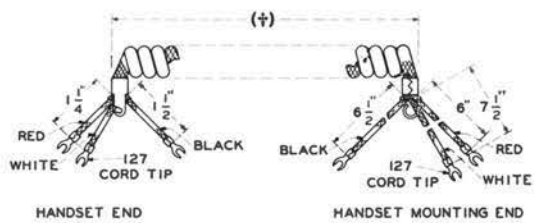


Code H3M **3 Conductors**

Brown.

Intended for use with the 1002-AC Handset.

Replaces 318.



Code H3P Type **3 Conductors**

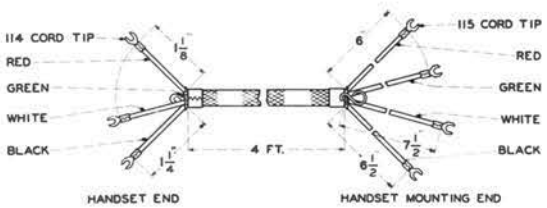
(Retractile)

(†) Length fully extended is 7 ft. Designed for use as 4 ft. cord. When not extended forms a close uniform helix approximately 10 in. long.

Special retractile cord with retractile element consisting of rubber threads.

Intended for use with Handsets.

Code	Color	Code	Color
H3P- 4	Ivory	H3P-16	Old Rose
H3P- 8	Silver	H3P-18	Dark Blue
H3P- 9	Brown	H3P-19	Gray-Green
H3P-12	Dark Gold	H3P-20	Pekin Red



Code H4L Type **4 Conductors**

Intended for use with E2B and E2C Type Handsets.

Replaces H4D.

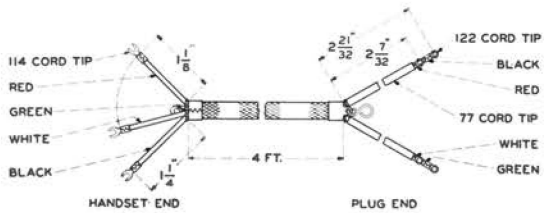
Code	Color	Code	Color
H4L- 4	Ivory	H4L-16	Old Rose
H4L- 8	Silver	H4L-18	Dark Blue
H4L- 9	Brown	H4L-19	Gray-Green
H4L-12	Dark Gold	H4L-20	Pekin Red

TCI Library: www.telephonecollectors.info

CORDS

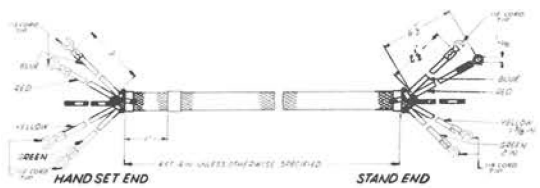
Handset Cords—*Continued*

(Cords Connected Directly to Handsets)



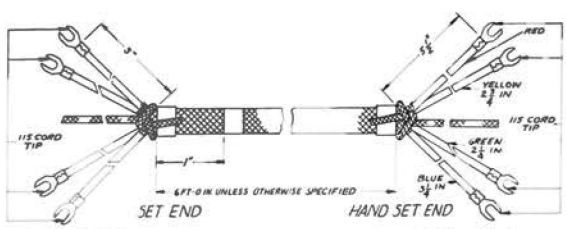
Code H4M **4 Conductors**

Brown.
Intended for use with the E2A-3 Handset.
Arranged for connection to a 137 Plug.
Replaces H4C.



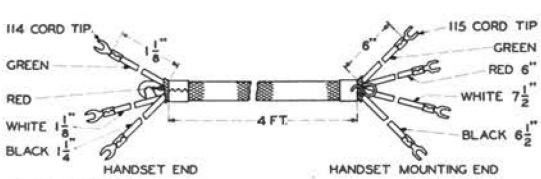
Code H4P **4 Conductors**

Brown.
Intended for use with the 1002-D Handset.
Replaces 429.



Code H4S **4 Conductors**

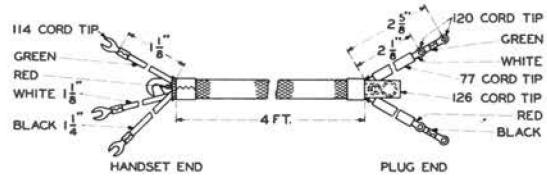
Brown.
Intended for use with 1001-J Handset.
Replaces 502.



Code H4T Type **4 Conductors**

Intended for use with F2B Type Handsets.

Code	Color
H4T- 4	Ivory
H4T- 8	Silver
H4T- 9	Brown
H4T-12	Dark Gold
H4T-16	Old Rose
H4T-18	Dark Blue
H4T-19	Gray-Green
H4T-20	Pekin Red

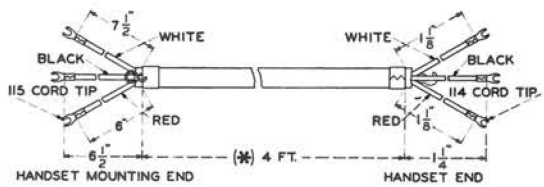


Code H4U **4 Conductors**

Brown.

Intended for use with F2A-3 Handset.

The following cords have bare rubber insulated conductors covered by a rubber jacket.

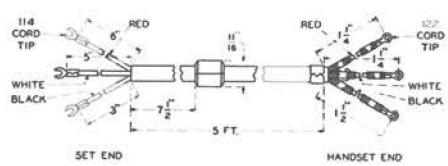


Code H3H **3 Conductors**

Brown.

(*) 1 ft. and 9 ft. cords can be furnished when specified.

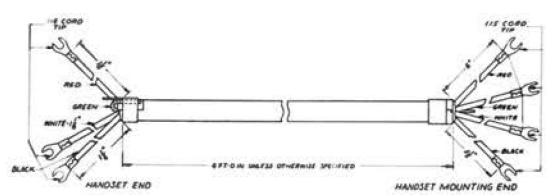
Intended for use in place of H3C-9 where service conditions are unusually severe.



Code H3R **3 Conductors**

Brown.

Intended for use with 320 Type Telephone Set in explosive atmosphere.



Code H4J **4 Conductors**

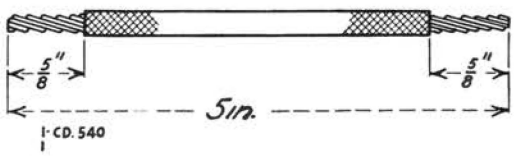
Brown.

Intended for use with the E3A Handset.

TCI Library: www.telephonecollectors.info

CORDS—*Continued*

Miscellaneous Cords Which Are Not Classified Under Other Designations

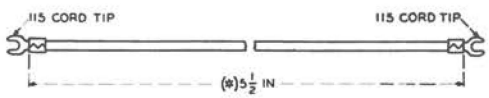


Code 540 **1 Conductor**

(Special)

Brown cotton covered cords with stranded copper conductors.

Intended to connect dry cells equipped with spring or screw terminals.



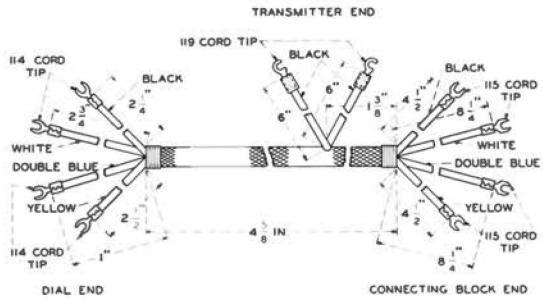
Code M1W **1 Conductor**

Black.

(*) 7 in., 10 in. and 14 in. cords can be furnished when specified.

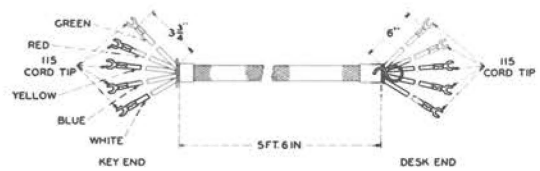
Intended for use with D1, E4 and similar type Handset Mountings when equipped with dial and Nos. 1011A, 1012A and 1013A Transmitters.

Replaces M1E.



Code M4P **4 Conductors**

Brown.
Intended for use with 37A Dial Mounting.
Shanks of 119 Cord Tips are insulated.
Replaces M4J.



Code M5E **5 Conductors**

Brown.
Intended for use with 549A Key.
Replaces M5C.

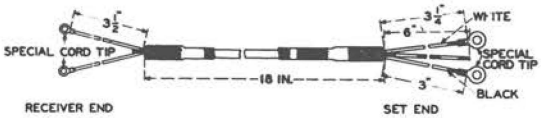
Receiver Cords



Code R2H **2 Conductors**

Brown.

Intended for use with Nos. 122, 128, 146 and other types of receivers requiring No. 29 Cord Tip.



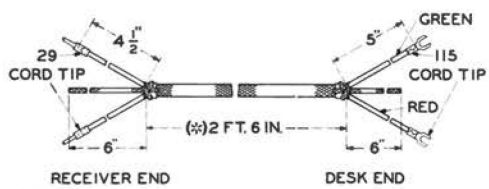
Code R2AD **2 Conductors**

(Special)

Black.

No. 18 A.W. gauge stranded copper wire.

Intended for use with the No. 558 Receiver in connection with the No. 629A Subscriber Set.



Code R2BR **2 Conductors**

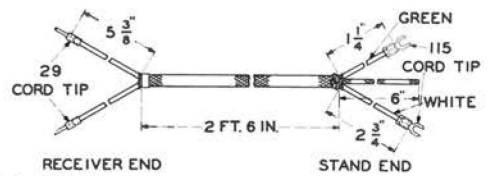
Brown.

(*) 1 ft. 3 in. and 5 ft. 6 in. cords can be furnished when specified.

Metal band at each end insulated.

Intended for use on exposed binding post receivers.

Replaces 391.



Code R2BS **2 Conductors**

Brown.

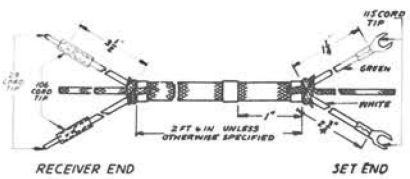
Intended for use in 50 Type Deskstand.

Replaces 542B and 549B Cords.

TCI Library: www.telephonecollectors.info

CORDS

Receiver Cords—*Continued*

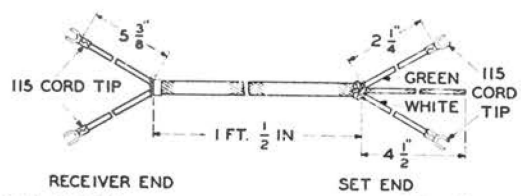


Code R2BW **2 Conductors**

Brown.

Intended for use in Deskstands and Transmitter Arms.

Replaces 408.

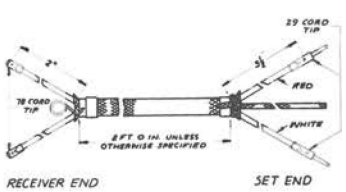


Code R2BY **2 Conductors**

Brown.

Intended for use with 336 and 337 Type Subscriber Sets.

Replaces 384.

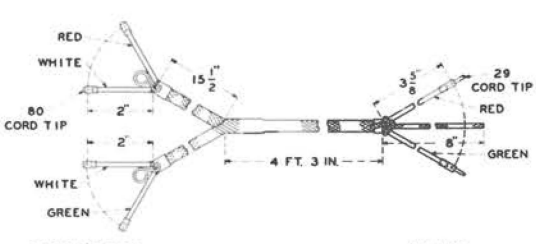


Code R2CB **2 Conductors**

Brown.

Intended for use with 515 Receiver in 1017 Type Test Set.

Replaces 572 Cord.



Code R2CC **2 Conductors**

Brown.

Intended for use with 528 Receiver in 19 Type Test Set.

Replaces 584.

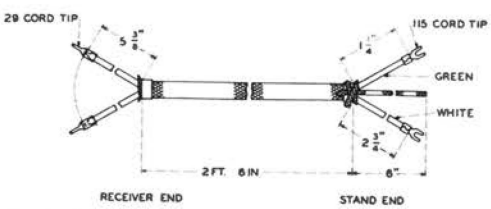


Code R2CD **2 Conductors**

Brown.

Intended for use with 528 Receiver in 19C Test Set.

Replaces 747.

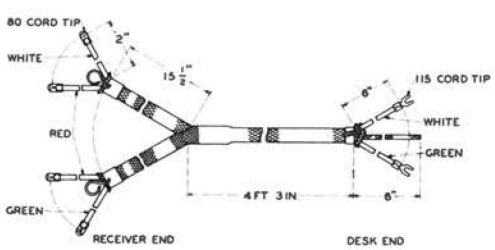


Code R2CE **2 Conductors**

Brown.

Intended for use with 40P Transmitter Arm.

Replaces 542 and 549.

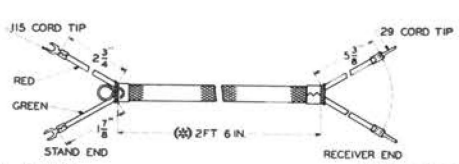


Code R2CG **2 Conductors**

Brown.

Receiver cord with a third conductor introduced in receiver end to permit the connecting of two receivers in series.

Replaces 696.



Code R2CL **2 Conductors**

Brown.

(*) 5 ft. 6 in. cords can be furnished when specified.

Intended for use with Nos. 20R, 20AH, 20CJ, 20CN, 40R, 40AH, 40CN and 41CJ Deskstands.

Replaces R2S and R2W.

TCI Library: www.telephonecollectors.info

CORDS

Receiver Cords—*Continued*

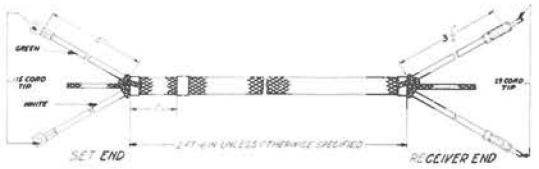


Code R2CM **2 Conductors**

Brown.

Intended for use with 128 Receiver in connection with Nos. 1200 and 1360 series Switchboards.

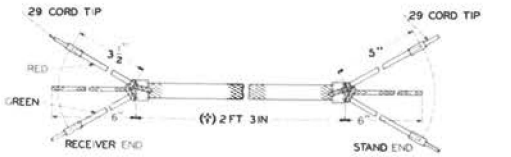
Replaces 369.



Code R2CP **2 Conductors**

Brown.

Replaces 446.



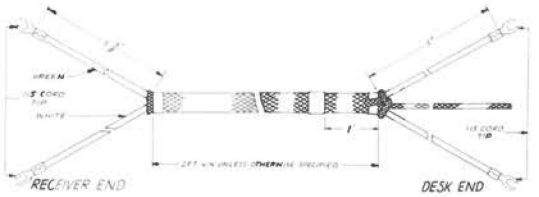
Code R2CR **2 Conductors**

Brown.

(†) 5 ft. 3 in. cords can be furnished when specified.

Pin tips both ends.

Replaces 454 and 460.

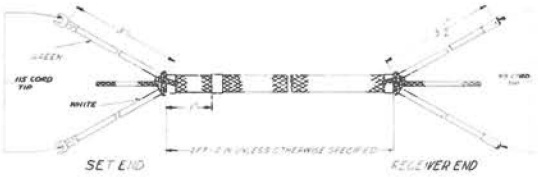


Code R2CS **2 Conductors**

Brown.

Intended for use with concealed Binding Post Receivers.

Replaces 521.



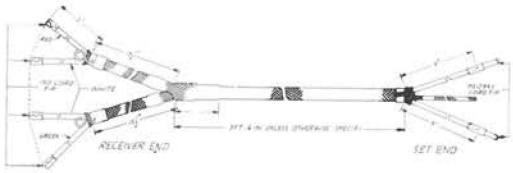
Code R2CT **2 Conductors**

Brown.

(*) 2 ft. cords can be furnished when specified.

Intended for use with 1148-DA, DB, DC and DD Transmitter Arms.

Replaces 546 and 554.

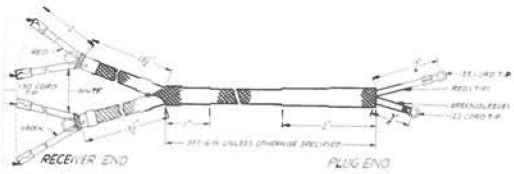


Code R2CY **2 Conductors**

Brown.

Intended for use with 1002-C Headset.

Replaces 763.

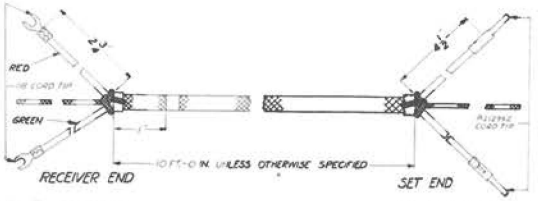


Code R2DA **2 Conductors**

Brown.

Intended for use with 1002-F Headset.

Replaces 768.



Code R2DC **2 Conductors**

5 ft. cords can be furnished when specified.

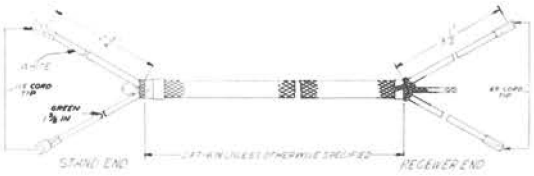
Intended for use with 518W Receiver.

Replaces 767 and 862.

TCI Library: www.telephonecollectors.info

CORDS

Receiver Cords—*Continued*

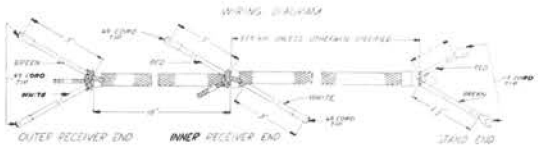


Code R2DF **2 Conductors**

Brown.

Intended for use with 1020-AB, 1120-AB, 1042-AB, 1142-AB, 1042-BR, 1020-C, 1120-C, 1020-D, and 1020-E Transmitter Arms.

Replaces R2U.

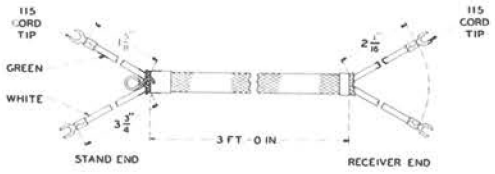


Code R2DS **2 Conductors**

Brown.

Intended for use with 1010-A Headset (series connection).

Replaces 571.



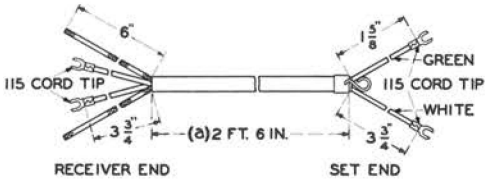
Code R2DW **2 Conductors**

Brown.

Intended for use with 144 and 706A Receiver.

Replaces R2B Cord.

The following cords have bare rubber insulated conductors covered by a rubber jacket.

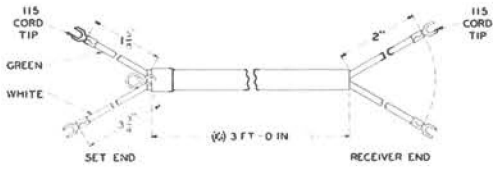


Code R2BU **2 Conductors**

Dark Brown.

(a) 1 ft. 10 in. cords can be furnished when specified

Intended for use with 144 Receiver.



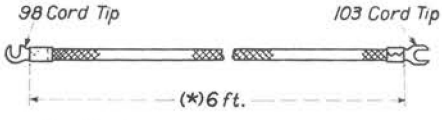
Code R2DY **2 Conductors**

Brown.

(*) 2 ft. 3 in. cords can be furnished when specified.

Intended for use at coin box stations equipped with 706A Receivers.

Transmitter Cords



Code 330 **3 Conductors**

(Special)

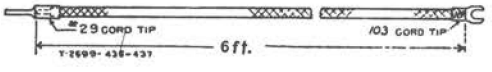
Brown.

(*) 5 ft. cords can be furnished when specified.

Tinsel conductor, double cotton insulation.

Intended for use as transmitter cord on P.B.X. Switchboards.

Shank of the 98 Cord Tip insulated.



Code 437 **3 Conductors**

(Special)

Brown.

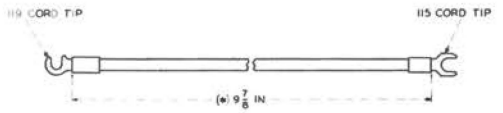
Tinsel conductor, double cotton insulation.

Intended for use with Transmitter Arms or Suspended Type Transmitters.

TCI Library: www.telephonecollectors.info

CORDS

Transmitter Cords—*Continued*



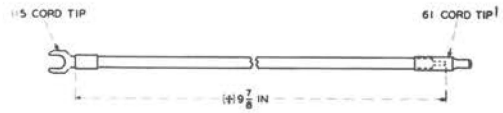
Code T1C **1 Conductor**

Yellow.

(*) 6 in., 7 in., 8 in. and 12 in. cords can be furnished when specified.

Intended for use in Deskstands.

Replaces 385, 329, 463, T1A, 426 and 427.



Code T1E **1 Conductor**

Green.

(*) 5½ in., 11 in., 12 in., 13 in. and 14 in. cords can be furnished when specified.

Intended for use in 20 Type Deskstands.

Replaces 179, 390 and 423.



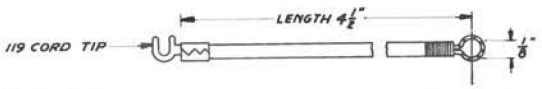
Code T1F **1 Conductor**

Green.

(*) 9½ in. cords can be furnished when specified.

Intended for use with 1002-D and E Handsets.

Replaces 402 and 415.



Code T1G **1 Conductor**

Red.

Intended for use with 1002-AC Handset.

Replaces 336 and 414.

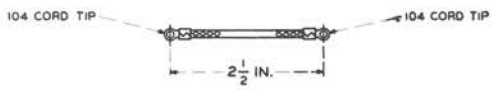


Code T1H **1 Conductor**

Green.

Intended for use with 1D Handset Handles and Cable Transfer Clips.

Replaces 243.



Code T1M **1 Conductor**

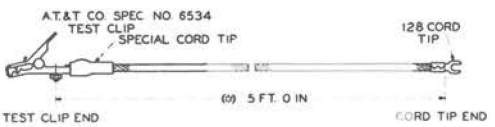
Brown Body—Red Tracer.

Intended for use with 320 Type Telephone Sets.

Test Cords

(Includes cords used with test sets and in connection with central office testing)

The following cords have rubber insulated conductors covered by conductor braids. Outside cord braids of black cotton.



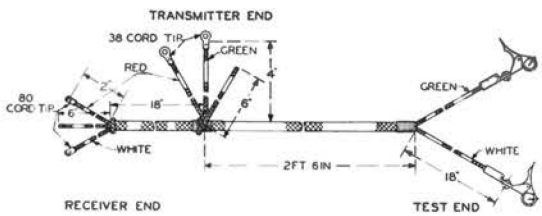
Code W1T **1 Conductor**

(*) 3 ft. cords can be furnished when specified.

Equipped with a test clip having pins which puncture the insulation of the line wires, thus making it unnecessary to remove the insulation when testing.

Intended for use with 1A Handset Handle for linemen's testing.

Replaces 574.



Code W2AG **2 Conductors**

Intended for use with a No. 528 Receiver for testing lines at connecting boxes.

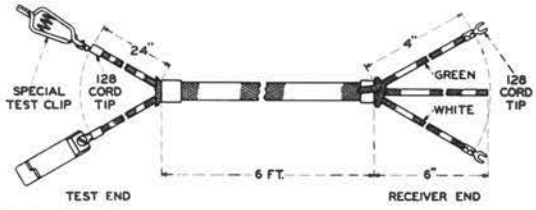
TCI Library: www.telephonecollectors.info

CORDS

Test Cords—*Continued*

(Includes cords used with test sets and in connection with central office testing)

The following cord has rubber insulated conductors covered by conductor braids. Outside cord braids of black cotton.



Code W2BH **2 Conductors**

Intended for use with the No. 17 Type Test Set on open wire line. This cord is beeswaxed.

Replaces 736.

CORD REPLACEMENT INFORMATION

Complete information on replacing cords will be found on preceding pages.

Switchboard Cords

Old Cords	Replaced by
447	S3A
448	S3B
493	S2A
635	S2B
S3E	S3A

Patching Cords

Old Cords	Replaced by
510	P1A
515	P2B
516	P2A
659	P4A
728	P3E
855	P2AA

Operators' Telephone Set Cords

Old Cords	Replaced by
87	L4B
748	L4D
848	L4E
L2F	L2J

Desk Stand Cords

Old Cords	Replaced by
231	D4AE
409	D3AB
416	D4AE
541	D3AB
545	D2H
550	D3AB
D3H	D3AK
D3Y	D3AD
D4D	D4AD
D4E	D4AC
D4G	D4AC
D4N	D4U
D4S	D4U

Desk Stand Cords (Cont.)

Old Cords	Replaced by
D4T	D4W
D5B	D5R
D5F	D5J
D5L	D5R
D6D	D6L
D6G	D6M
D6H	D6J
D7E	D7M
D7F	D7M

Handset Cords

Old Cords	Replaced by
318	H3M
429	H4P
502	H4S
H3B	H3C
H4B	H4L
H4C	H4M

Miscellaneous Cords

Old Cords	Replaced by
M1E	M1W
M4J	M4P
M5C	M5E

Receiver Cords

Old Cords	Replaced by
369	R2CM
384	R2BY
391	R2BR
408	R2BW
446	R2CP
454	R2CR
460	R2CR
521	R2CS
542	R2CE
542B	R2BS

Receiver Cords (Cont.)

Old Cords	Replaced by
546	R2CT
549	R2CE
549B	R2BS
554	R2CT
571	R2DS
572	R2CB
584	R2CC
696	R2CG
747	R2CD
763	R2CY
767	R2DC
768	R2DA
862	R2DC
R2B	R2DW
R2S	R2CL
R2U	R2DF
R2W	R2CL

Transmitter Cords

Old Cords	Replaced by
179	T1E
243	T1H
329	T1C
336	T1G
385	T1C
390	T1E
402	T1F
414	T1G
415	T1F
423	T1E
426	T1C
427	T1C
463	T1C
T1A	T1C

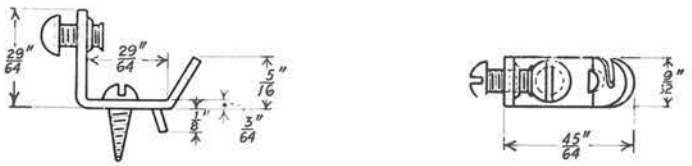
Test Cords

Old Cords	Replaced by
574	W1T
736	W2BH

TCI Library: www.telephonecollectors.info

CORD ACCESSORIES

Cord Fasteners



No. 9 Cord Fastener

Code No.	Description
9	This cord fastener is made of tinned brass. The screw end is spun over. Used on cord shelves with all types of switchboard cords.

Cord Hooks



No. 3 Cord Hook



No. 5



No. 7A, 3 per strip

Code No.	Description
3	Bright iron wire screw hook, overall length 1 5/8".
5	Brass: overall length 1 1/16".
6	Brass screw hook similar to No. 5 except that the hook end is bent out.

No. 7 TYPE

The No. 7 Type Cord Hook is designed for placement on the rear edge of cord shelves and consists of a flat brass strip 1/16" thick x 3/4" wide. The hooks are punched out and formed on various spacings as listed below.

The mounting holes are located 3/16" from the top and bottom edge alternately at convenient distances from each other according to the length of the strip. When only two hooks per strip are ordered the mounting holes are located one above the other. Furnished complete with mounting screws.

These cord hooks are furnished with any number of hooks per strip from 2 to 32 and the number of hooks per strip desired must be specified in the order.

Code No.	Spacing of Hooks (Inches)	Maximum Number of Hooks per Strip	To Obtain Overall Length in Inches
7A	27/32	14	Multiply number of hooks per strip by spacing and add 1/2 inch.
7C	3/4	16	Multiply number of hooks per strip by spacing and add 1/2 inch.

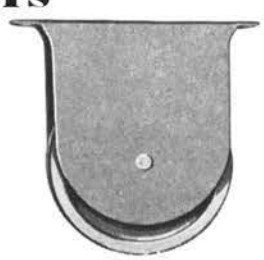
No. 9 TYPE

This is a black finished metal hook used for holding patching cords and operator's telephone set when not in use. Overall dimensions 3 1/2 x 3 13/32 x 3/4 inches.

CORD PULLEYS



No. 106



No. 112

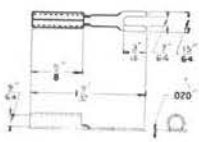
Note. Both types listed may be used for switchboard or telephone cords.

Code No.	Description
106	Brass frame supporting a brass wheel 9/32" wide. The wheel rim surface is a sharp groove. The mounting lugs are at the side of the frame. Overall dimensions 1 3/16 x 7/8 x 1 1/2 inches.
112	Steel frame supporting a brass wheel 1/4" wide. The rim of the wheel is a round groove. The steel frame is galvanized and the mounting lugs are at the ends. Overall dimensions 2 5/16 x 2 3/32 x 25/64 inches.

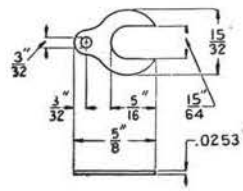
TCI Library: www.telephonecollectors.info

CORD TIPS

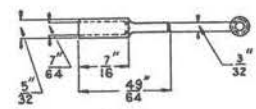
All cord tips are made of brass



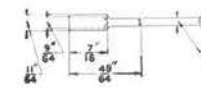
No. 8
Tinned



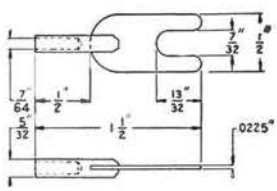
No. 22
Tinned



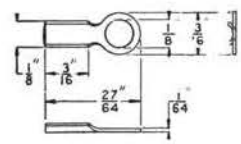
No. 29
Nickel Plated



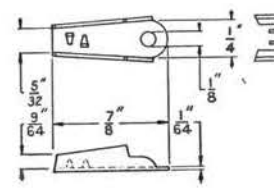
No. 30
Nickel Plated



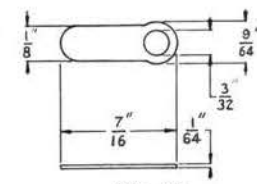
No. 35
Nickel Plated



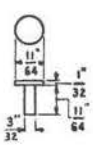
No. 38
Tinned



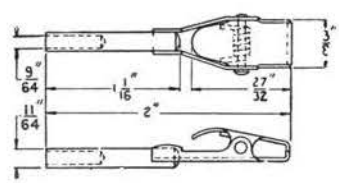
No. 45
Brass



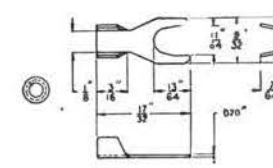
No. 47
Tinned



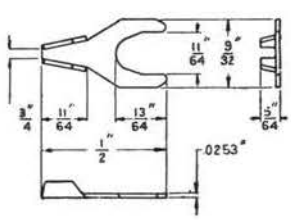
No. 55
Tinned



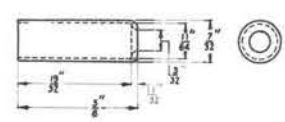
No. 59
Nickel Plated



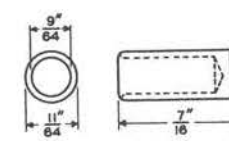
No. 62
Tinned



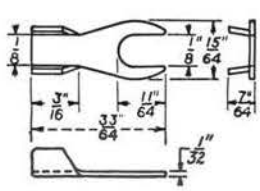
No. 72
Tinned



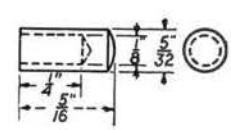
No. 76
Rubber



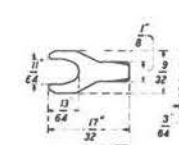
No. 78
Nickel Plated



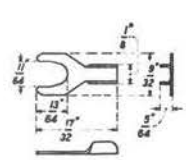
No. 79
Tinned



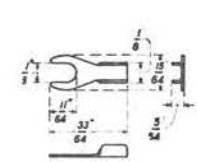
No. 80
Nickel Plated



No. 85
Tinned



No. 86
Tinned



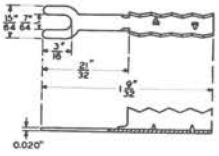
No. 87
Tinned

TCI Library: www.telephonecollectors.info

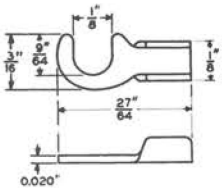
CORD TIPS—*Continued*



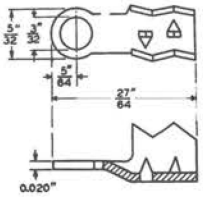
No. 92
Nickel Finished



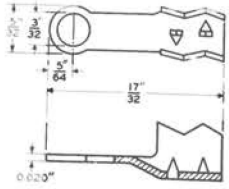
No. 93
Nickel Finished



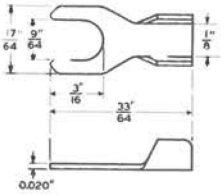
No. 97
Tinned



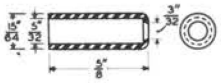
No. 101
Nickel Finished



No. 102
Nickel Finished



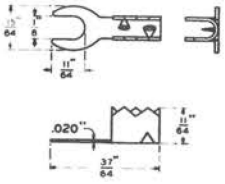
No. 105
Tinned



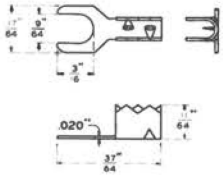
No. 106
Rubber



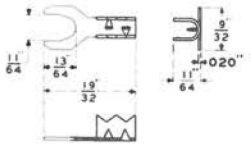
No. 110
Rubber



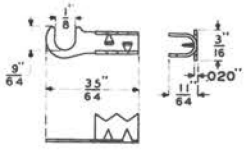
No. 114
Nickel



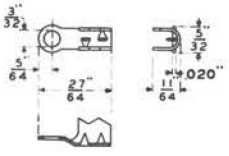
No. 115
Nickel



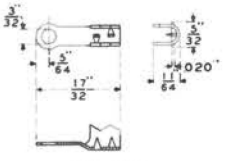
No. 118
Nickel



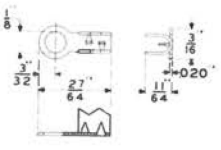
No. 119
Nickel



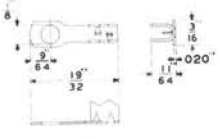
No. 120
Nickel



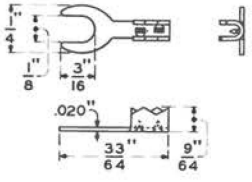
No. 121
Nickel



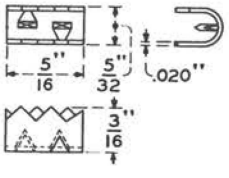
No. 122
Nickel



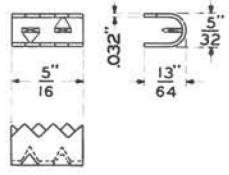
No. 123
Nickel



No. 127
Nickel



No. 129
Nickel



No. 130
Nickel

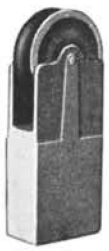
TCI Library: www.telephonecollectors.info

CORD TIPS—*Continued*

Code No.	
8	Tinned. For use on switchboard cords in connection with Nos. 8 and 9 cord fasteners. Replaces No. 42.
22	Flat, tinned for fastening under binding post or screw. Slotted for No. 12 screw. Replaces No. 43.
29	Nickel-plated. Ordinarily used on silk covered cords in connection with drilled binding posts. Replaces No. 10. Recommended in place of No. 31.
30	Nickel-plated. Ordinarily used on worsted or cotton covered cords in connection with drilled binding posts. Replaces Nos. 13 and 20. Recommended in place of No. 31.
35	Nickel-plated. For use in connection with bracket transmitters. Slotted for No. 12 screw.
38	Tinned, eyelet tip; for use on plug end of switchboard cords. Replaces No. 41.
45	Eyelet tip; for use on stay cord end of switchboard cords.
47	Tinned, eyelet tip; for use on plug end of switchboard cords. Replaces Nos. 23 and 27.
55	Tinned; for use with transmitter cords.
59	Nickel-plated, brass spring tip with one-piece shank.
62	Tinned. Slot beveled to admit either a No. 6 or No. 8 screw. Replaces Nos. 1, 53, 54 and 58.
72	Tinned; for fastening under binding post or screw. Ordinarily used on transposition leads in subscriber sets.
76	Semi-hard rubber sleeve intended to cover the exposed portion of the No. 30 cord tip.
78	Nickel-plated; for drilled binding posts. Used on such cords as the No. 572.
79	Tinned; for fastening under binding post or screw.
80	Nickel-plated; for use with high efficiency receivers.
85	Tinned; for fastening under binding post or screw. Slotted for Nos. 6 or 8 screw.
86	Tinned; for fastening under binding post or screw. Slotted for Nos. 6 or 8 screw.
87	Tinned; for fastening under binding post or screw. Slotted for No. 4 screw.
93	Solderless, nickel-finished; having two tangs for making contact with conductors on switchboard cords having tinsel conductors. Used in connection with Nos. 8 and 9 cord fasteners.
97	Tinned; for use on transmitter and hand set cords. Slotted for No. 4 screw.
101 and 102	Solderless nickel-finished; having two tangs for making contact with tinsel conductor. For use on ring and tip conductors respectively of cords arranged for Nos. 109 and 110 type plugs.
105	Tinned; for use on station cords. Slotted for No. 6 screw.
106	Semi-hard rubber sleeve intended to cover the exposed portion of the No. 29 cord tip.
110	Flexible rubber tubing for protecting the conductors on the plug end of cords arranged for use with No. 289A Plug.
114	Solderless nickel-finished, having two tangs for making contact with tinsel conductor. For use on cords having rubber insulated tinsel conductors. Also recommended for replacement purposes on cords having textile insulated tinsel conductors where Nos. 100 and 103 cord tips respectively were used. Slotted for No. 4 screw.
115	Same as No. 114 type except slotted for No. 6 screw.
118 119 120 121 122 123	The 118, 119, 120, 121, 122 and 123 cord tips are similar to the 92, 98, 101, 102, 104 and 109 cord tips, respectively, except that the sides of the shanks are formed parallel in order to adapt these tips for application to rubber insulated tinsel conductors.
127	Solderless nickel-finished, of the spade type. Intended for use on stranded wire in combined hand telephone sets.
129	Solderless nickel-plated, for use on rubber insulated tinsel conductors covered by a conductor braid.
130	Solderless nickel-plated. The length of the cord tip is such that it can be concealed in a receiver leaving no part exposed which would permit an operator to come in contact with the current.

TCI Library: www.telephonecollectors.info

CORD WEIGHTS



No. 117



No. 118



No. 119



No. 121A

Code No.	Description	Use
117	18 oz. single pulley brass weight. Pulley wheel $^{11}/_{32}$" wide. Overall dimensions $^{5}/_{8}$ x $2^{5}/_{16}$ x 4 inches.	General.
118	$29^{1}/_{2}$ oz. double pulley iron weight, galvanized finish. Pulley wheel $^{1}/_{4}$" wide; wheel space $2^{3}/_{4}$" centers. Overall dimensions $^{13}/_{32}$ x $4^{11}/_{16}$ x $7^{37}/_{64}$ inches.	In switchboards when double length cord is required.
119	$9^{1}/_{2}$ oz. single pulley, cast iron weight, galvanized finish. Pulley wheel $^{1}/_{4}$" wide. Overall dimensions $^{7}/_{16}$ x $2^{5}/_{16}$ x $4^{7}/_{16}$ inches. Replaces the No. 116 Cord Weight.	Used in Nos. 1240, 1962, 1948 and other types of switchboards.
120	$12^{1}/_{2}$ oz. single pulley, cast iron weight. Pulley wheel $^{1}/_{4}$ inch. Overall dimensions $^{7}/_{16}$ x $2^{5}/_{8}$ x $4^{27}/_{32}$ inches.	Same as No. 119.
121A	325 grams, nickel finish weight. Overall dimensions $1^{1}/_{4}$ x $2^{3}/_{8}$ inches.	With jack testing plugs and gauges to clamp the cord near the heel of plug or gauge.

DESIGNATION STRIPS



Wood Type with Metal Face



Wood Type with Rubber Face



Wood Type with Celluloid Face



Metal Face

WOODEN TYPE WITH METAL FACE

These consist of a wooden mounting strip with a black finished No. 8 Type Designation Strip attached to the face and are for use in designating outgoing trunk jacks, etc.

Code No.	Width of Face (Inches)	Length (Inches) Overall	Face	Used with Jack Mountings
1C	$^{7}/_{16}$	$9^{13}/_{16}$	$9^{3}/_{16}$	Nos. 1, 2, 3, 21, 22, 34, 36, 46, 47, 62, 63, 75, 77, 84, 85.
1G*	$^{1}/_{2}$			
6F	$^{3}/_{8}$	$8^{3}/_{32}$	$7^{23}/_{32}$	Nos. 18, 19, 20, 83, 102, 113.
10E	$^{1}/_{2}$	$11^{3}/_{16}$	$10^{1}/_{2}$	Nos. 4, 5, 6, 7, 8, 35, 37, 45, 89.
51A	1	$11^{9}/_{16}$	$11^{3}/_{16}$	Nos. 108, 109, 110, 112.
55A	$^{7}/_{16}$	$11^{9}/_{16}$	$11^{3}/_{16}$	No. 112 or similar.
55B*	$^{1}/_{2}$			
62A	1	$9^{13}/_{16}$	$9^{3}/_{16}$	Nos. 1, 2, 3, 21, 22, 34, 46, 47, 62, 63, 75, 77, 84, 85, 114, 141, 142, 143, 144.

*Has a $^{1}/_{16}$" Holly Strip mounted on top. The width of face as given above includes the holly strip.

TCI Library: www.telephonecollectors.info

DESIGNATION STRIPS—*Continued*

WOODEN TYPE WITH CELLULOID FACE

These consist of wooden mounting strips with transparent celluloid face strips which are intended to cover a strip of printed figures.

Code No.	Width of Face (Inches)	Length (Inches)		Used with Jack Mountings
		Overall	Face	
7A 7B	7/16 1/4	9 13/16	9 3/16	Nos. 1, 2, 3, 21, 22, 34, 63, 77, 84, 114, 141, 142, 143, 144, 163, 165, 191A, 204A, 205A.
24A	7/16	11 1/8	10 1/2	Nos. 6, 7, 8, 35, 37, 45, 89, 115, 116.

WOODEN TYPE WITH RUBBER FACE

These consist of a wooden mounting strip with a hard rubber face which is milled and drilled for 20 Number Plates.

Code No.	Width of Face (Inches)	Length (Inches)		Used with Jack Mountings	Number Plates
		Overall	Face		
14A	3/8	8 3/32	7 23/32	Nos. 18, 19, 20, 83, 102, 113, 155.	Nos. 6, 30 or 60.
50A	7/16	11 9/16	11 3/16	Nos. 108, 109, 110, 112.	Nos. 4, 31, 32 or 59.

METAL TYPE

These consist of a black finish metal retaining strip. The No. 8 also has a transparent celluloid strip for protecting a strip of printed figures. Mounting screws are furnished.

Code No.	Width (Inches)	Length (Inches)	Use
8G	7/16	Specified (not exceeding 3′)	General
8H	3/8	Specified (not exceeding 3′)	General
8K	5/8	6 1/8	General
8L	7/16	Specified (not exceeding 3′)	General
8M	3/8	Specified (not exceeding 3′)	General
8P*	7/16	22 13/16	General
8R*	7/16	27 5/16	General
8U	5/8	Specified (not exceeding 3′)	General
8AB	7/16	(a)	On keys 9/16″ wide "A10" or similar type
8AC	7/16	3 3/4	On key cabinet No. 20
8AD	3/4	5 5/16	On No. 6019 type keys
8AE	3/4	3 15/16	On No. 6012 type keys
8AF	3/4	3 15/16	On No. 6009 type keys
8AG	5/8	2	On No. 6002 type keys
43B	39/64	1 1/2	General
43C	39/64	1 1/4	General
43D	3/4	1 1/4	General
90A	7/16	15 1/16	Intended to mount on Nos. 184, 185 and 194A Jack Mountings and No. 262 Lamp Socket Mountings and is arranged to accommodate a designation card for each pair of jacks or lamps.

* Riveted to a phenol fibre mounting strip which insulates the mounting screws from the retaining strip.

(a) Lengths suitable for any number of keys from 3 to 48 inclusive.

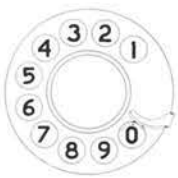
TCI Library: www.telephonecollectors.info

DIALS—MACHINE SWITCHING

Western Electric dials are reliable in operation and are designed to operate between very close speed limits.

These dials are designed to mount on Western Electric machine switching, desk stands, hand set mountings, and wall type telephones; also in Western Electric dial mountings; also for switchmen's desks, trouble desks and local test desks in manual offices for connecting with dial offices.

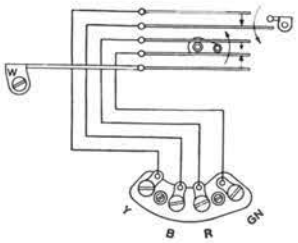
5E TYPE DIALS



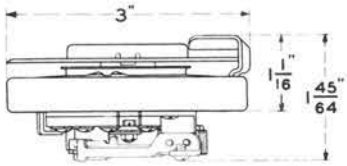
5EA



5EB



5E



5E



5ED



5EE

The 5E Type Dials are intended primarily for use on maintenance desks. Mounts on a 30A or similar type Dial Mounting by means of a 52B Dial Adapter. Also arranged to mount on No. 50 and similar type desk stands.

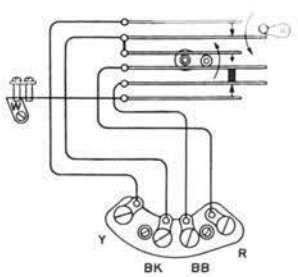
Code No.	Number Plate	Color of Characters		Replaces No.
		Numerals	Letters	
5EA	150A	Black	Black	4EA
5EB	150B	Red	Black	4EB
5ED	150D	Black	Black	4ED
5EE	150E	Black	(*)	4EE

(*) Word "Operator" is in black, other letters are in red.





5H Type Dials Front and Rear Views



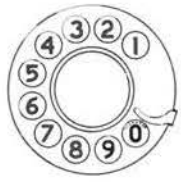
Wiring Diagram
5H Type Dial

TCI Library: www.telephonecollectors.info

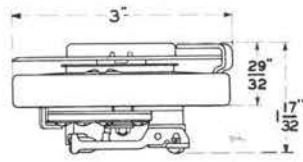
DIALS—MACHINE SWITCHING—*Continued*

5H TYPE DIALS

The 5H Type Dials are intended for use at subscriber stations, Private Branch Exchange switchboards and with repairmen's handsets.



5HA



5HA



5HB



5HD



5HE



5HH

Mounts on 302 Type Telephone Sets, C1, D1, E4 or similar type handset mountings, No. 51 or similar type desk stands, No. 553 or similar type subscriber sets or on repairmen's handset handles.

Also mounts on a 30A or similar type Dial Mounting by means of a No. 52B Dial Adapter.

The 5H Type Dial is provided with a finger wheel which when rotated causes a pair of contacts to make and break, thus permitting current impulses to flow over the line and operate the selecting mechanism and also causes another set of contacts to make the necessary changes in the station circuit in which the Dial is used.

The 5H Type Dial is equipped with No. 149 Type Number Plates as indicated below. These Number Plates may be removed for maintenance purposes. The following 5 Type Dials differ only in the Number Plates and colors as indicated.

Code No.	Color	Number Plate	Color of Characters		Replaces No.
			Numerals	Letters	
5HA-3	Black	150A	Black	Black	4HA-3
5HA-6	Old Brass	150A	Black	Black	4HA-6
5HA-7	Statuary Bronze	150A	Black	Black	4HA-7
5HA-8	Oxidized Silver	150A	Black	Black	4HA-8
5HA-12	Dark Gold	150A	Black	Black	4HA-12
5HB-3	Black	150B	Red	Black	4HB-3
5HB-6	Old Brass	150B	Red	Black	4HB-6
5HB-7	Statuary Bronze	150B	Red	Black	4HB-7
5HB-8	Oxidized Silver	150B	Red	Black	4HB-8
5HB-12	Dark Gold	150B	Red	Black	4HB-12
5HD-3	Black	150D	Black	Black	4HD-3
5HE-3	Black	150E	Black	(*)	4HE-3
5HE-6	Old Brass	150E	Black	(*)	4HE-6
5HE-7	Statuary Bronze	150E	Black	(*)	4HE-7
5HE-8	Oxidized Silver	150E	Black	(*)	4HE-8
5HE-12	Dark Gold	150E	Black	(*)	4HE-12
5HH-3	Black	150H	No characters		4HH-3

(*) Word "Operator" is in black, other letters are in red.

TCI Library: www.telephonecollectors.info

DIAL—MACHINE SWITCHING—*Continued*

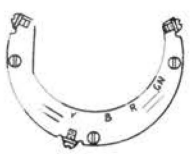
5J TYPE DIALS

The 5JA, 5JB and 5JE Dials are the same as the 5HA-3, 5HB-3 and 5HE-3 Dials respectively, except that the finger wheels, finger stops and card holder frames are stainless steel and the cases have a white enamel finish.

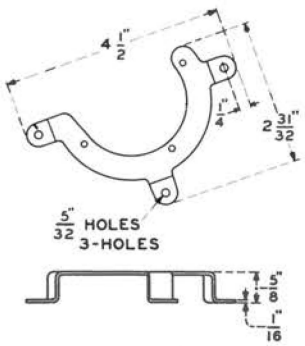
Code No.	Number Plate	Color of Characters		Replaces No.
		Numerals	Letters	
5JA	150A	Black	Black	4JA, 5HA-4, -16, -18, -19, -20
5JB	150B	Red	Black	4JB, 5HB-4, -16, -18, -19, -20
5JE	150E	Black	(*)	4JE, 5HE-4, -16, -18, -19, -20

(*) Word "Operator" is in black, other letters are in red.

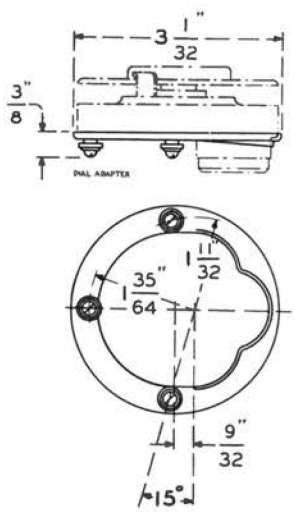
DIAL ADAPTERS



52B Dial Adapter



58A Dial Adapter

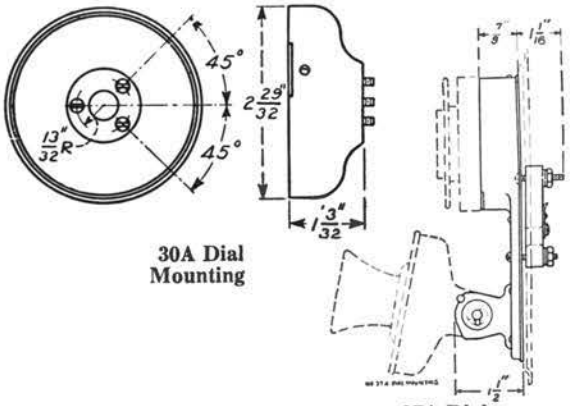


59A Dial Adapter

Code No.	Use and Description
52B	For use with 2E, 4E or 5E Type Dials. For mounting Dials on Nos. 30, 32, 36, 6000 or similar type Dial Mountings. Consists of black finished plates provided with machine screws for attaching Adapter to Dial and Adapter to Dial Mounting.
52C	For use with 2H, 4H or 5H Type Dials. For mounting Dials on Nos. 30, 32, 36, 6000 or similar type Dial Mountings. Otherwise same as 52B.
58A	For use in mounting 4 or 5 Type Dials in No. 300 Type Telephone Sets. Consists of a semi-circular flat metal plate with three mounting lugs. Screws, lock washers and nuts are provided for mounting the Dial Adapter, and screws and lock washers for mounting the Dial on the Dial Adapter are also provided.
59A	For use in connection with "H" Type Telephone Set mountings. Consists of a soft rubber gasket provided with three eyelets and three screws for mounting.
62A	For use with 34G, 34H or 42A Dial Mountings for mounting the Nos. 4 or 5 Type Dials. It consists of a 59A Dial Adapter, a brass adapter and the necessary mounting screws.

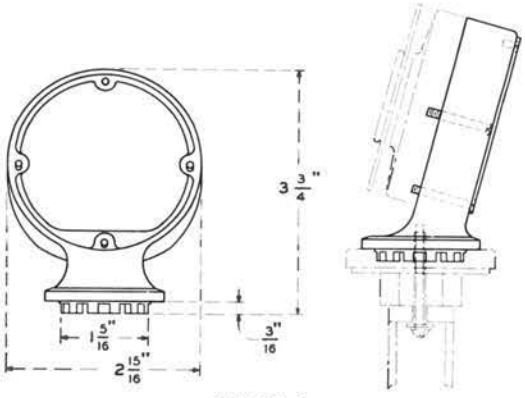
TCI Library: www.telephonecollectors.info

DIAL MOUNTINGS



30A Dial Mounting

37A Dial Mounting



41A Dial Mounting

These Dial Mountings in connection with the No. 52 Type Dial Adapter are designed for mounting Western Electric No. 2, 4 or 5 Type Dials.

By the use of these mountings manual telephones may be arranged for machine switching service. These mountings are made of metal and have a black finish unless otherwise specified.

Code No.	Use and Description
30A	Intended to mount on wall type telephones. Provided with suitable mounting screws.
32A	For use in conjunction with 52 Type Dial Adapters for mounting No. 2, 4 or 5 Type Dials. Consists of the No. 30A Dial Mounting provided with a black finished base for mounting Dial in a vertical position on local test desks and P.B.X. switchboards. Furnished with mounting screws.
33A	For use in conjunction with 52 Type Dial Adapters for mounting 2, 4 or 5 Type Dials. Consists of a 30A Dial Mounting provided with a black finished base for mounting on walls of subscriber station. Base is provided with 8 tapped holes so that when it is mounted above, below or on either side of the associated subscriber set with the cord hole in the base adjacent to the set, the dial can be mounted in a correct position for use by attaching the 30A Dial Mounting in the proper one of four positions.
34G	For use in the 6000G Dial Mounting at telephone switchboards for mounting a dial in installations where a locking stud is required for securing the mounting to the connecting block.
34H	For use in the 6000H Dial Mounting at telephone switchboards for mounting a dial in installations where a locking stud is not required for securing the mounting to the connecting block.
37A	Used to convert for dial service certain manual subscriber sets of the Nos. 124, 293, 296, 333, 433, 533 and 633 types. Intended to mount 323 or similar type transmitter and a No. 4H Type Dial to which a No. 52C Dial Adapter has been attached. One M4J cord, a connecting block and mounting screws are furnished as part of this apparatus.
41A Type	For use with G Type Handset Mounting and is arranged to mount on handset mounting in several mounting positions. Arranged for mounting 4H and 5H Type Dials. Has a removable cover plate providing access to the dial terminals and is furnished with screws for mounting dial.

Code	Color	Code	Color
41A-3	Black	41A-12	Dark Gold
41A-4	Ivory	41A-16	Old Rose
41A-6	Old Brass	41A-18	Dark Blue
41A-7	Statuary Bronze	41A-19	Gray-Green
41A-8	Oxidized Silver	41A-20	Pekin Red

6000 Type Dial Mountings

The 6000 Type Dial Mountings are intended for use at telephone switchboards for mounting a dial in installations where a locking stud is required for securing the mounting to the connecting block. They replace the 6000D and E Type Dial Mountings except for additions and maintenance.

TCI Library: www.telephonecollectors.info

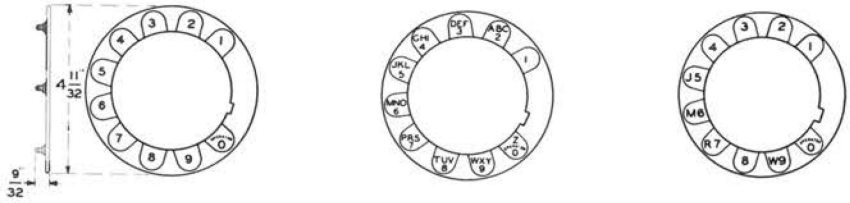
DIAL MOUNTINGS

6000 Type Dial Mountings—*Continued*

The 6000 G and H Type Dial Mountings consist of an assembly of 34G and H Dial Mountings, respectively, 25B Connecting Block and a D5P Cord.

When equipped with a 62A Dial Adapter these dial mountings provide means for mounting a 5E Type Dial and means for connecting it to the contact springs of a 34 Type Dial Mounting, the terminals of which are arranged to contact with the terminals of the 25B Connecting Block. The connecting block is intended to be permanently attached to the apparatus in which the dial mounting is to be used.

Dial Number Plates



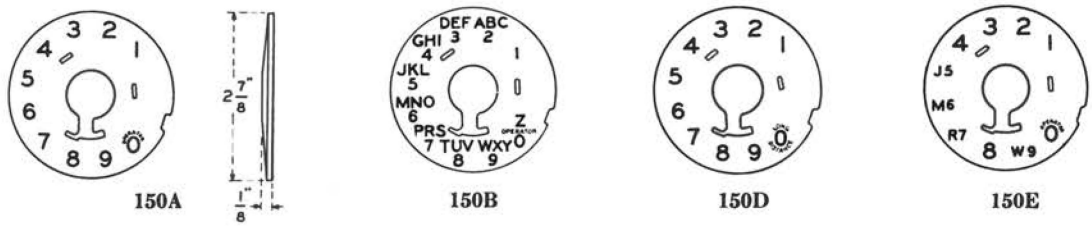
General Design and Dimensions
No. 147 Type

147 TYPE NUMBER PLATE

The 147 Type Number Plates are intended for use with a 56A Dial Adapter and a No. 2, 4 or 5 Type Dial on No. 50 Type Coin Collectors in dial systems. Consists of black enameled number plates with designations as shown in illustrations, on a white enameled background. The outside diameter is $4\frac{11}{32}$" and the thickness over the studs is $\frac{9}{32}$".

Code No.	Color of Characters	
	Numerals	Letters
147A	Black	Black
147B	Red	Black
147E	Black	(*)

(*) Word "Operator" is in black, party line letters are in red.



150 TYPE NUMBER PLATES

The 150 Type Number Plates are intended for use with Nos. 2, 4 and 5 Type Dials for maintenance purposes. Consists of a metal plate coated with vitreous enamel. A small lug projecting from the back fits into a hole in the dial frame, thereby insuring proper alignment of the Number Plate with regard to the finger wheel of the dial.

Code No.	Color of Characters	
	Numerals	Letters
150A	Black	Black
150B	Red	Black
150D	Black	Black
150E	Black	(*)
150H	No Characters	

(*) Word "Operator" is in black, other letters are in red

TCI Library: www.telephonecollectors.info

Dial Opening—Apparatus Blanks

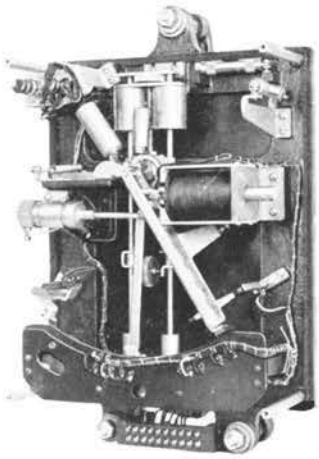
The following Apparatus Blanks as described under the heading "Apparatus Blanks" are used to cover unequipped dial positions in various types of apparatus.

Nos. 50B, 50C Type, 50E, 50H Type, 50J Type.

51C DIAL TESTER



With Cover



Cover Removed

A pendulum type Dial Tester used for checking the pulse rate of dials. Operates on 48 volts D.C. in either manually or remotely controlled circuits, and passes a tone indication for the normal, subnormal or above normal rates of dial speed to test-man or subscriber's station. Enclosed in a metal cover having a window for observing the contact arm when checking the speed and decrement loss of the pendulum.

It will check the speed of dials having the following limits:

Step-by-Step

Test Limits	Readjustment Limits
8 and 11 pulses per second	9½ and 10½ pulses per second
11 and 13 pulses per second	11 and 13 pulses per second

Panel Type

16 and 20 pulses per second	17 and 19 pulses per second
8 and 11 pulses per second	9½ and 10½ pulses per second

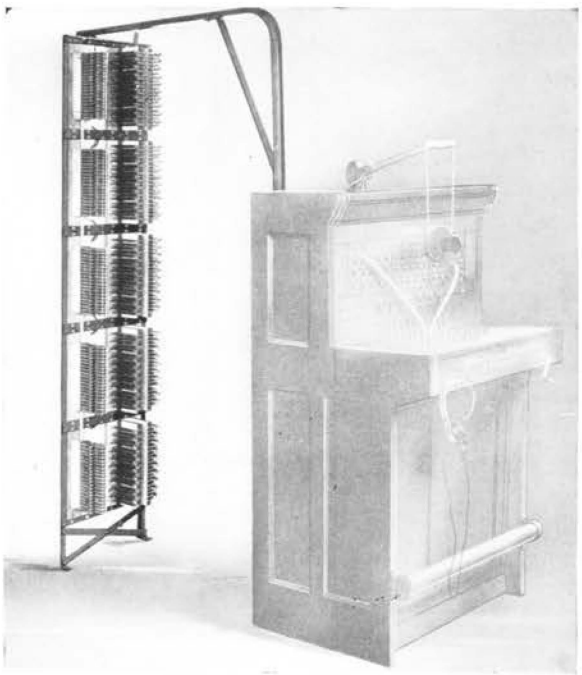
This Dial Tester is equipped with two spirit levels for setting the Tester in a true perpendicular position.

It is arranged to mount on a No. 16A Bracket which is not furnished and must be ordered separately.

TCI Library: www.telephonecollectors.info

DISTRIBUTING FRAMES

These distributing frames have been designed to meet the requirements of small central offices where simple and compact protective equipment is desired.



No. 1430 Type Main Distributing Frame

These frames are built in units of two verticals, one vertical for mounting the terminal apparatus of the outside lines, and the other vertical for mounting the terminal apparatus of the inside lines.

Facilities for cross connection between the inside and outside lines are provided by the distributing rings on the back of each protector group. These frames are designed to be supported by the switchboard sections.

Each unit will accommodate 100 metallic telephone lines by using the protector groups described and illustrated under "Protector Groups." The protector group equipment desired should be specified on each order.

These frames have the following important features:

1. Steel Framework. The framework is of steel, forming a rigid support for the apparatus. A rust resisting finish is applied.

2. Ease of Access. The framework is so constructed that cross connections and inspections can be easily made.

3. Unit Type. The framework is built in 100 line units and is so arranged that several units may be lined up to form a frame of larger capacity. It is only necessary to purchase enough frame to handle your present requirements, and later increase your frame capacity as the number of lines increases.

4. Universal Design. All of the vertical mountings are arranged so that our standard protector groups can be mounted. By the addition of a small steel supporting bracket, the No. 1430 Type Frame can be converted into the No. 1420 Wall Type Frame described later.

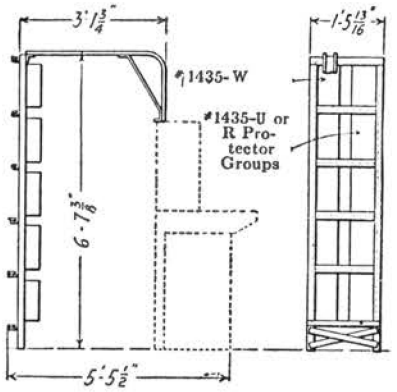
5. Minimum Floor Space. Due to their compact design, these frames occupy very little floor space.

Code No.	Used with Switchboards	Capacity		Protective Groups Used	
		Inside Lines	Outside Lines	Inside Lines	Outside Lines
1430F	No. 1240D	100	100–125	1435W	1435U or R
1420B	Any non-multiple switchboard	100	100–125	1435W	1435U or R

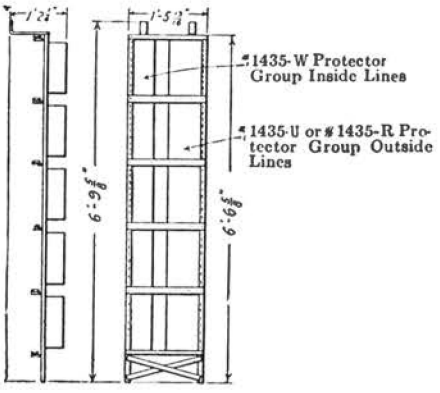
TCI Library: www.telephonecollectors.info

DISTRIBUTING FRAMES

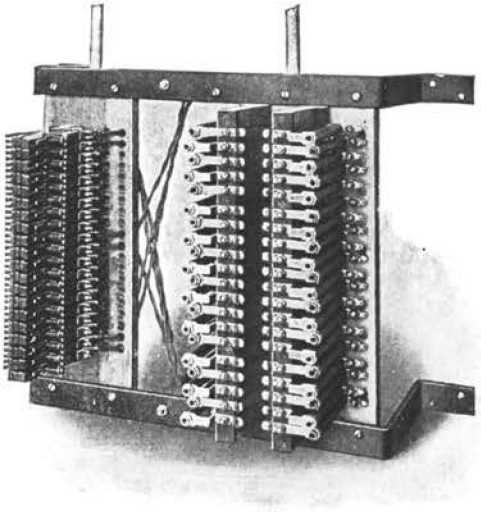
Nos. 1430 and 1420 TYPES—Continued



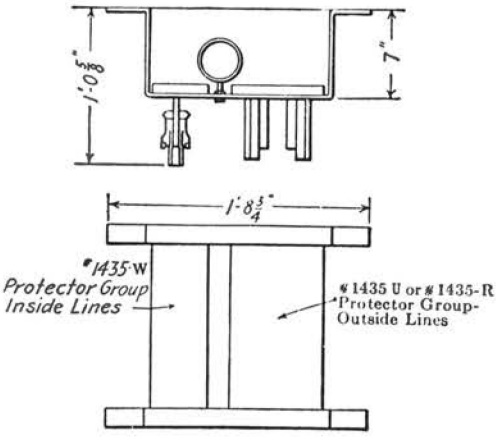
No. 1430F Distributing Frame



No. 1420B Distributing Frame



No. 1431A 20 Line Main Frame



No. 1431A 20 LINE MAIN FRAME

This frame has been designed to satisfy a demand for a small capacity, inexpensive, and yet sturdy distributing and protective equipment.

It is especially suitable for the small rural exchange owning and operating a No. 1800 or other switchboard, equipped for from 10 to 40 lines, with little prospect of immediate growth.

Where more than 20 lines are to be accommodated, two of these frames can be lined up, one above the other. Cross connection facilities are provided by rings on the back of the frame.

This frame is designed for mounting against the wall. The drilling is so arranged that our standard protector groups can be used.

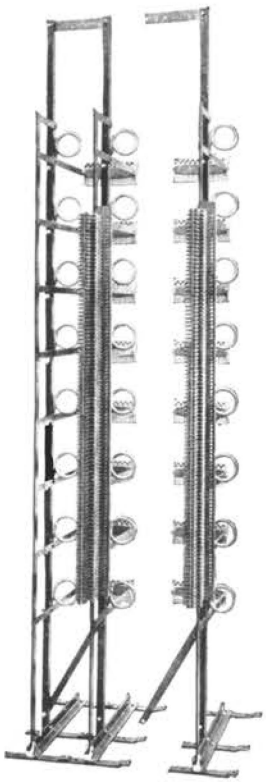
In ordering this frame specify the protector groups desired. (See description of protector groups.)

Code No.	Used with	Capacity		Protector Groups Used	
		Inside Lines	Outside Lines	Inside Lines	Outside Lines
1431A	Any small switchboard.....	20	20–25	1435W	1435U or R

TCI Library: www.telephonecollectors.info

DISTRIBUTING FRAMES—*Continued*

No. 1425 TYPE



This shows two units of No. 1425C distributing frame lined up and bolted together.

As many 100 line units as desired may be installed.

Two units are necessary at the beginning of the frame; one unit for each additional 100 lines.

This is one 100 line unit of No. 1425C distributing frame. The Code No. 1425C covers the steel framework, distributing rings and fanning strip, but does not cover the protector groups and No. 65 terminal strips. The terminal strips for terminating 20 pairs of outside cable may be ordered as follows: ——— No. 65 terminal strips. The carbon, mica and heat coil protector may be ordered as follows: ——— No. 1435T Protector groups each accommodating 20 inside or switchboard pairs. These protector groups are suitable for both Central Battery and magneto lines.

This is a unit type frame, adapted for telephone central office or exchange protective apparatus where the Nos. 1420 or 1430 Type Frames are too small for present requirement or future growth.

Fuses. No provision is made for mounting on this frame abnormal current fuses. If it is considered necessary to equip certain lines with this type of protector, it is suggested that they be mounted elsewhere, such as on the wall or on a special frame constructed for the purpose.

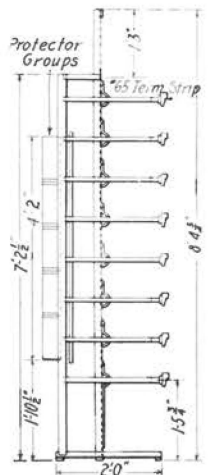
Construction. This frame is rigidly constructed of steel angles and bar iron, and is made up in units of one vertical each, three verticals of this frame being shown in the accompanying illustration.

Each unit has a vertical bar which is arranged for mounting five No. 1435T Protector Groups which provide protectors of the carbon block and heat coil type for 100 magneto or central battery lines. Each protector group accommodates 20 lines.

This vertical protector bar is called the "vertical side" of the frame. The switchboard cables or inside lines are usually connected to these protectors.

Rubber covered distributing rings are placed conveniently, making it easy to run the jumper wires in a uniform, compact and neat manner, without going through more than one ring or making more than one turn.

The unit type of framework makes it possible, by lining up together a number of vertical units, to build a frame of any required capacity.



*1425 - Distributing Frame

Initial Equipment. For initial equipment at least two units or verticals must be ordered and installed (which provide space for a maximum of 200 inside lines and 160 outside lines), as the No. 65 Terminal Strips to which the outside lines connect are mounted horizontally between adjacent vertical units, thus requiring at least two verticals to support a row of them. Eight of these terminal strips providing terminal facilities for 160 outside lines can be mounted between any two adjacent vertical units of the frame.

For Example:

1. 1425C Frame provides space for 100 protectors (or 100 inside lines) and no outside lines.

2. 1425C Frames provide space for 200 protectors (or 200 inside lines—*see note) and 160 outside lines.

3. 1425C Frames provide space for 300 protectors (or 300 inside lines—*see note) and 320 outside lines.

* **Note.** It is not customary to equip the first vertical unit with protectors, but to mount on it the required terminal equipment for miscellaneous inside circuits. The No. 65 or similar type terminal strips can be mounted on the vertical side of these frames for this purpose. In ordering terminal strips for use on this frame, however, so specify on the order, so that proper mounting details may also be furnished.

INFORMATION

Code No.	Protector Groups Used "Vertical Side" Inside Lines	"Horizontal Side" Outside lines
*1425C	Magneto or central battery lines—No. 1435T	No. 65 Terminal Strips

* This Code number includes one vertical unit of this frame and distributing rings only. The protector groups and terminals must be ordered separately.

TCI Library: www.telephonecollectors.info

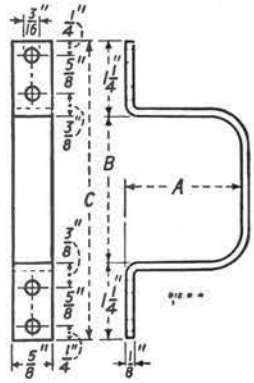
DISTRIBUTING RINGS



No. 8A
Distributing Ring



No. 9A
Distributing Ring

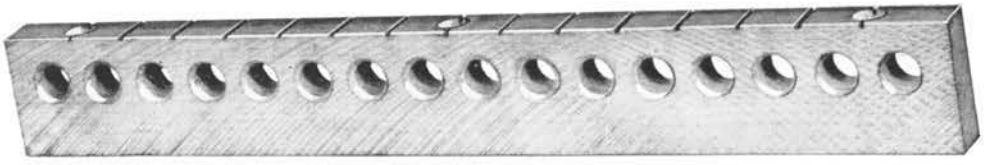


No. 4
Distributing Ring

Code No.	Dimensions Inches A	B	C	Description and Use
4A	$1\frac{7}{8}$	$2\frac{3}{8}$	$4\frac{7}{8}$	Steel with black finish for use in building distribution systems.
4B	$2\frac{7}{8}$	$3\frac{5}{8}$	$6\frac{1}{8}$	
4C	$2\frac{7}{8}$	$5\frac{5}{8}$	$8\frac{1}{8}$	

Code No.	Dimensions (Overall) —Inches—		Description and Use
8A	$2\frac{11}{16}$	$1\frac{15}{16}$	Metal support intended for use in "GA", "GB" or "GC" Type Cable Terminal Boxes. Provided with mounting screw and washer.
9A	6	$1\frac{1}{8}$	A vitreous enameled insulated metal ring for use on distributing frames, provided with mounting screw and nut. Recommended in place of 1 and 2 Type.

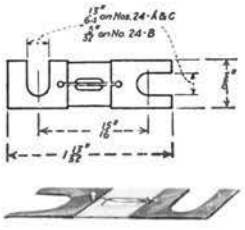
FANNING STRIPS



No. 15A Fanning Strip

Made from well seasoned maple. The dimensions are $1\frac{5}{16}$ x $\frac{1}{2}$ inches with lengths as given below. They are designed to mount on edge and fasten in place by means of flat head screws. The outside edge is finished black, so that white characters may be painted upon this surface for identification of the various wires. The holes through which the wires are to pass have their edges carefully chamfered in order that the insulation may not be injured.

Code No.	Replaces	Capacity Pairs	Length (Inches)	Used with Connecting Block	Protector
10	....	13	$22\frac{5}{8}$	.....	1079
11	....	16	$27\frac{7}{8}$	.....	1079
15A	2 and 7	16	$10\frac{7}{16}$	30C and 31C	....
15B	4, 9	26	$16\frac{11}{16}$	30D and 31D	....



No. 24 Type Fuse

FUSES
Non-Alarm Type

These phenol fibre fuses will mount on 1 inch centers by means of Fuse Posts or individual porcelain mounting as in the No. 62D Protector. The overall dimensions are: length $1\frac{13}{32}$ inch, width $\frac{13}{32}$ inch. The current carrying capacities and operating current values are given in the table below.

In ordering it is necessary that both the code number and rated capacity be given.

TCI Library: www.telephonecollectors.info

FUSES

Non-Alarm Type—*Continued*

Code No.	Rated Capacity Amperes	Operates in Less than One Minute on Amperes	Terminals: Finish	Terminals: Slotted for Screw No.
24A	½	1	Tinned	10
	1⅓	2	Tinned	10
24B	½	1	Copper	6
	1⅓	2	Copper	6
	2	3	Copper	6
	3	4	Copper	6
	4	5	Copper	6
	5	6½	Copper	6
24C	2	3	Tinned	10
24D	¾	1¼	Copper	6

Indicator Alarm Type

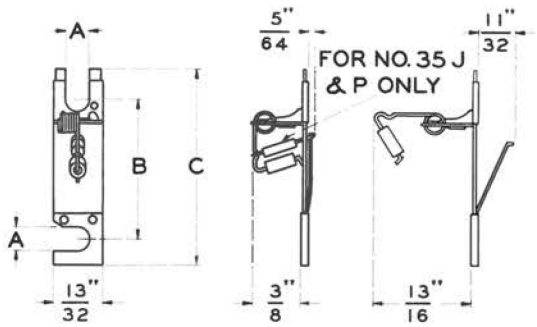
These phenol fibre fuses have the fuse wire so mounted that one end is fastened to a coiled spring and the other to a flat spring on the opposite side of the base. The terminal ends have a copper tinned finish.



No. 35A Type Fuse



No. 35J Type Fuse



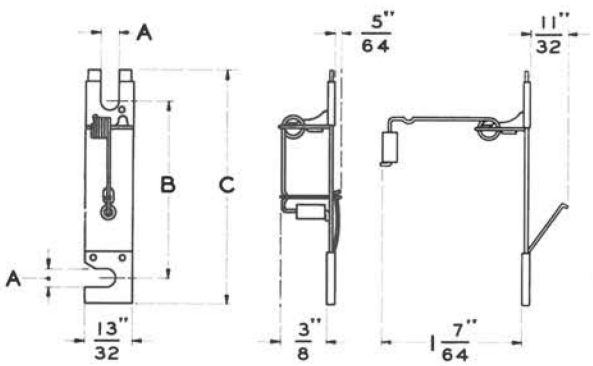
Unoperated Operated

No. 35 Type, Fig. 1

When the fuse operates, the coiled spring causes a glass bead to be brought into a prominent position where it acts as a visible indication of the blown fuse. The mounting of the fuse may be so arranged as to cause the flat spring on the bottom of the fuse to make contact with an alarm circuit when the fuse wire is broken.

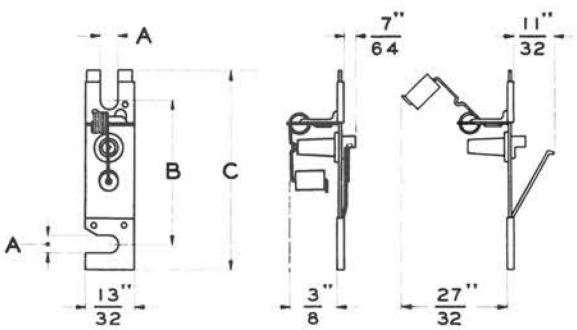
No. 35 Type Fuses operate on currents fifty per cent in excess of those for which they are rated.

When ordering, both the code number and rated capacity should be specified.



Unoperated Operated

No. 35 Type, Fig. 2



Unoperated Operated

No. 35 Type, Fig. 3

TCI Library: www.telephonecollectors.info

FUSES

Indicator Alarm Type—*Continued*

Code No.	Fig. No.	Rated Amperes	Operates on		Color of Bead	Slotted For Screw	Dimensions (Inches) (See Illustration)		
			Amperes	In Less Than			A	*B	C
35A	1	1⅓	2	1½ Min.	White	No. 10	13/64	1¼	143/64
35B	1	1⅓	2	1½ Min.	White	No. 6	5/32	1¼	143/64
35C	1	2	3	3 Min.	Orange	No. 10	13/64	1¼	143/64
35D	1	1⅓	2	1½ Min.	White	No. 6	5/32	13/16	1⅝
35E	2	3	4	5 Min.	White	No. 6	5/32	19/16	163/64
35F	1	½	¾	1½ Min.	Red	No. 10	13/64	1¼	143/64
35G	1	3	4½	5 Min.	Blue	No. 6	5/32	1¼	143/64
35H	1	5	6½	5 Min.	Green	No. 6	5/32	1¼	143/64
(a) 35J	1	½	¾	1½ Min.	Red	No. 10	13/64	1¼	143/64
(b) 35K	3	1⅓	2	3 Min.	White	No. 10	13/64	1¼	143/64
(b) 35L	3	2	3	3 Min.	Orange	No. 10	13/64	1¼	143/64
(b) 35M	3	3	4½	5 Min.	Blue	No. 6	5/32	1¼	143/64
(b) 35N	3	5	6½	5 Min.	Green	No. 6	5/32	1¼	143/64
(a) 35P	1	¾	1⅛	1½ Min.	Brown	No. 10	13/64	1¼	143/64

(a) For repeater plate supply circuits, or in similar circuits using 100 to 160 volts. Fuse wire enclosed in glass tube to prevent side flash.
(b) For use in 150 volt circuits. Fuse wire enclosed in porcelain tube to prevent side flash.
*) Mounting centers shown allow for 1/16" clearance.

Dummy Fuses

These fuses are composed of black insulating material and are for use on fuse panels not equipped with fuses.

Code No.	Fuses Used In Place of	Overall Dimensions Inches
63A	35A, B, C or F	143/64 x 13/32 x 3/64
64A	24 or 44 Type	1⅜ x 13/32 x 3/64

Tubular Fuses



No. 7A



No. 7T



No. 11C

These fibre shell type Fuses are carefully made from especially selected materials. The use of lead fuse wire prevents the possibility of overheating the shell. These Fuses will carry their rated currents indefinitely without injury and will act reliably on one and one-half times their rated current values. Fuses of the same code number and rated capacity will give consistent performance as to rated and operating current values.

Code No.	Rated Capacity Amperes	Used with
7A	1, 2, 3, 4, 5 or 7 as specified	Nos. 77, 1074A, 1075A and 1078A Protectors.
7T	7	"B" Cable Terminals and Fuse Chambers.
11C	7	Nos. 58AP and 1079AP Protectors.

TCI Library: www.telephonecollectors.info

FUSES—*Continued*

Porcelain Shell Fuses



No. 47A Fuse

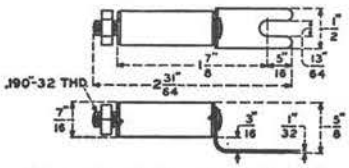
In certain cases where lines are exposed to high potential crosses, it is advisable to insert a Fuse in the line near the crossarm in addition to the No. 60AP Protector installed at the telephone station. In such cases the No. 47 Type is recommended; the porcelain shell used on this type of Fuse will break upon the passage of a large current or upon the continued flow of smaller current. The wires in which the Fuses are inserted will fall apart as the shells break, and the line end of the wire, being close to the crossarm, will not come in contact with objects on the ground. These Fuses operate on one and one-half times their rated capacity.

Code No.	Capacity
47A	7 Amperes
47B	14 Amperes

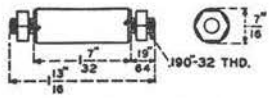
60 Type Fuses



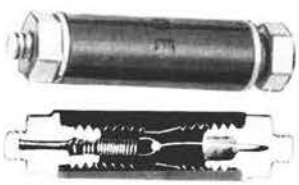
No. 60A



Dimensional Drawing, No. 60A



Dimensional Drawing, No. 60D, E, F and G



No. 60D, E, F and G

60A: Intended for use with Nos. 58AP and 1079AP Protectors. When used with No. 58AP Protector, mounts on the instrument side of protector and a No. 16 Protector Mounting. When used with the No. 1079AP Protector, mounts on the instrument side of the protector and a No. 80A Protector Mounting.

60D: Intended for use with LA and LB Type Fuse Chambers.

60E: Intended for use in battery feeder circuits in connection with LA and LB Type Cable Terminals.

60F: Intended for use with centrifugal voltage regulator in power ringing circuits.

60G: Intended for use in exposed charging leads to small P.B.X. and wiring plan batteries.

Code No.	Color of Shell	Carrying Current for three hours at a temperature of 68° Fahrenheit (Amperes)	Operate Values	
			Time (Seconds)	Current (Amperes)
60A	Red	.350	less than 210	.500
60D	Red	.350	less than 210	.500
60E	Black	1.25	less than 210	1.80
60F	Red	.179	less than 60	.267
60G	Red	.500	less than 210	.750

TCI Library: www.telephonecollectors.info

FUSES—*Continued*

Glass Shell Fuses

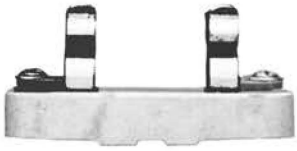


No. 55A

This Glass Tube Type Fuse is equipped at both ends with tinned caps to which the fuse element is attached. Designed to mount in the No. 9A Fuse Block. Overall length of Fuse is $2\frac{11}{64}$ inches.

Code No.	Will Carry		Will Blow On	
	Amperes	For Minutes	Amperes	In Less Than
55A	.400	..	.800	.....

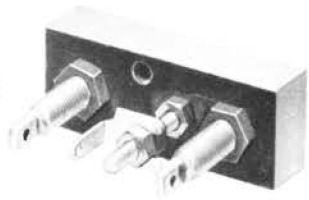
Fuse Blocks



No. 9A Fuse Block



No. 12 Type Fuse Block





No. 13A Fuse Block

NO. 9A TYPE

A porcelain Block provided with clips for holding one No. 55A Fuse.

NO. 12 AND NO. 13 TYPES

The 12 and 13 Type Fuse Blocks are Blocks of insulating material equipped with two Fuse Posts. They are arranged for use on $\frac{7}{32}$" Mounting Plates. To permit insertion and removal of Fuses, the following clearances are necessary between the centers of the Fuse Posts and the adjacent surface of the apparatus.

When Mounted Vertically (Top Post for Transverse Slot of Fuse)	When Mounted Horizontally (Right Post for Transverse Slot of Fuse)
$\frac{7}{8}$" to Left of Post	$\frac{3}{4}$" to Right of Post
$\frac{3}{4}$" above Top Post	$\frac{7}{8}$" above Posts

The No. 12 Type is equipped with an alarm stud and terminal. When mounted either horizontally or vertically will mount on $\frac{9}{16}$" centers when placed side by side or $2\frac{1}{16}$" centers when placed end to end. Fuse Posts are attached for mounting and are provided with insulating bushings, washers and nuts.

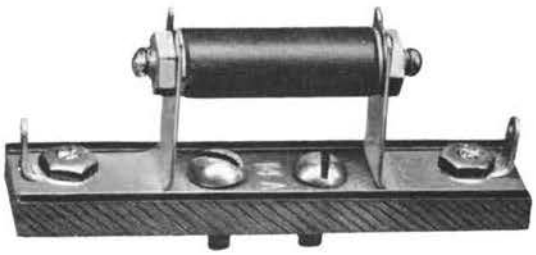
The No. 13A Fuse when mounted either horizontally or vertically will mount on $\frac{1}{2}$" centers when placed side by side or $1\frac{11}{16}$" centers when placed end to end. Provided with insulating bushings and washers.

Code No.	Equipped with Fuse Post Nos.	Arranged for Fuses
12E	1—5E 1—5F	35A, 35C, 35F, or 35J
12F	1—6C 1 Modified 6C	35B, 35D, 35G, or 35H
13A	2—5E	24A, or 24C

TCI Library: www.telephonecollectors.info

FUSE BLOCKS—*Continued*

No. 14A TYPE



No. 14A Type Fuse Block Equipped with 60D Fuses

The 14A Type Fuse Block consists of a block of insulating material equipped with two open end terminal clips. Arranged to mount Nos. 60D, 60E, 60F or 60G Fuses. Provided with mounting screws.

Fuse Chambers

For information regarding Fuse Chambers refer to Page 52 under "Cable Terminals."

Fuse Posts



No. 2A Fuse Post



No. 5A Fuse Post



No. 7A Fuse Post

These Fuse Posts are made of brass and have the head of the screw used for clamping the Fuse in place finished to correspond with the finish of the Fuse end.

Fuses up to and including $1\frac{1}{3}$ ampere capacity are supplied with tinned terminals; Fuses of 2 or 3 amperes capacity have copper terminals.

The Nos. 5 and 6 Type Fuses will mount on $\frac{1}{2}''$ centers except Nos. 5D, 5F and 6D which mount on $\frac{9}{16}''$ centers.

TCI Library: www.telephonecollectors.info

FUSE POSTS—*Continued*

Code No.	Overall Dimensions, (Inches) Length	Width	Depth	Finish	Screw No.	Used with Fuse No.
1C	$1\frac{9}{16}$	$\frac{5}{16}$	$\frac{1}{8}$	Tinned Brass	6	Nos. 24 and 35 Types
2A	$1\frac{1}{2}$	$\frac{7}{16}$	$\frac{1}{8}$	Nickel Dip	8	Nos. 24 and 35 Types
5A	2	$\frac{7}{16}$	$\frac{1}{8}$	Nickel Dip	...	Nos. 24 and 35 Types
5B	2	$\frac{7}{16}$	$\frac{1}{8}$	Brass	...	Nos. 24 and 35 Types
5C	$2\frac{3}{4}$	$\frac{7}{16}$	$\frac{1}{8}$	Nickel Dip	...	Nos. 24 and 35 Types
*5D	2	$\frac{7}{16}$	$\frac{1}{8}$	Nickel Dip	...	Nos. 24 and 35 Types
5E	$1\frac{5}{8}$	$\frac{7}{16}$	$\frac{1}{8}$	Nickel Dip	...	Nos. 24 and 35 Types
*5F	$1\frac{5}{8}$	$\frac{7}{16}$	$\frac{1}{8}$	Nickel Dip	...	Nos. 24 and 35 Types
6	2	$\frac{7}{16}$	$\frac{1}{8}$	Brass	...	Nos. 24 and 35 Types
6B	2	$\frac{7}{16}$	$\frac{1}{8}$	Nickel Dip	...	Nos. 24 and 35 Types
6C	$1\frac{5}{8}$	$\frac{7}{16}$	$\frac{1}{8}$	Nickel Dip	...	Nos. 24 and 35 Types
*6D	$2\frac{3}{4}$	$\frac{7}{16}$	$\frac{1}{8}$	Nickel Dip	...	Nos. 24 and 35 Types
7A	$1\frac{15}{64}$	$\frac{3}{8}$	$\frac{1}{8}$	Tinned Brass	6	Nos. 24 and 35 Types

* Provided with a clip to prevent engagement of the transversely slotted ends of No. 35 Type Fuses.

GAUGES



No. 33 Gauge



No. 95A Gauge



No. 113B Gauge



No. 43 Gauge



No. 99A Gauge



No. 70D Gauge



No. 123B Gauge

Code No.	Description and Use
27	For determining when the parts of the No. 109 Type Plugs have reached the limit of wear.
33	A steel gauge for gauging the sleeves of No. 49 and other Jacks having sleeves of similar dimensions. The Gauge Plug P-97443 is detachable from the handle and may be ordered separately if desired.
35	Dry battery gauge for testing dry batteries in transmitter, pole changer and coin collector service. Provided with a 20 ohm winding for transmitter service when testing three cells in series and a 5 ohm winding for single cell in pole changer service. Equipped with two 18″ No. 361 Cords. A No. 12029 leather battery gauge case for protecting gauge may be obtained on order.

TCI Library: www.telephonecollectors.info

GAUGES—*Continued*

Code No.	Description and Use
43	Consists of one .012″ thickness gauge and one .016″ thickness gauge held together by a brass ring. Intended for gauging the air gap between the armature stop pin and the core of Nos. 2 and 38 Type Ringers respectively.
66D	Consists of the following coded gauges assembled on a holding ring. Intended for use in adjusting the armature travel of relays.

1 67A	.015″	1 67H	.004″
1 67B	.020″	1 67J	.008″
1 67C	.025″	1 67K	.005″
1 67D	.030″	1 67L	.006″
1 67E	.035″	1 67M	.010″
1 67F	.040″	1 67N	.023″
1 67G	.003″	1 67P	.045″

70D	Intended for measuring the tension of relay springs. Consists of a frame on which are assembled an indicating spring, a folding handle and adjustable tension attachment. The folding handle, when closed, serves as a protector for the indicating spring and the adjustable tension attachment provides for setting the indicating spring at an initial tension. Scale 50-0-50 grams. Scale graduations 5 grams.
70E	Same as 70D, except scale 150-0-150; scale graduations 12.5 grams.
70F	Same as 70D, except scale 10-0-10; scale graduations 1 gram.
70G	Intended for measuring tension of ringer biasing springs. Adjustable tension attachment provided with a means for locking in place. Otherwise same as 70D. Scale 50-050. Scale graduations 5 grams.
70H	Same as 70D, except scale 0-30; scale graduations 2 grams.
90	Used for gauging the back contact air gap on No. 114 Type Relays. Gauge thickness .030″.
91A and B	Used for gauging the minimum and maximum permissible air gap respectively between the armature and each pole piece on No. 218B Relays. Gauge thickness 91A .014″, 91B .020″.
91C	Used for gauging the air gap between the pole piece and the armature of the vibrator unit in the No. 156B Interrupter. Gauge thickness .060″.
92A	Used for gauging the maximum air gap between the armature and either pole piece on the Nos. 206 and 215 Type Relays. Gauge thickness .010″.
92B	Used for gauging the mean air gap between the armature and either pole piece on the 228A Relay. Gauge thickness .013″.
92D and E	Used for adjusting 231 Type Relays. Gauge thickness 92D .018″, 92E .015″.
92F	Used for checking armature travel of No. 149P Relays. Gauge thickness .022″.
92G, H, J, K, L, M, N	Used for checking armature travel of Nos. 149, 162 and 178 Type Relays. Gauge thicknesses are:

92G	.020″	92L	.040″
92H	.025″	92M	.045″
92J	.030″	92N	.050″
92K	.035″		

TCI Library: www.telephonecollectors.info

GAUGES—*Continued*

Code No.	Description and Use
95A	Intended for use in gauging the back contact air gap on certain relays of the 114 and 198 Types. Gauge thickness .020″.
99A	For use in adjusting the armature or air gaps of "B" and "G" Type Relays. Consists of the following coded gauges assembled on a holding ring:

100A	.005″	100H	.040″
100B	.010″	101A	.030″
100C	.015″	101B	.035″
100D	.020″	101C	.040″
100E	.025″	101D	.050″
100F	.030″	101E	.060″
100G	.035″		

106A	Intended for use in testing No. 109 Plugs without removing them from service, to determine whether or not they are suitable for further service and to provide means for straightening the plugs when it is necessary. Also intended for checking the serviceability of No. 113A Gauge. When gauge is to be mounted on repair table, it requires two No. 23A Brackets which must be ordered separately.
111A	Same as 106A except arranged for testing 110 Plugs. Also intended for checking the serviceability of No. 123A Gauge.
113B	For use in testing 92 Jacks. Consists of a plug equipped with a plug shell and arranged for cord connection same as in the 109 Plug. In conjunction with a cord and a 121A Cord Weight, tests for possible cut-outs in service.
114B	Same as 113B except designed to test for springs so close to the jack sleeve center line as to butt with a plug in service.
115B	Same as 113B except designed to test for possible crosses in service between the springs of the jack when plug is inserted.
123B	Intended for use in testing jacks used with No. 110 Plugs. Equipped with a black shell of insulating material and arranged for cord connections same as in the 110 Plug. For use in determining whether jack springs would make proper contact with plugs in service.
124B	Same as 123B except designed to determine whether jack springs readjusted in maintenance are so close to the sleeve center line as to butt with plugs in service.
125B	Same as 123B except designed to determine whether jack springs readjusted in maintenance are likely to be crossed by a service plug fully inserted in the jack sleeve.

TCI Library: www.telephonecollectors.info

GAUGES—*Continued*

Code No. **Description and Use**

126 Type Chromium finished metal thickness gauges of two thicknesses.

126A, 126B, 126D } Intended for inspecting and adjusting ringer and loud ringing bell air gaps.

126C Intended for inspecting and adjusting ringer air gaps and coin collector relays.

126E Intended for inspecting and adjusting coin collector relays.

Gauge thicknesses:

126A	.009″	.015″
126B	.020″	.028″
126C	.030″	.040″
126D	.055″	.065″
126E	.123″	.129″

Note: Ring P-464203, $^{11}/_{16}$″ inside diameter, may be used for holding one or more gauges. This ring is not included as a part of the gauges but can be obtained when specified in the order.

127A Chromium finished metal thickness gauge. Intended for inspecting and adjusting ringer air gaps. Gauge thickness, .004″.

127B Intended for inspecting and adjusting coin collector relays. Gauge thickness, .015″.

131A Intended for use in adjusting the armature travel and for spring gauging of U and Y Type Relays. Consists of one each of the following 132 Type Gauges assembled on a key ring P-243953, marked "131A".

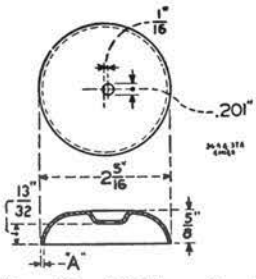
Code No.	Thickness (Inches)	Marked on Gauge	Code No.	Thickness (Inches)	Marked on Gauge
132A	.008	8	132S	.050	50
132B	.010	10	132T	.053	53
132C	.013	13	132U	.056	56
132D	.015	15	132W	.059	59
132F	.020	20	132Y	.062	62
132G	.023	23	132AA	.065	65
132H	.026	26	132AB	.068	68
132J	.029	29	132AC	.071	71
132K	.032	32	132AD	.074	74
132L	.035	35	132AE	.018	18
132M	.038	38	132AF	.004	4
132N	.041	41	132AG	.006	6
132P	.044	44			
132R	.047	47			

133A Intended for use in gauging stud gaps of U and Y Type Relays.

134A Flat blade in an insulated handle. Intended for use in adjusting separation of the normally open contacts of the make-before-break units on U and Y Type Relays. Gauge thickness, .010 grams.

TCI Library: www.telephonecollectors.info

GONGS



Nos. 40 and 41 Type Gong

The 40 Type Gongs are intended for use on the B1A Ringer used in the H1-3 Telephone Set. These gongs are unfinished. The 40A and B are ordinarily used on this type of set and the 40C, D and E are provided when gongs having a different pitch are desired.

		Dimensions (Inches)		
Code	Material	Diameter	Height	Thickness of Metal
40A	Brass	1 3/4	13/16	.0403
40B	Brass	1 3/4	13/16	.0508
40C	Brass	1 3/4	13/16	.064
40D	Aluminum Alloy	1 3/4	13/16	.050
40E	Aluminum Alloy	1 3/4	13/16	.064

The 41A Gong is made of brass and has an eccentric mounting hole. It is designed so that a 101A gong attachment may be used with it when it is desired. Intended for use on B1A and similar type ringers. Dimensions are as follows: Diameter 1 3/4", height 27/32", thickness of metal .0403".

The 41B Gong is the same as the 41A except for tone. Dimensions are as follows: Diameter 1 3/4", height 27/32", thickness of metal .0508".

Gong Attachments

Code No.	Description and Use
101A	Intended for use with the 41A Gong on B1A Type Ringers where greater sound output is required. Consists of a dome-shaped punching having a non-integral cap. Provided with two orifices, one on either side. When the gong attachment is mounted in a 41A Gong and the gong is hit by the ringer clapper, the air trapped inside the dome causes the gong attachment to resonate at a frequency most audible to the human ear.
Brass	Consists of a pair of Gong Posts or Gong Post Extenders together with two No. 6—32 x 5/16" R. H. M. Screws.

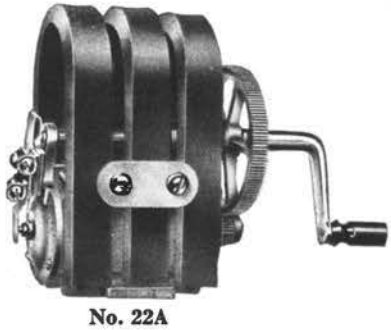
HAND GENERATORS

Western Electric Hand Generators are correct in both mechanical and electrical design and the materials used and manufacturing processes employed are such that their high efficiency is retained indefinitely. A few of the important features are as follows:

All parts are accurately machined and fitted and the bearings are of such size that no trouble due to the armature scraping on the pole pieces will be encountered even after years of service. The gears are accurately cut so that smooth, noiseless operation is obtained.

All metal parts are given a protective finish and the armature winding is moisture-proofed.

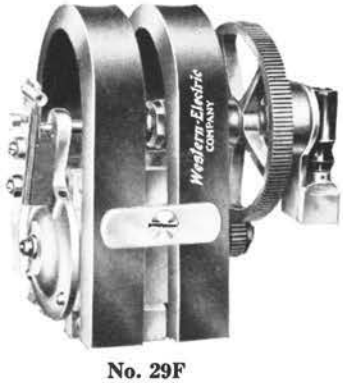
The magnets are made from steel which was developed especially for this purpose and the heat treatment employed is such that their strength is retained indefinitely.



No. 22A



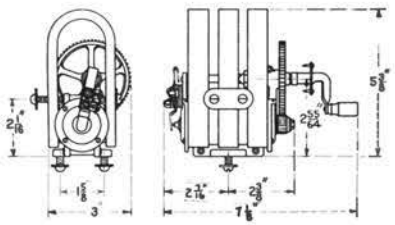
No. 29E



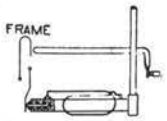
No. 29F

TCI Library: www.telephonecollectors.info

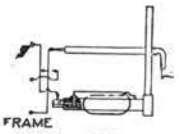
HAND GENERATORS—*Continued*



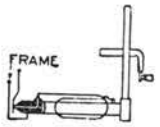
No. 22 Type Generator



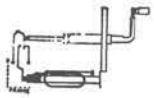
Nos. 22A & E



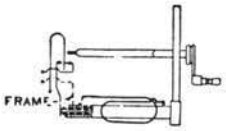
No. 22D



Nos. 22K & N



No. 29E



No. 29F

No. 29G Similar except for Washer and Screws on Crank Handle Assembly

Schematics of Generator Circuits

NO. 22 TYPE GENERATORS

The No. 22 Type Generator is used on lightly loaded magneto lines and may be obtained either for alternating or pulsating current.

These Generators have three magnets except the No. 22E, which has only two.

With a non-inductive load of 2660 ohms and an armature speed of 1,000 R.P.M. (except No. 22N which is tested at 1,050 R.P.M.) will give voltages as shown below.

Code No.	Voltage	Generator Circuit	Principal Use and Description
22A	60 A.C.	Open	Telephones and small switchboards.
22D	43 P.C.	Closed	Telephones and small switchboards.
22E	42 A.C.	Open	Telephones. Same as 22A except that only two magnets are used. For use on lightly loaded four-party selective lines.
22K	60 A.C.	Open	Small switchboards where key is employed to open circuit or test sets.
22N	65 A.C.	Open	Small switchboards where key is employed to open circuit or test sets.

NO. 29 TYPE GENERATORS

The No. 29 Type Generators are used where light weight is essential as in linemen's test sets, and portable telephones.

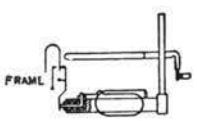
The 29E Generator will ring fifty 2,500 ohm bells through 1,000 ohms resistance and five bells through 16,000 ohms resistance.

The 29F and 29G Generators will give 60 volts A.C. with a non-inductive load of 2,500 ohms and an armature speed of 1,025 R.P.M.

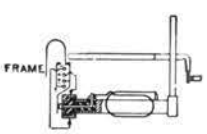
Code No.	Voltage	Generator Circuit	Principal Use and Description
29E	65 A.C.	Open	Has back contact. Used in portable telephones.
29F	60 A.C.	Open	Portable telephones and No. 1017 Type Test Sets. Has folding handle.
29G	60 A.C.	Open	Similar to No. 29F. Used in No. 1526B Telephone Set.



No. 48A



Nos. 48A, C & G



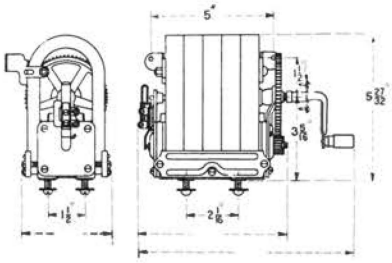
No. 48B



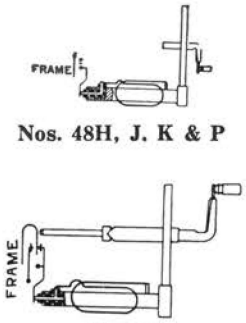
No. 50A

TCI Library: www.telephonecollectors.info

HAND GENERATORS—*Continued*



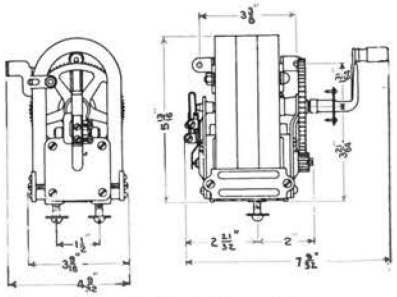
No. 48 Type Generator



Nos. 48H, J. K & P

No. 50A

Schematics of Generator Circuits



No. 50 Type Generator

No. 48 TYPE GENERATORS

The No. 48 Type is our most powerful Hand Generator and is used in telephones for heavily loaded line service.

With a non-inductive load of 1500 ohms and an armature speed of 1025 R.P.M., these Generators will give 80 volts A.C. No. 48B also gives 56 volts positive and negative pulsating current under the same conditions.

Code No.	Voltage	Normal Condition of Generator Circuit	Principal Use and Description
48A	80 A.C.	Open	Standard for telephones intended for use on heavily loaded lines.
48B	80 A.C. & 56 P.C.	Open	Telephones designed for "secret" signaling.
48C	80 A.C.	Open	Mine telephones. All parts are treated to resist the action of moisture and fumes.
48G	80 A.C.	Closed	No. 1800 Switchboards.
48H	80 A.C.	Closed	Switchboards.
48J	80 A.C.	Open	No. 1800 Switchboards.
48P	80 A.C.	Open	Switchboards.

No. 50 TYPE GENERATORS

The No. 50 Type delivers 60 volts A.C. under a 1500 ohm non-inductive load (after being short-circuited for ½ minute) and an armature speed of 1025 R.P.M.

Code No.	Voltage	Normal Condition of Generator Circuit	Principal Use and Description
50A	60 A.C.	Open	For telephones for use on medium loaded lines.
50F	60 A.C.	Open	Same as the 50A, except that a shorter crank is provided and the rear mounting bracket is omitted. Intended for use in telephones in which a mounting bracket forms a part of the telephone.

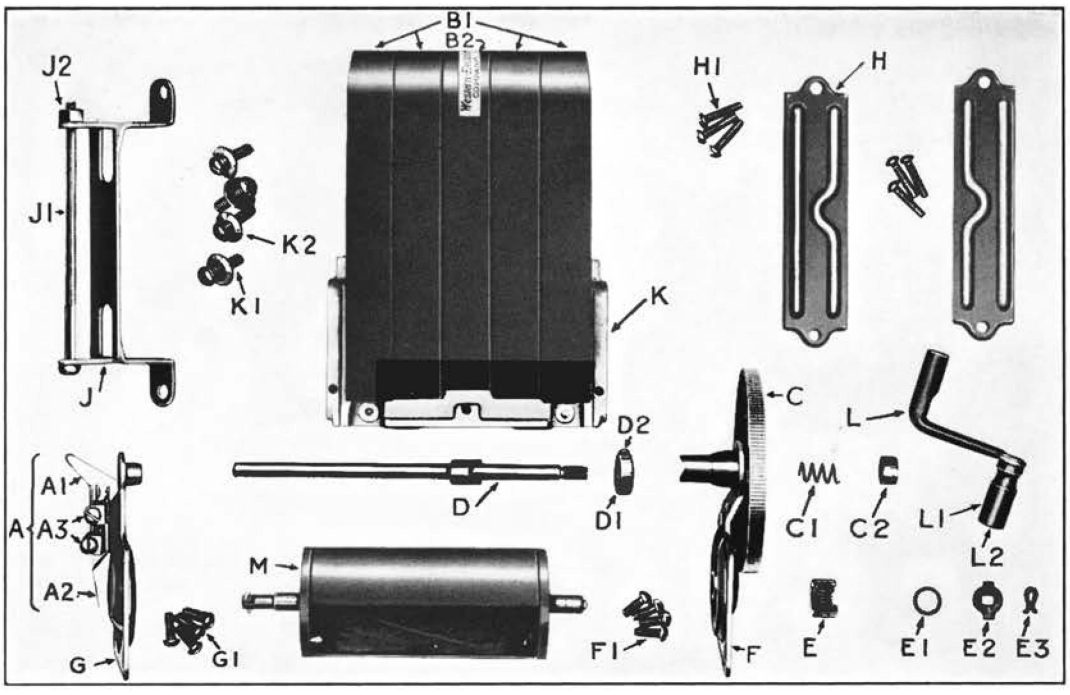
No. 51 TYPE GENERATORS

The No. 51 Generator is similar to the 48C Generator, except that the contact springs are enclosed in a protective compartment.

Code No.	Voltage	Normal Condition of Generator Circuit	Principal Use and Description
51A	80 A.C.	Open	In 536E Subscriber Set in Mine Telephones. All parts are treated to resist moisture and fumes.

TCI Library: www.telephonecollectors.info

HAND GENERATOR REPLACEMENT PARTS



Part	Name of Part	22A	22D	22E	22K	22N	29B	29E	29F	48A	48B
A	Contact Spring Assembly	P-290217	*	*	*	*	*	A-107157	*	P-290216	P-290219
A-1	Shaft Contact Spring	P- 46968	P- 44597	P- 46968	.....	.....	P- 20800	P-113335	P-113335	P-101468	P-106102
A-2	Armature Contact Spring	P- 46969	P- 44596	P- 46969	P- 46969	P- 46969	.....	P-122967	P-122967	P-103130	P-106099
A-3	But. H. M. Screw	P-122193	P-116353	P-122193	P-122193	P-122193	.....	P-122982	P-106222	P-106222	P-106222
B-1	End Magnet	P-139279	P-139279	P-139279	P-139279	P-139279	xP- 21365	xP-128889	xP-121728	P-139286	P-139286
B-2	Center Magnet	P-139279	P-139279	P-139279	P-139279	P-139279	†P-136787	†P-136789	†P-136788	P-139293	P-139293
C	Gear and Sleeve	P-139879	P-139885	P-139879	P-139883	P-139883	P-139883	P-139891	P-139891	P-139889	P-139889
C-1	Main Shaft Spring	P-141097	P- 19671	P-141097	.....	.....	P- 10293	P-135611	P-135611	P- 18377	P- 18377
C-2	Shaft Nut or Coupling	P- 18378	P-139870	P- 18378	.....	.....	P- 19420	P-149750	P-101492	P-101492	P-101492
D	Shaft	P-139882	P-139860	P-139882	.....	.....	P- 19464	P-139862	P-139862	P-139864	P-139864
D-1	Shaft Nut or Collar	P- 18379	P- 20087	P- 18379	P- 18379	P- 18379	P- 18379	P-113451	P-113451	P-113451	P-113451
D-2	Shaft Collar Screw	.....	.....	.....	.....	.....	.....	P-138680	P-138681	P- 21140	P- 21140
E	Pinion	P- 21624	P- 21624	P- 21624	P- 21624	P- 21624	P- 21624	P-122957	P-121699	P-101493	P-101493
E-1	Pinion Spring	P- 18375	P- 18375	P- 18375	P- 18375	P- 18375	P- 18375	.....	P- 42972	P- 42972	P- 42972
E-2	Pinion Washer and Pinion Cap	P- 21625	P- 21625	P- 21625	P- 21625	P- 21625	P- 21625	P-122964 P-110666	P-103717 P- 42977	P- 42977	P- 42977
E-3	Cotter pin or R. H. M. Screw	P- 32588	P- 32588	P- 32588	P- 32588	P- 32588	P- 32588	P-122979	P-108955	P-108254	P-108254
F	Bearing Bracket	P- 18366	P- 18366	P- 18366	P- 18366	P- 18366	P- 18366	P-124481	P-131593	P-106290	P-106290
F-1	R. H. M. Screw	P-146134	P-146134	P-146134	P-146134	P-146134	P-146134	P-124483	P-124482	P- 41140	P- 41140
G	Bearing Bracket	P- 18367	P- 20094	P- 18367	P- 18367	P- 18367	P- 20037	P-124480	P-131592	P-106289	P-106143
G-1	R. H. M. Screws	P-146134	P-146134	P-146134	P-146134	P-146134	P-146134	P-124483	P-124482	P- 41140	P- 41140
H	Clamping Plate	P- 5863	P- 5863	P- 5863	P- 5863	P- 5863	P-113358	.....	.....	P-111330	P-111330
H-1	R. H. M. Screw	P- 41383	P- 41383	P- 41383	P- 41383	P- 41383	P- 46983	.....	.....	P- 30443	P- 30443
J	Mt. Bracket	.....	.....	.....	.....	.....	.....	.....	P-121710	P-121753	P-121753
J-1	R. H. M. Screw	.....	.....	.....	.....	.....	.....	.....	P-121774	P- 42986	P- 42986
J-2	Nut	.....	.....	.....	.....	.....	.....	.....	P-121771	P-101556	P-101556
K	Pole Piece	P- 18414	P- 18414	P- 18414	P- 18414	P- 18414	P- 21364	P-140483	P-131600	P-108260	P-108260
K-1	Mounting Screw Lower	P- 22779	P- 22779	P- 22779	P- 22779	P- 22779	P- 48704	.....	.....	P- 22779	P- 22779
	Upper	P- 14943	P- 14943	P- 14943	P- 14943	P- 14943	P- 48703	.....	.....	.....	.....
K-2	Washer	P-131379	P-131379	P-131379	P- 18680	P- 18680	.....	.....	.....	P-131379	P-131379
L	Crank Assembly	P-158949	P-158949	P-158949	P-158946	P-158946	P-143244	P-135306	P-143244	P-158950	P-158950
L-1	Crank Handle	P- 18372	P- 18372	P- 18372	P- 18372	P- 18372	P- 18372	P- 18372	P- 18372	P- 18372	P- 18372
M	Armature	P- 44621	P- 44625	P- 44621	P- 44621	P- 44629	P- 44712	P-121693	P-121693	P-156430	P-156430

x These are left-hand magnets.

† These are right-hand magnets.

* Order as follows: Example: 1 Contact Spring Assembly for No. 48A Generator.

TCI Library: www.telephonecollectors.info

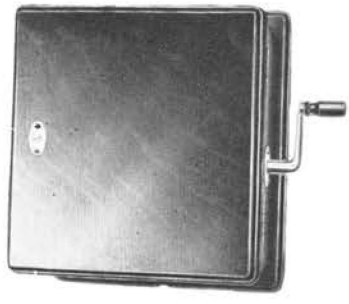
HAND GENERATOR AND BOXES

Hand Generator Replacement Parts—*Continued*

Part	Name of Part	48C	48G	48H	48J	48K	48P	48R	48S	50A & F	51A
A	Contact Spring Assembly	P-290216	P-290216	*	*	*	*	*	*	P-290216	A-145479
A-1	Shaft Contact Spring	P-101468	P-101468					P-101468	P-101468	P-101468	P-217635
A-2	Armature Contact Spring	P-103130	P-103130	P-103130	P-103130	P-103130	P-103130	P-103130	P-103130	P-103130	P-217634
A-3	But. H. M. Screw	P-106222	P-106222	P-106222	P-106222	P-106222	P-106222	P-106222	P-106222	P-106222	P-121833
B-1	End Magnet	P-107912	P-139286	P-139286	P-139286	P-139286	P-139286	P-139286	P-107912	P-139286	P-139286
B-2	Center Magnet	P-136791	P-139293	P-139293	P-139293	P-139293	P-139293	P-139293	P-136791	P-136793	P-139293
C	Gear and Sleeve	P-139889	P-139889	P-139900	P-139900	P-139900	P-139900	P-139889	P-139889	P-139889	P-139889
C-1	Main Shaft Spring	P- 18377	P- 18377					P- 18377	P- 18377	P-141097	P- 18377
C-2	Shaft Nut or Coupling	P-101492	P-101492					P-158815	P-158815	P-101492	P-101492
D	Shaft	P-139864	P-139864					P-139874	P-139874	P-139866	P-139864
D-1	Shaft Nut or Collar	P-113451	P-113451					P-113451	P-113451	P-113451	P-113451
D-2	Shaft Collar Screw	P- 21140	P- 21140					P- 21140	P- 21140	P- 21140	P- 21140
E	Pinion	P-101493	P-101493	P-101493	P-101493	P-101493	P-101493	P-101493	P-101493	P-101493	P-101493
E-1	Pinion Spring	P- 42972	P- 42972	P- 42972	P- 42972	P- 42972	P- 42972	P- 42972	P- 42972	P- 42972	P- 42972
E-2	Pinion Washer and Pinion Cap	P-107916	P- 42977	P- 42977	P- 42977	P- 42977	P- 42977	P- 42977	P-107916	P- 42977	P-107916
E-3	Cotter pin or R. H. M. Screw	P-108254	P-108254	P-108254	P-108254	P-108254	P-108254	P-108254	P-108254	P-108254	P-108254
F	Bearing Bracket	P-106290	P-106290	P-106290	P-103899	P-122083	P-122083	P-106290	P-106290	P-106290	P-106290
F-1	R. H. M. Screws	P- 41140	P- 41140	P- 41140	P- 41140	P- 41140	P- 41140	P- 41140	P- 41140	P- 41140	P- 41140
G	Bearing Bracket	P-106143	P-106289	P-106289	P-103898	P-122085	P-122085	P-106289	P-106289	P-106289	
G-1	R. H. M. Screws	P- 41140	P- 41140	P- 41140	P- 41140	P- 41140	P- 41140	P- 41140	P- 41140	P- 41140	
H	Clamping Plate	P-107914	P-111330	P-111330	P-111330	P-111330	P-111330	P-111330	P-107914	P-113427	P-107914
H-1	R. H. M. Screw	P-107905	P- 30443	P- 30443	P- 30443	P- 30443	P- 30443	P- 30443	P-107905	P- 30443	P-107905
J	Mounting Bracket	P-106176 P-106177	P-106840 P-106839	P-121753	P-106176 P-106177	P-106176 P-106177	P-106840 P-106839	P-121753	P-121753	†P-113428	P-121753
J-1	R. H. M. Screw	P-107906	P- 42986	P- 42986	P- 42986	P- 42986	P- 42986	P- 42986	P- 42986	P-113429	P-107906
J-2	Nut	P-101556	P-101556	P-101556	P-101556	P-101556	P-101556	P-101556	P-101556	P-101556	P-101556
K	Pole Piece	P-108261	P-108260	P-108260	P-108260	P-108260	P-108260	P-108260	P-108261	P-113410	P-108261
K-1	Mounting Screws	P-107908	P- 22779	P- 22779	P- 22779	P- 22779	P- 22779	P- 22779	P-131380	P- 22779	P-107908
K-2	Washer	P-131379	P-131379	P-131379	P-131379	P-131379	P-131379	P-131379	P-131379	P-131379	P-131379
L	Crank Assembly	P-158948	P-158947	P-158947	P-158947	P-158947	P-131286	P-158950	P-158950	xP-158950	P-158950
L-1	Crank Handle	P- 18372	P- 18372	P- 18372	P- 18372	P- 18372	P- 18372	P- 18372	P- 18372	P- 18372	P- 18372
M	Armature	P-156431	P-156430	P-156430	P-156430	P-156430	P-156430	P-156430	P-156431	P-155522	P-156431

* Order as follows: Example: 1 Contact Spring Assembly for No. 48C Generator.
† 50A P-113428 50F P-140909.
x 50A P-158950 50F P-158949.

Hand Generator Boxes



No. 299F

A hand generator box consists of a generator mounted in an oak cabinet having a hinged cover. The leads from the generator are connected to terminals mounted close to the inside edge of the box.

Code No.	Generator	Current	Dimensions of Box (Inches) Width	Depth	Length
299F	48A	Alternating	8	6	9

TCI Library: www.telephonecollectors.info

HAND SETS



F1AW-3 Hand Set

F1AW-3 HAND SET

The F1AW Type Hand Set was designed for use with and forms a part of the new 302 Type Combined Telephone Set described in this catalog under "Telephone Sets." It represents the latest development in hand sets of the Bell Telephone Laboratories and provides a much higher grade of speech transmission and reproduction than former types. Intended for general use at subscriber stations. It consists of the following equipment:

Transmitter Unit	Receiver Unit	Cord	Hand Set Handle
F1	HA1	H3C-9 4′	F1-3

F2AW-3 HAND SET

The F2AW Type Hand Set is intended for use in central offices and P.B.X. systems. Similar to the F1AW-3 except that it is equipped with a four-conductor cord terminating in a twin plug. The F2AW-3 Hand Set replaces the E2A-3 Hand Set. It consists of the following equipment:

Transmitter Unit	Receiver Unit	Cord	Plug	Hand Set Handle
F1	HA1	H4U	289A	F2-3

F2BW-3 HAND SET

The F2BW Type Hand Set is intended for use in anti-sidetone local battery talking, common battery signaling subscribers' stations in manual and dial areas, and in key cabinets. It is similar to the F1AW except that it employs a four-conductor cord and a different receiver unit. It consists of the following equipment:

Transmitter Unit	Receiver Unit	Cord	Hand Set Handle
F1	HA2	H4T-9	F2-3

The hand sets described above are finished in black. They are available, however, in ivory, old brass, statuary bronze, oxidized silver, dark gold, old rose, dark blue, gray-green and pekin red on a special order basis. The dash numbers (—) used to designate these colors are as follows:

Black	—3	Dark Gold	—12
Ivory	—4	Old Rose	—16
Old Brass	—6	Dark Blue	—18
Statuary Bronze	—7	Gray-Green	—19
Oxidized Silver	—8	Pekin Red	—20

TCI Library: www.telephonecollectors.info

HAND SETS—*Continued*

F3AW-3 HAND SET

The F3AW Type Hand Set is similar to the F2AW except that it is equipped with a switch in the center of the hand set handle which cuts out the transmitter circuit when not in operated position. It consists of the following equipment:

Transmitter Unit	Receiver Unit	Cord	Hand Set Handle
F1	HA1	H4J	F3W

The F1AW, F2AW and F3AW Type Hand Sets are intended to be used with anti-sidetone circuits, but where it is desirable to use these sets with sidetone circuits, a protective condenser (129F) should be added to the transmitter circuit. The 129F Condenser should be used for this purpose and may be mounted under the transmitter contact springs in the handle. This is a field operation; it can be handled readily by the installer.

F6AW-3 HAND SET



F6AW-3 Hand Set

The F6AW-3 Hand Set is designed to provide protection against the probability of explosion resulting from flames originating within the hand set under all normal and many abnormal conditions of operation. For use in Class 1, Groups B, C and D atmospheres as defined by the National Electrical Code. It consists of the following equipment:

Transmitter Unit	Receiver Unit	Cords	Hand Set Handle	Used with
K1-3	HA1	2—T1M 1—H3R	F6W-3	320 Type Telephone Set

Handset Hangers

Code No.	Description
1B	Mounts on a vertical surface for holding a No. 1001 Type Hand Set when not in use. The Hand Set is suspended by its receiver, which fits into a recess in the hanger. Cast brass; black finish. Overall dimensions, 3 1/16 inches wide, 2 1/2 inches deep, and 3 3/8 inches high.

TCI Library: www.telephonecollectors.info

HAND SETS

Handset Hangers—*Continued*

Code No.	Description
1C	Same as the No. 1B, except that it is equipped with rubber studs and a spring, so arranged as to prevent the Hand Set from swaying. Used principally on steamships.
4A	Black finished hook arranged for supporting an E1B or E2 Type Hand Set and a black finished bumper plate into which is fastened a linoleum pad. Intended to mount on the face of P.B.X. switchboards, order turrets, etc.
5A	Consists of a No. 4A Hand Set Hanger provided with a reversible mounting bracket. Intended to mount on either the right or left end panel of P.B.X. switchboards. Bumper plate must be mounted accordingly.

Handset Mountings



G Type Hand Set Mounting

The "G" Type Hand Set Mountings are arranged for use with the F1AW and the F2BW or similar type hand sets. They are equipped with a bracket designed to permit adjustment of the mounting to various lengths of desk top overhang. The bracket also permits mounting to be secured for the hand set to hang on either side of the mounting or in front of the mounting.

The G Type Hand Set Mountings may be obtained equipped with a No. 61M Filter to suppress dial induction into radio receiving sets when so specified on the order.

The "G" Type Hand Set Mountings are finished in black. They are available, however, on special order in ivory, old brass, statuary bronze, oxidized silver, dark gold, old rose, dark blue, gray-green and pekin red. The dash (—) number part of the code indicates the color and should be specified on the order. Representative dash (—) numbers used to designate these colors are as follows:

Black	—3	Dark Gold	—12
Ivory	—4	Old Rose	—16
Old Brass	—6	Dark Blue	—18
Statuary Bronze	—7	Gray-Green	—19
Oxidized Silver	—8	Pekin Red	—20

The reversible mounting bracket is adjustable to four lengths as follows:

$1\frac{5}{32}$" $2\frac{5}{32}$" $1\frac{3}{32}$" $1\frac{13}{32}$"

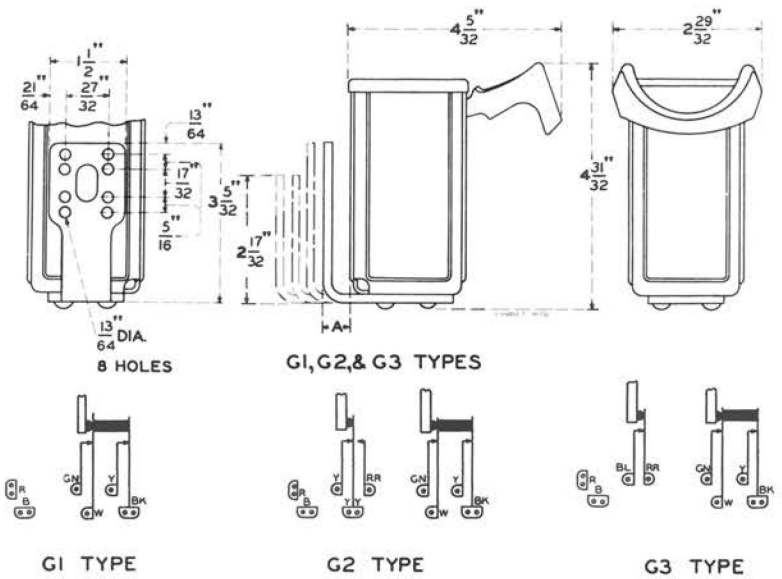
TCI Library: www.telephonecollectors.info

HAND SETS

Handset Mountings—*Continued*

G1 TYPE

The G1 Type Hand Set Mounting is intended for use in individual lines, P.B.X. extensions, two-party selective (except tip-party dial message rate), four-party selective and semi-selective and multi-party sidetone or anti-sidetone common battery service in either dial or manual areas.



G2 TYPE

The G2 Type Hand Set Mounting is intended for use in anti-sidetone, two-party selective message rate, party on tip stations in dial systems and also in anti-sidetone circuits with the 23A Amplifier and the 6013B Key for subscribers who are hard-of-hearing, in both manual and dial areas.

G3 TYPE

The G3 Type is intended for use with the No. 6021J-3 Key at anti-sidetone dial subscriber stations in the No. 755A P.B.X. system.

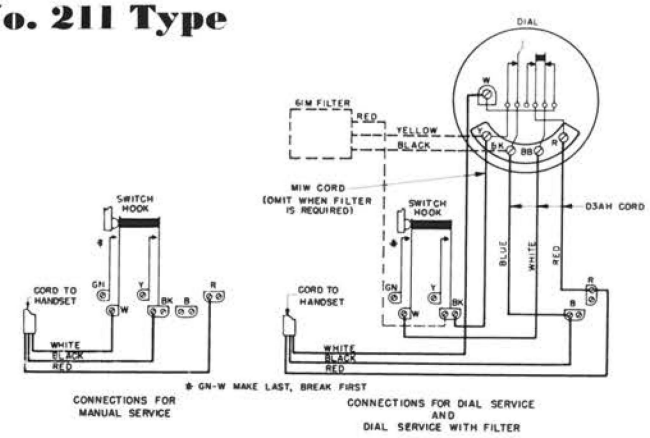
TCI Library: www.telephonecollectors.info

HAND TELEPHONE SETS

No. 211 Type



211AW-3
Hand Telephone Set



211AW
Hand Telephone Set

211BW, CW and DW
Hand Telephone Sets

The following 211 Type Hand Telephone Sets are intended for use in individual lines, P.B.X. extensions, two-party selective (except tip party dial message rate), four-party selective and semi-selective and multi-party sidetone or anti-sidetone common battery service.

211AW-3F—For use at manual stations.

211BW-3F, 211CW-3F and 211DW-3F—For use at dial stations.

Finished in black.

Code No.	Hand Set Mounting	Dial Number	Dial Mtg. Number	Cords	Hand Set	Replaces
*211AW-3F	G1-3	—	—	—	F1AW-3	201A-3
†211BW-3F	G1-3	5HA-3	41A-3	D3AH, M1W	F1AW-3	201B-3
†211CW-3F	G1-3	5HB-3	41A-3	D3AH, M1W	F1AW-3	201C-3
†211DW-3F	G1-3	5HE-3	41A-3	D3AH, M1W	F1AW-3	201D-3

(*) Equipped with a card holder frame.

(†) Will be furnished equipped with a 61M Filter to suppress dialing induction into radio receiving sets when specified in the order. When equipped with a filter, the M1W Cord is omitted.

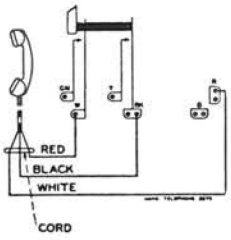
The hand sets described above are finished in black (—3F). These sets, however, can be obtained on special order in the following colors. To obtain these sets in color, the dash number (—3F) for black finish should be changed as shown below:

Dash Number	Color	Dash Number	Color
—4	Ivory	—12	Dark Gold
—6	Old Brass	—16	Old Rose
—7	Statuary Bronze	—18	Dark Blue
—8	Oxidized Silver	—19	Gray-Green
		—20	Pekin Red

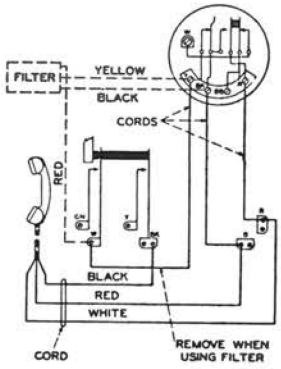
TCI Library: www.telephonecollectors.info

HAND TELEPHONE SETS

No. 211 Type – *Continued*



211EW
Hand Telephone Set



211FW, GW and HW
Hand Telephone Set

The following 211 Type Hand Telephone Sets are intended for use in anti-sidetone, local battery talking, and common battery signaling service.

211EW-3F—For use at manual stations.

211FW-3F, 211GW-3F and 211HW-3F—For use at dial stations.

Finished in black.

Code No.	Hand Set Mounting	Dial Number	Dial Mtg. Number	Cords	Hand Set
*211EW-3F	G1-3	—	—	—	F1AW-3
†211FW-3F	G1-3	5HA-3	41A-3	3—M1W 5½″	F1AW-3
†211GW-3F	G1-3	5HB-3	41A-3	3—M1W 5½″	F1AW-3
†211HW-3F	G1-3	5HE-3	41A-3	3—M1W 5½″	F1AW-3

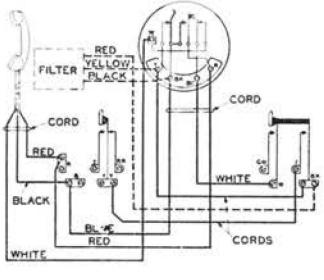
(*) Equipped with a card holder frame.

(†) Will be furnished equipped with a 61M Filter to suppress dialing induction into radio receiving sets when specified in the order. When equipped with a filter, the M1W Cord is omitted.

The hand sets described above are finished in black (—3F). These sets, however, can be obtained on special order in the following colors. To obtain these sets in color, the dash number (—3F) for black finish should be changed as shown below:

Dash Number	Color	Dash Number	Color
—4	Ivory	—12	Dark Gold
—6	Old Brass	—16	Old Rose
—7	Statuary Bronze	—18	Dark Blue
—8	Oxidized Silver	—19	Gray-Green
		—20	Pekin Red

No. 212 Type



212 Type Hand Telephone Set

The 212 Type Hand Telephone Set is intended for use in anti-sidetone two-party selective message rate party-on-tip stations in dial systems.

When specified in the order, these hand telephone sets will be equipped with a No. 61M Filter to suppress dialing induction into radio receiving sets. When equipped with a filter one M1W 5½″ Cord is omitted.

Finished in black.

TCI Library: www.telephonecollectors.info

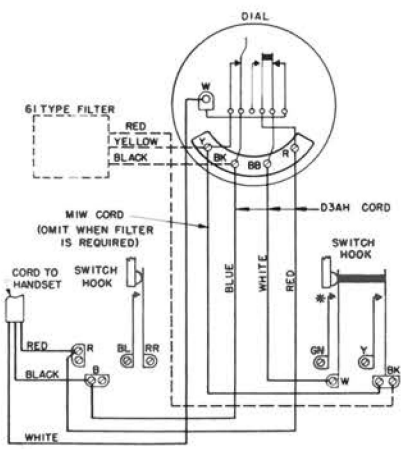
HAND TELEPHONE SETS

No. 212 Type—*Continued*

Code No.	Hand Set Mounting	Dial Number	Dial Mtg. Number	Cords	Hand Set	Replaces
212AW-3F	G2-3	5HA-3	41A-3	D3AH 2—M1W	F1AW-3	203A
212BW-3F	G2-3	5HB-3	41A-3	D3AH 2—M1W	F1AW-3	203B
212CW-3F	G2-3	5HE-3	41A-3	D3AH 2—M1W	F1AW-3	203C

The hand sets described above are finished in black (—3F). These sets, however, can be obtained on special order in the following colors. To obtain these sets in color, the dash number (—3F) for black finish should be changed as shown below:

Dash Number	Color	Dash Number	Color
—4	Ivory	—12	Dark Gold
—6	Old Brass	—16	Old Rose
—7	Statuary Bronze	—18	Dark Blue
—8	Oxidized Silver	—19	Gray-Green
		—20	Pekin Red



213AW, -BW, -CW

No. 213 Type

The 213 Type Hand Telephone Set is intended for use with a No. 6021J-3 Key at anti-sidetone dial subscriber stations in the 755A P.B.X. system.

When specified, these sets may be obtained equipped with a 61M Filter to suppress dialing induction into radio receiving sets. When equipped with a filter, the M1W 5½″ Cord is omitted.

Finished in black.

Code No.	Hand Set Mounting	Dial Number	Dial Mtg. Number	Cords	Hand Set	Replaces
213AW-3F	G3-3	5HA-3	41A-3	B3AH M1W	F1AW-3	205A 205D
213BW-3F	G3-3	5HB-3	41A-3	B3AH M1W	F1AW-3	205B 205E
213CW-3F	G3-3	5HE-3	41A-3	B3AH M1W	F1AW-3	205C-3 205F-3

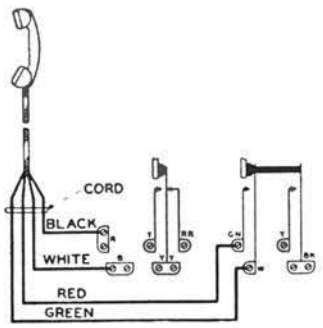
The hand sets described above are finished in black (—3F). These sets, however, can be obtained on special order in the following colors. To obtain these sets in color, the dash number (—3F) for black finish should be changed as shown below:

Dash Number	Color	Dash Number	Color
—4	Ivory	—12	Dark Gold
—6	Old Brass	—16	Old Rose
—7	Statuary Bronze	—18	Dark Blue
—8	Oxidized Silver	—19	Gray-Green
		—20	Pekin Red

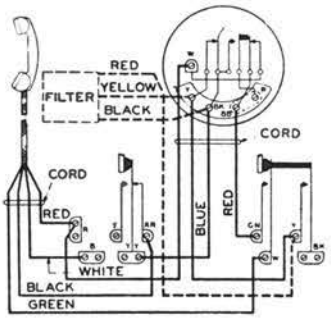
TCI Library: www.telephonecollectors.info

HAND TELEPHONE SETS—*Continued*

No. 214 Type



214AW



214BW, CW, DW

The 214 Type Hand Telephone Set is intended for use in anti-sidetone circuits with the No. 23A Amplifier and the No. 6013B Key for subscribers who are hard of hearing.

The 214AW-3F is used at manual stations.

The 214BW-3F, 214CW-3F and 214DW-3F are used at dial stations.

Finished in black.

Code No.	Hand Set Mounting	Dial Number	Dial Mtg. Number	Cords	Hand Set	Replaces
*214AW-3F	G2-3	—	—	—	F2BW-3	207A
†214BW-3F	G2-3	5HA-3	41A-3	D3AH / M1W	F2BW-3	207B
†214CW-3F	G2-3	5HB-3	41A-3	D3AH / M1W	F2BW-3	207C
†214DW-3F	G2-3	5HE-3	41A-3	D3AH / M1W	F2BW-3	207D

(*) Equipped with a card holder frame.

(†) When specified, will be equipped with a 61M Filter to suppress dialing induction into radio receiving sets. When equipped with a filter the M1W Cord is omitted.

The hand sets described above are finished in black (—3F). These sets, however, can be obtained on special order in the following colors. To obtain these sets in color, the dash number (—3F) for black finish should be changed as shown below:

Dash Number	Color	Dash Number	Color
—4	Ivory	—12	Dark Gold
—6	Old Brass	—16	Old Rose
—7	Statuary Bronze	—18	Dark Blue
—8	Oxidized Silver	—19	Gray-Green
		—20	Pekin Red

Head Bands (Receivers)

Code No.	Description
1B	Consists of a wire Head Band with olive drab textile covering, equipped with adjustable yokes for holding two No. 525 or 528 Receivers (less the No. 3A or 11A Head Bands ordinarily furnished), also for holding two No. 509 Receivers.
3B	Wire Head Band covered with black sleeving and a yoke for holding the receiver. The yoke is shaped so that it will fit head receivers provided with two holes drilled in the side of the case. Intended primarily for use with the 186 Type Receiver.
3D	Imitation leather covered wire Head Band of flat cross section for use with a single receiver in train dispatching service. Used in place of No. 3A Head Band with No. 528 Receiver in conjunction with No. 52AB Desk Stand. Recommended in place of No. 7A.
11A	A single wire Head Band arranged to hold one No. 128 or No. 528 Receiver. Made of one piece nickel finished piano wire. A No. 1466 Pad is furnished as part of this Head Band but is not assembled to it. Replaces the No. 3A Head Band.

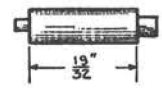
TCI Library: www.telephonecollectors.info

HEAT COILS

No. 76 Type



No. 76A Heat Coil



No. 40 Type Heat Coil

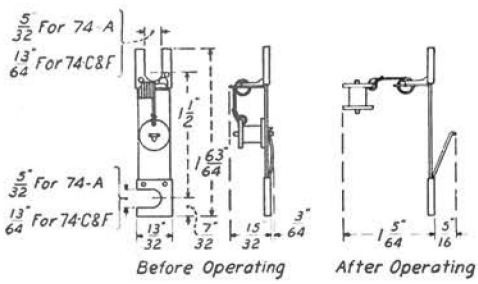
The No. 76A Heat Coil is used in the No. 1168 Type, No. 1169A, No. 1268 Type and No. 1269A Protectors and in the Nos. 1435P, 1435H and 1435T Protector Groups for protecting central office equipment against sneak currents. It consists of a black hard rubber shell. When a current greater than that for which it is designed passes through the winding, the solder melts and allows a spring on the protector mounting to press the pin against a contact, thus grounding the line. Replaces No. 73A.

Code No.	Approx. Resistance	Will Operate in 210 Sec. on Amperes	For Use As
40	.....	.....	Brass Dummy
72A	.....	.....	Composition Dummy
76A	3.45 ohms	.54	Heat Coil

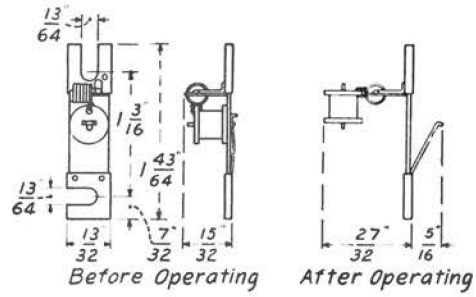
No. 74 Type



No. 74 Type Heat Coil



No. 74-A, C and F



No. 74-B, D, E and G

These heat coils are designed to act on small current values at which fuses will not give reliable operation.

They are similar in mechanical construction to the No. 35 Type Fuses, differing in that a heat coil is used in place of a fuse wire. The spool of the coil is soldered to the alarm spring with low melting solder and the indicator spring is hooked into a hole in the upper spoolhead. When excessive current passes through the winding, the heat generated melts the solder, allowing the alarm spring to actuate the alarm and the indicator spring causes the spool to fly up, thereby giving a visible indication of the operated coil.

Fuse posts may be used in mounting the No. 74 Type Heat Coils. They will carry continuously one half their operating current.

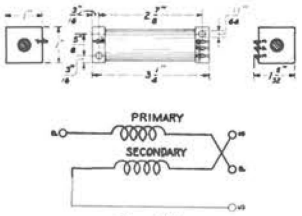
Code No.	Rated Resistance Max.	Rated Resistance Min.	Will Operate in 210 Sec. on Current of (Amperes)	Size of Mounting Screw Required
74A	21.0	19.0	.18	No. 6
74B	4.1	3.7	.40	No. 10
74C	8.0	6.5	.265	No. 10
74D	4.7	4.1	.34	No. 10
74E	8.0	6.5	.265	No. 10
74F	57	53	.110	No. 10
74G	57	53	.110	No. 10

TCI Library: www.telephonecollectors.info

INDUCTION COILS

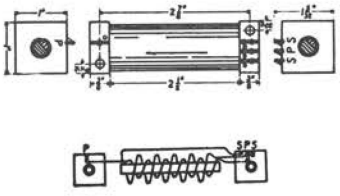
Western Electric Induction Coils are designed to obtain extremely high transmission efficiency. One of the important features is that the entire winding is included in the effective flux area. In other words, the entire winding is contributed to the efficiency of the Induction Coil; there being no dead sections of the winding to reduce its efficiency through the introduction of direct current resistance.

As a result of several years' research work, we have adopted a new core material which consists of a special steel alloy, used in the form of thin strips. This new material permits of greater transmission efficiency than was heretofore possible with any Induction Coil core material known to the telephone art.



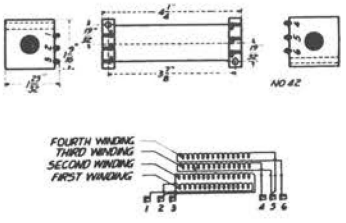
No. 13

Code No.	Description	Resistance (Ohms) Primary	Secondary	Tertiary
13	Intended for use in local battery subscriber sets.....	(P-P) 1.4	(S-S) 17.0	—
31	Same as No. 13 except that it is treated to resist the action of moisture and fumes. Intended for use in Nos. 1336 and 1536 Type Mine Telephones.....	(P-P) 1.4	(S-S) 17.0	—



No. 32

Code No.	Description	Resistance (Ohms) Primary	Secondary	Tertiary
32	Intended for use in magneto portable telephone sets and magneto Railway Train Dispatching Telephone Sets exposed to moisture or to weather. Used in No. 1526B Telephone Sets....	(P-P) 0.38	(S-S) 37.0	—

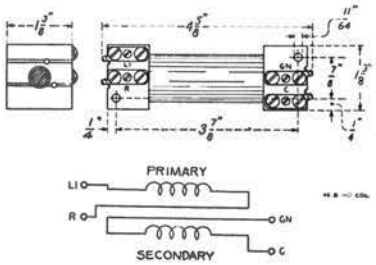


No. 42

Code No.	Description			
42	Designed for use in Nos. 501A and 501B Desk Set Boxes and No. 1317BU Telephone Sets.....	First Winding	(1-2)	.41 ohms
		Second Winding	(2-3)	7.5 ohms
		Third Winding	(4-5)	31.0 ohms
		Fourth Winding	(5-6)	290.0 ohms

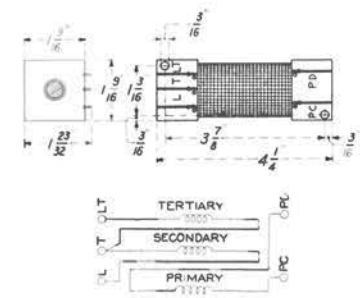
TCI Library: www.telephonecollectors.info

INDUCTION COILS—*Continued*

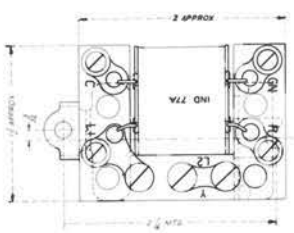


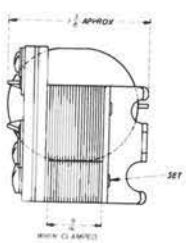
No. 55B

Code No.	Description	Resistance (Ohms) Primary	Secondary	Tertiary
55B	Moisture-proofed Induction Coil. For use in subscriber sets. Recommended in place of No. 55	(L1-R) 14.7	(GN-C) 9.5	—
62	Intended for use in "A" operator's anti-sidetone telephone circuit and "B" operator's telephone circuit	(PC-PD) 1.32	(L-T) 8.8	(T-LT) 325.0
63	Intended for use in P.B.X. attendant's anti-sidetone telephone circuit and "A" operator's telephone circuit	(PC-PD) 2.3	(L-T) 25.0	(T-LT) 450.0
65	Intended for use in toll operator's anti-sidetone telephone circuit and "B" operator's telephone circuit	(PC-PD) 1.32	(L-T) 9.9	(T-LT) 500.0

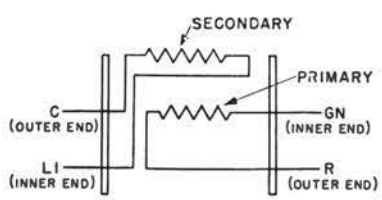


Nos. 62, 63, 65





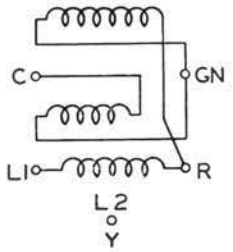
Code No.	Description	Resistance (Ohms) Primary	Secondary	Tertiary
77A	A two-winding closed core type coil. Intended for use in the 301A Telephone Set	(L1-C) 143	(GN-R) 2.8	—



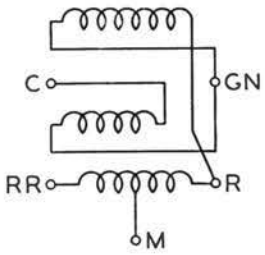
No. 77A

TCI Library: www.telephonecollectors.info

INDUCTION COILS—*Continued*

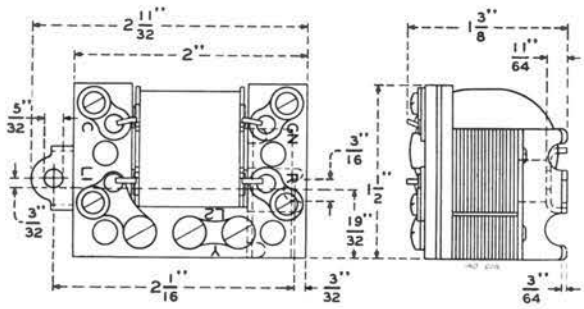


No. 101A



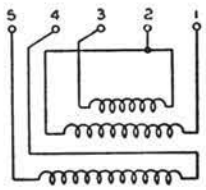
No. 101B

Code No.	Description	Resistance (Ohms) Primary	Secondary	Tertiary
101A	Intended for use in anti-sidetone subscriber sets. . .	(L1-R) 22.0	(GN-C) 19.0	(R-GN) 75.0

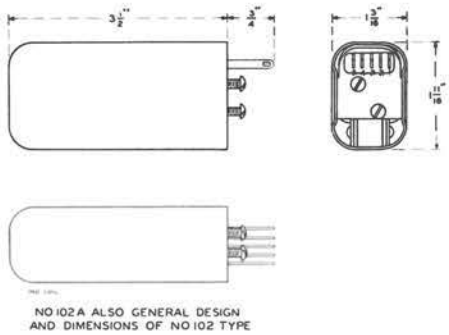


No. 101 A and B

101B	Intended for use in the 304B, C and D Telephone Sets.	(RR-R) 22	(R-GN) 75	(GN-C) 19

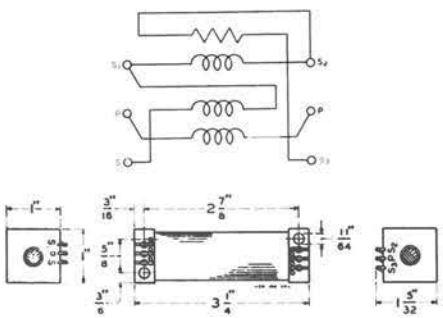


No. 102A



No. 102A

102A	Intended for use in operator's telephone sets	(1-2) 485	(2-3) 9.3	(4-5) 1.7



No. 113D

113D	Intended for use in anti-sidetone local battery talking, common battery signaling subscriber sets . .	(P-P) 1.4	(S-S1) 17	(S1-S2) 200 (S2-S3) 280 (N. I.)

TCI Library: www.telephonecollectors.info

JACKS

Singly Mounted—Welded Frame Jacks

The following singly mounted, electrically welded frame type jacks replace the corresponding punched frame types as indicated in the code number listings. The terminals of the jacks are regularly arranged to accommodate two No. 19 B & S gauge wires unless otherwise specified. Mounting screws are furnished.

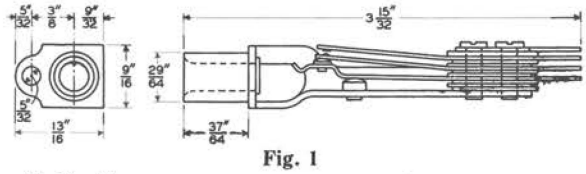


Fig. 1

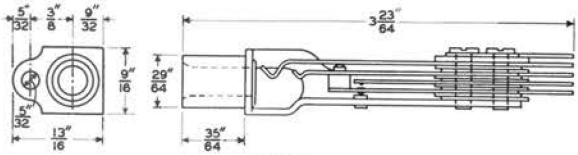


Fig. 2

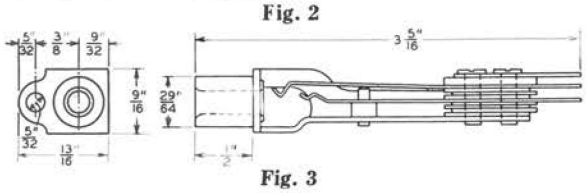


Fig. 3

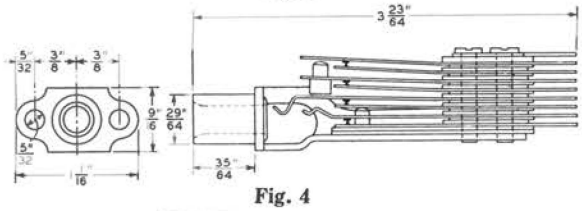


Fig. 4



No. 215 Jack

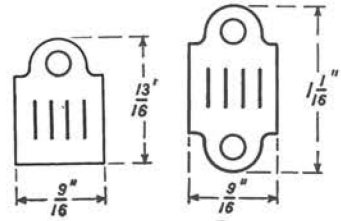
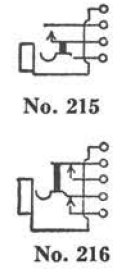


Fig. A Fig. B



No. 215

No. 216

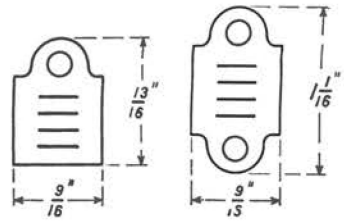
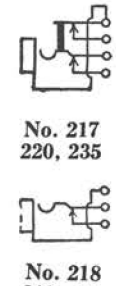
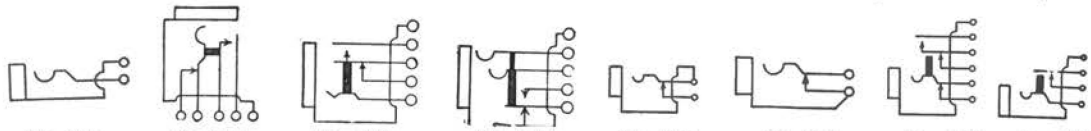


Fig. C Fig. D

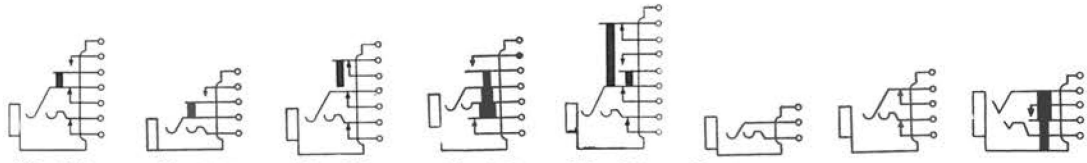


No. 217
220, 235

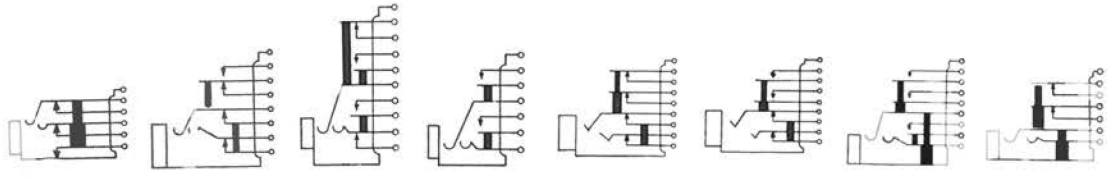
No. 218
219, 231



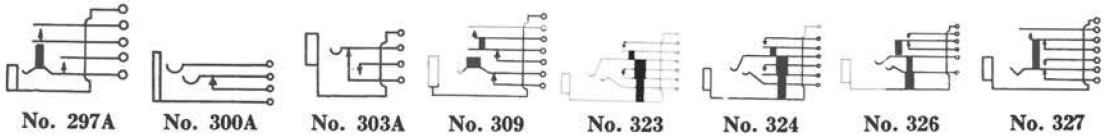
No. 223 No. 225 No. 234 No. 226 No. 227 No. 230, 233 No. 232 No. 236 No. 237



No. 240 No. 241 No. 242 No. 243 No. 245 No. 246, 238 No. 248, 239 No. 249



No. 267 No. 280 No. 284 No. 285 No. 289 No. 290 No. 291 No. 293

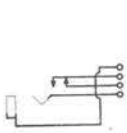


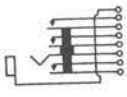
No. 297A No. 300A No. 303A No. 309 No. 323 No. 324 No. 326 No. 327

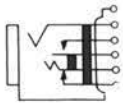
TCI Library: www.telephonecollectors.info

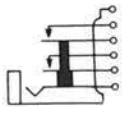
JACKS

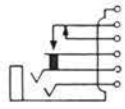
Singly Mounted—Welded Frame—*Continued*

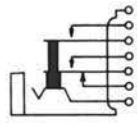

No. 353

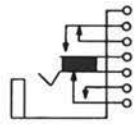

No. 355


No. 360


No. 361C


No. 387


No. 411


No. 438

The first code letter, A, B, C or D, of the code numbers of jacks listed below, indicates the number of mounting lugs (single or double) and their arrangement with respect to the plane of the springs (horizontal or vertical) as illustrated in figures A, B, C and D on the preceding page.

JACKS FOR USE WITH PLUGS Nos. 47, 116, 137, 141, 144, 151, 152, 153, 154, 209, 217, 218, 220, 221, 241, 246, 249 AND 289A

Code No.	Dimensions Page 129 Fig. No.	Mounting Centers (Inches) Horizontal	Vertical	Replaces Jack No.
(a) 215A	1	5/8	7/8	215
(a) 215B	1	5/8	1 1/8	
(a) 215C	1	7/8	5/8	
(b) 216A	1	5/8	7/8	216
(b) 216B	1	5/8	1 1/8	
(b) 216C	1	7/8	5/8	204
(b) 217A	1	5/8	7/8	217
(b) 217C	1	7/8	5/8	209
(c) (b) 217E	1	5/8	7/8	
218A	1	5/8	7/8	218
218C	1	7/8	5/8	
(d) 218E	1	5/8	7/8	
219A	1	5/8	7/8	219
219B	1	5/8	1 1/8	
219C	1	7/8	5/8	155
219D	1	1 1/8	5/8	175
220A	1	5/8	7/8	220
220C	1	7/8	5/8	154
220D	1	1 1/8	5/8	176
(e) 223A	1	5/8	7/8	221A & C, 223
(e) 223B	1	5/8	1 1/8	221B & D
(f) 225A	1	5/8	7/8	225
(f) 225B	1	5/8	1 1/8	
(f) 225C	1	7/8	5/8	156
(f) 225D	1	1 1/8	5/8	177
(g) (f) 225E	1	5/8	7/8	299A
(f) (p) 225CE	1	7/8	5/8	
(a) 226A	1	5/8	7/8	226
(a) 226C	1	7/8	5/8	
(h) 227A	2	7/8	5/8	227
(h) 227C	2	7/8	5/8	206
(j) 230A	1	5/8	7/8	
(j) 230C	1	7/8	5/8	146
(j) 231A	1	5/8	7/8	

TCI Library: www.telephonecollectors.info

JACKS

Singly Mounted—Welded Frame—*Continued*

Code No.	Dimensions Page 129 Fig. No.	Mounting Centers (Inches) Horizontal	Vertical	Replaces Jack No.
(j) 231B	1	5/8	1 1/8	
(j) 231C	1	7/8	5/8	147
(j) 231D	1	1 1/8	5/8	168
232A	1	5/8	7/8	
232B	1	5/8	1 1/8	
232C	1	7/8	5/8	148
232D	1	1 1/8	5/8	169
(k) 232E	1	5/8	7/8	
233A	1	5/8	7/8	
233B	1	5/8	1 1/8	
233C	1	7/8	5/8	149
233D	1	1 1/8	5/8	170
(L) 234A	1	5/8	7/8	
(L) 234C	1	7/8	5/8	151
(L) 234D	1	1 1/8	5/8	172
(j) 235A	1	5/8	7/8	
(j) 235C	1	7/8	5/8	153
(j) 235D	1	1 1/8	5/8	174
236A	1	23/32	7/8	
(m) 236B	1	23/32	1 1/8	
236C	1	7/8	5/8	189
236D	1	1 1/8	5/8	188
237A	1	5/8	7/8	
237C	1	7/8	5/8	185
(n) 297A	1	5/8	7/8	
303A	1	5/8	7/8	
303AK	1	5/8	7/8	
309BK	1	3/4	1 1/8	
309CK	1	7/8	5/8	
327C	1	7/8	5/8	
(q) 353BK	1	5/8	1 1/8	
355C	1	7/8	5/8	
361C	1	7/8	5/8	
411C	1	7/8	5/8	
438C	1	7/8	5/8	281A

(*) Vertical center 5/8" when mounted in double horizontal rows with lugs in opposite directions and 7/8" when mounted in double horizontal rows with lugs in the same direction.

(a) The terminal of the tip spring is arranged to accommodate two No. 16 B & S gauge wires.

(b) The terminal of the tip spring and the terminal of the spring which makes contact with it are arranged to accommodate two No. 16 B & S gauge wires.

(c) Same as No. 217A Jack except it has a nickel-silver sleeve.

(d) Same as the No. 218A Jack except equipped with platinum contacts.

(e) The terminal of the tip spring is arranged to accommodate two No. 16 B & S gauge wires.

(f) The terminals of all springs are arranged to accommodate two No. 16 B & S gauge wires.

(g) Same as the No. 225A Jack except equipped with No. 2 metal contacts.

(h) The terminals of the tip and ring springs are arranged to accommodate two No. 16 B & S gauge wires.

(j) Local contacts not designed for use in talking circuits.

(k) The same as the No. 232A Jack except equipped with platinum contacts.

(L) Normally closed contacts are not designed for use in talking circuits.

(m) Cannot be used with Nos. 137, 152, 154, 209, 217, 218, 220, 241, 246 and 249 Plugs.

(n) Same as No. 303A Jack except equipped with platinum contacts.

(o) Same as 225C except has a nickel silver sleeve.

(p) Equipped with platinum contacts.

TCI Library: www.telephonecollectors.info

JACKS

Singly Mounted—Welded Frame—*Continued*

JACKS FOR USE WITH No. 109 TYPE PLUG

Code No.	Dimensions Page 129 Fig. No.	Mounting Centers (Inches) Horizontal	Vertical	Replaces Jack No.
246A	3	5/8	7/8	126
246B	3	5/8	1 1/8	
(a) 246E	3	5/8	7/8	
248A	3	5/8	7/8	134
248B	3	5/8	1 1/8	
248D	3	1 1/8	5/8	
(b) 248E	3	5/8	7/8	
249A	3	5/8	7/8	143
249B	3	5/8	1 1/8	
323C	3	7/8	5/8	

(a) Same as the No. 246A Jack except equipped with nickel-silver sleeve.
(b) Same as the No. 248A Jack except equipped with nickel-silver sleeve.

JACKS FOR USE WITH Nos. 110, 150, 184, 202, 207 AND 213 TYPE PLUGS

Code No.	Dimensions Page 129 Fig. No.	Mounting Centers (Inches) Horizontal	Vertical	Replaces Jack No.
238A	2	5/8	7/8	159, 238C
238B	2	5/8	1 1/8	178, 238D
(a) 238E	2	5/8	1 1/8	
239A	2	5/8	7/8	160
239B	2	5/8	1 1/8	179
239C	2	7/8	5/8	260
239D	2	1 1/8	5/8	
(b) 239E	2	5/8	7/8	
240A	2	3/4	7/8	161
240B	2	3/4	1 1/8	180
240C	2	7/8	5/8	
241A	2	3/4	7/8	162
241B	2	3/4	1 1/8	181
241C	2	7/8	5/8	
241D	2	1 1/8	5/8	
242A	2	3/4	7/8	163
242B	2	3/4	1 1/8	182
242C	2	7/8	5/8	259
(c) 242CK	2	7/8	5/8	
243A	2	3/4	7/8	165
243B	2	3/4	1 1/8	184
245A	2	29/32	7/8	
245B	2	29/32	1 1/8	
245C	2	29/32	5/8	
267A	2	11/16	5/8	
280A	2	7/8	7/8	
280B	2	7/8	1 1/8	
280C	2	7/8	5/8	
284A	2	1	7/8	
284B	2	1	1 1/8	
285A	2	13/16	7/8	
285B	2	13/16	1 1/8	
285C	2	7/8	5/8	
289B	4	15/16	1 1/8	
290B	4	15/16	1 1/8	
291B	2	1	1 1/8	
293B	2	15/16	1 1/8	
300A	2	5/8	7/8	
324C	2	7/8	5/8	
326A	2	13/16	7/8	

Continued on next page

TCI Library: www.telephonecollectors.info

JACKS

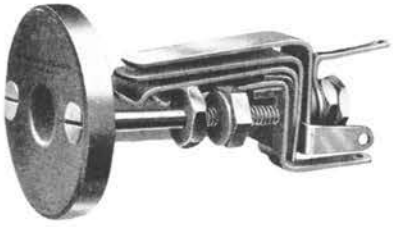
Singly Mounted—Welded Frame

JACKS FOR USE WITH Nos. 110, 150, 184, 202, 207 AND 213 TYPE PLUGS—Continued

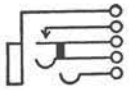
Code No.	Dimensions Page 129 Fig. No.	Mounting Centers, (Inches) Horizontal	Vertical	Replaces Jack No.
360A	2	23/32	7/8	....
360C	2	7/8	5/8	....
387B	2	13/16	1 1/8	....
387D	2	1 1/8	5/8	....

(a) Same as the No. 238B except equipped with a nickel-silver sleeve.
(b) Same as the No. 239A except equipped with a nickel-silver sleeve.
(c) Equipped with platinum contacts.

Singly Mounted—Miscellaneous Type



No. 77



No. 77

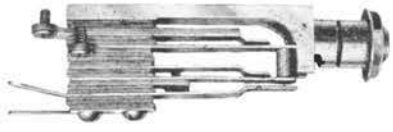


No. 78

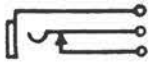
Code No.	Description
77	Operator's telephone set. Makes one separate contact when a No. 148 Plug is inserted; has tip, ring and sleeve terminals. Diameter of mounting plate 17/16".
78	Same as No. 77 Jack, except that the make contact is omitted.



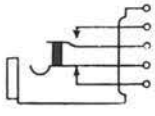
No. 200 Jack



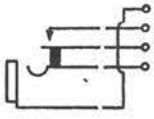
No. 224 Jack



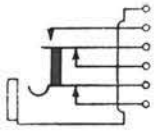
No. 200



No. 203



No. 208



No. 224

The Nos. 200, 203, 208 and 224 are fibre insulated jacks having micanite bushings. They will mount on any thickness of wood from 3/4 to 7/8 inch, the jack shank being threaded and the jack held in place by means of a nickel finished nut.

TCI Library: www.telephonecollectors.info

JACKS

Singly Mounted—Miscellaneous Type—*Continued*

Code No.	Mounting Centers (Inches) Horizontal	Vertical	Used with Plugs	Used in Jack Boxes
200	15/16	1	1A, 47 and 116	.....
203	15/16	1 1/4	1A, 47 and 116	.....
208	15/16	1 1/8	1A, 47 and 116	385, 386 and 389
224	15/16	1 15/32	1A, 47 and 116	385, 386 and 389



No. 403B Jack

No. 403B TYPE JACK

The No. 403B is intended for use in connection with portable telephones on subscribers premises and are to take care of two, three and four wire service requirements. Intended for use with No. 283B Type Plugs and the jacks are arranged so that the associated plugs can be inserted in one position only.

The No. 403B Type Jacks are four conductor jacks consisting of a phenol plastic mounting block with four inter-meshed coil spring contacts embedded therein, mounted on a bracket and fastened to a flush type switch plate 2 3/4" wide x 4 1/2" long. The bottom of the mounting block is provided with holes for cord connections. Switch plate, mounting screws and washers are furnished as loose parts.

The No. 403B Type Jacks are designed to mount in standard electrical outlet boxes having 3 9/32" mounting centers.

The No. 403B Type Jacks entirely replace the No. 403A Type and the No. 388A Type except for additions and renewals.

Code No.	Color
403B-4	Ivory
403B-6	Old Brass
403B-9	Brown
403B-14	Brushed Brass

TCI Library: www.telephonecollectors.info

JACKS

Singly Mounted—Miscellaneous Type—*Continued*

No. 404B TYPE JACK



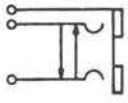
Wall Type Non-Flush Mounted Jack. Otherwise same as No. 403B Type.

Dimensions $1\frac{3}{4}$" x $1\frac{3}{4}$" x 1" deep.

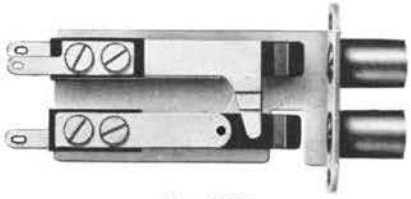
Replaces the No. 404A Type Jacks and also the No. 389A Type Jacks except for additions and renewals.

Code No.	Color
404B-4	Ivory
404B-9	Brown

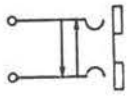
No. 410 TYPE JACK



Nos. 410A, B & D



No. 410B



No. 410C

The No. 410 Type Jack is a twin jack consisting of a single frame equipped with two sleeves. It is especially designed for all high frequency patching or testing.

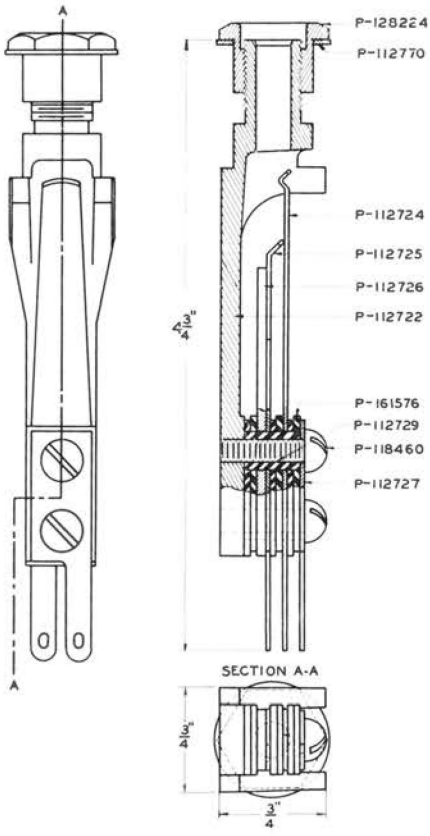
Code No.	Mounting Centers		Used with Plugs	Principal Use
	Horizontal	Vertical		
410A	$\frac{5}{8}$	$1\frac{3}{4}$	47, 241	Toll test boards.
410B	$\frac{5}{8}$	$1\frac{3}{4}$	47, 241	Toll test boards.
***410C**	$\frac{5}{8}$	$1\frac{3}{4}$	47, 305, 312	Patching and testing cable terminals in Type "K" carrier systems.
****410D**	$\frac{5}{8}$	$1\frac{3}{4}$	47, 305, 312	Type "J" carrier telephone systems.

*Same as the No. 410A except tip springs are gold plated for a distance of $\frac{1}{16}$" from the end of the lips.
**Tip springs are gold plated at the lip end.

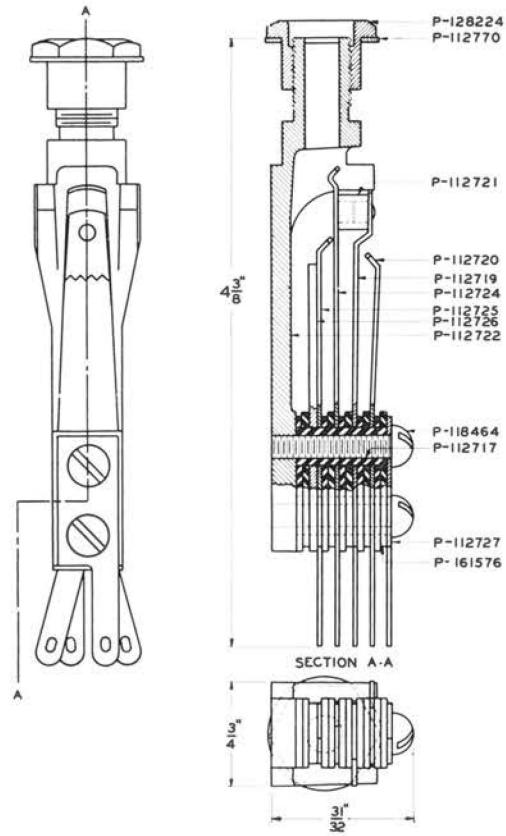
TCI Library: www.telephonecollectors.info

JACKS

Singly Mounted—Miscellaneous Type—*Continued*



No. 200 Jack



No. 203 Jack

REPLACEMENT PARTS

No. 200 Jack

Piece Part No.	No. Req.	Material	Name
P128224	1	Brass	Sleeve Nut
P112770	1	Brass	Washer
P112724	1	Ger. Silver	Tip Spring
P112725	1	Ger. Silver	Contact Spring
P112726	1	Brass	Stop Spring
P112722	1	Brass	Frame
P161576	6 and As Req.	Phenol Fibre	Insulator
P112729	2	Micanite	Bushing
P118460	2	Brass	R.H.M. Screw
P112727	1	Ger. Silver	Terminal

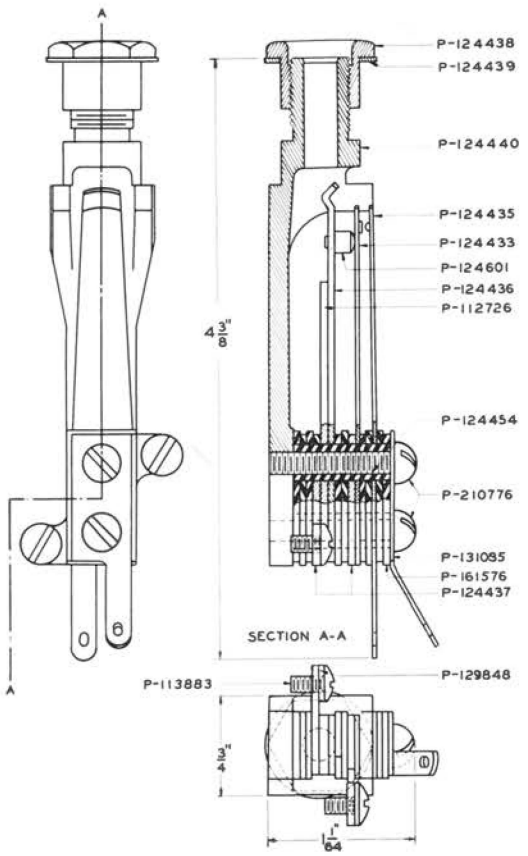
No. 203 Jack

Piece Part No.	No. Req.	Material	Name
P128224	1	Brass	Sleeve Nut
P112770	1	Brass	Washer
P112721	1	Micanite	Bushing
P112720	1	Ger. Silver	Contact Spring
P112719	1		Contact Spring and Stud
P112724	1	Ger. Silver	Tip Spring
P112725	1	Ger. Silver	Contact Spring
P112726	1	Brass	Stop Spring
P112722	1	Brass	Frame
P118464	2	Brass	R.H.M. Screw
P112717	2	Micanite	Bushing
P112727	1	Ger. Silver	Terminal
P161576	10 and As Req.	Phenol Fibre	Insulator

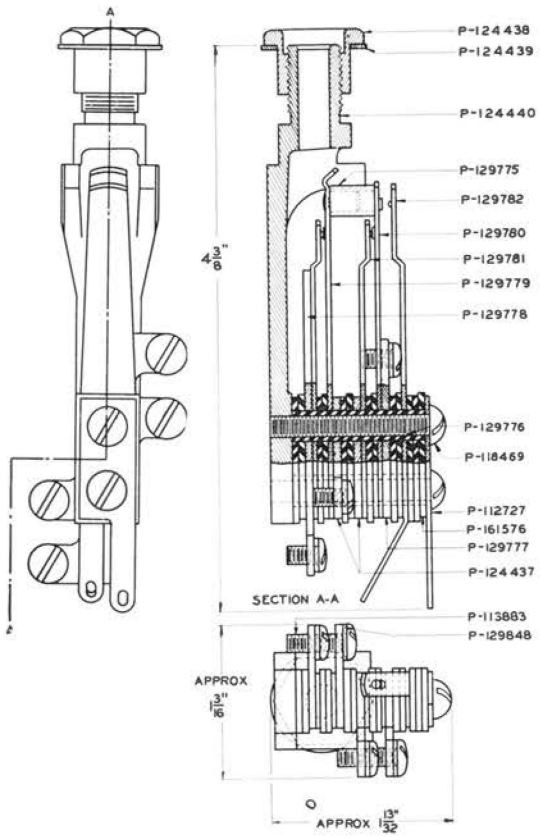
TCI Library: www.telephonecollectors.info

JACKS

Singly Mounted—Miscellaneous Type—*Continued*



No. 208 Jack



No. 224 Jack

REPLACEMENT PARTS

No. 208 JACK

Piece Part No.	No. Req.	Material	Name
P124438	1	Brass	Sleeve Nut
P124439	1	Brass	Washer
P124440	1	Brass	Frame
P124435	1		Contact Spring
P124433	1		Contact Spring
P124601	1	Hd. Rubber	Separator
P124436	1	Nickel Silver	Tip Spring
P112726	1	Brass	Stop Spring
P124454	2	Micanite	Bushing
P210776	2	Steel	R.H.M. Screw
P131035	1	Nickel Silver	Terminal
P161576	9 and As Req.	Phenol Fibre	Insulator
P124437	2	Brass	Terminal
P129848	2	Brass	Washer
P113883	2	Brass	Button H.M. Screw

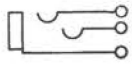
No. 224 JACK

Piece Part No.	No. Req.	Material	Name
P124438	1	Brass	Sleeve Nut
P124439	1	Brass	Washer
P124440	1	Brass	Frame
P129775	1	Micanite	Bushing (Separator)
P129782	1		Contact Spring
P129780	1		Contact Spring
P129781	2		Contact Spring
P129779	1		Tip Spring
P129778	1	Brass	Terminal
P129776	2	Micanite	Bushing
P118469	2	Brass	R.H.M. Screw
P112727	1	Ger. Silver	Terminal
P161576	13	Phenol Fibre	Insulator
P129777	1	Brass	Terminal
P124437	2	Brass	Terminal
P113883	4	Brass	Button H.M. Screw
P129848	4	Brass	Washer

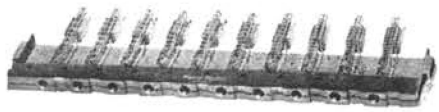
TCI Library: www.telephonecollectors.info

JACKS—*Continued*

For Mounting in Strips



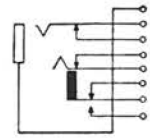
No. 49



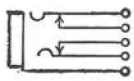
No. 110 Jack Mounting with No. 141 Jack



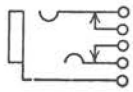
No. 359



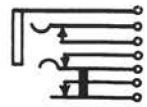
No. 362



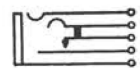
No. 50



No. 141



No. 229



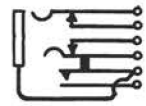
No. 295



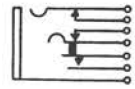
No. 92



No. 193



No. 275



No. 308

These jacks are designed for mounting in groups in jack mountings, a few of which are listed under "Jack Mountings." In ordering, the code number of the jack and the code number of the jack mountings should be given as well as the total number of jacks and mountings required.

The number of jacks to be mounted per strip should be specified and the numbering desired, or they will otherwise be furnished unnumbered.

These jacks are not supplied unmounted.

Code No.	Used with Plug No.	Used with Jack Mounting	No. per Strip
49	110	77–114–141–142 167–168	5, 10 and 20
50	110	77–141–142	5 and 10
92	109	113–138–139	10 and 20
141	110	112–115–116–131 136–137–180–181	10 and 20
193*	110	117–118–120–122 123–125–127	10 and 20
229	109	145	10
275	110	112–115–116–136 137	10 and 20
295	110	112–115–116–136 or 137	10 and 20
308	110	116–136–137	10 and 20
359	110	21	10
362	110	116–136–137	10

*The No. 119 Tool is designed for extracting and replacing the sleeve of the No. 193 Jack.

JACK FASTENERS



No. 16



No. 19

These Fasteners serve the purpose of holding either jack mountings or lamp socket mountings in place on the switchboard frame. They are made of brass.

The No. 103 Tool listed under "Tools" should be used in placing and removing Fasteners, with the exception of the No. 15 which requires a No. 64 Tool.

Code No.	Used On
15	No. 49 Jack Sections, Nos. 9C and 109A Switchboards having slotted stile strips.
16	No. 92 Jack Sections having drilled stile strips.
19	Nos. 49 and 193 Jack Sections having drilled stile strips on 1 inch centers.
21	No. 49 Jack Sections having stile strips drilled on ¾ inch centers.
25	No. 5 Toll Test Board to clamp Nos. 184 and 185 Jack Mountings and No. 262 Lamp Socket Mountings on relay racks.

TCI Library: www.telephonecollectors.info

JACK MOUNTINGS

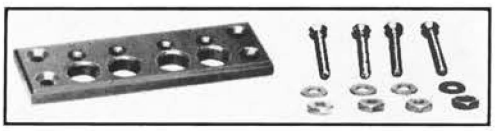
For central battery exchanges it is customary to have the multiple jack strips in each panel separated into groups of five rows by thin white holly strips. Each group consists of one hundred jacks numbered 0 to 99. Each strip has 20 jacks and is divided into four smaller groups (each having five jacks) by a distinctive mark so that an operator may readily choose the proper jack. It is also usual to furnish these Jack Mountings with a groove on the lower edge for marking the jacks for various purposes such as signifying that several adjoining jacks are connected to one private exchange, etc.

In ordering, specify the number of jacks and the Code No., the Code No. of the Jack Mounting with the number per strip, together with the numbering desired. If the holly strips are to be attached to the upper edge of any of the Jack Mountings, the order should specify which ones.

The No. 80 Jack Mounting is so designed that the twin plug of an operator's head set may be inserted in each pair of jacks. Mountings will be furnished unnumbered unless otherwise specified.



No. 80 with No. 99 Jacks



No. 199A Jack Mounting

Code No.	Used with Jack No.	Ordinarily Used with Plug No.	No. of Jacks per Strip	Plate No.	Mounting Face Dimensions (Inches) Length	Width
21	70 or 359	110	10		9 3/16	11/16
80	99 or 234	137	2		2 3/8	1 1/4
114	49	110	20		9 3/16	7/16
116	141 or 166	110	10		10 1/2	11/16
128	219C or similar Jack	47	10		6 21/32	1 1/4
129		47	20		6 21/32	2 1/8
130		47	10		6 21/32	1 1/4
135	236C	47	30	21B	21 3/4	1 3/8
136	141 or 308	110	10		11 3/16	1/2
137	141 or 308	110	10	5B	11 3/16	1/2
143	238A	110	10		9 3/16	1
184	218 or similar type	47	24	23D	16 15/16	1 1/4
185			48	127A	16 15/16	2 1/8
189A	240A	110	10		11 3/16	1 5/8
189C	284B	110	10		11 3/16	1 1/8
199A	364 or 396	47 or 137	4		3 3/4	1 1/4



No. 148 Jack Mounting

No. 148 JACK MOUNTING

This ebony finished wood box is primarily designed for mounting a No. 218A or similar type jack on the side of a desk. Two wood screws with washers are provided for fastening it in place. The overall dimensions are length 5 inches, width 2 5/16 inches and depth 1 21/32 inches.

TCI Library: www.telephonecollectors.info

JACK SPACES

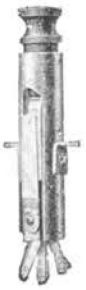


No. 63A

For further information concerning types other than those listed below, consult your nearest distributor.

Code No.	Width of Face (Ins.)	Finish	Remarks
1AK	1/64	.....	Insulator for use between No. 114 Jack Mounting and No. 102 Lamp Socket Mounting when equipped with No. 30 Lamp Sockets.
62A	1/8	Dull Black Fibre	Intended for use with No. 184 and No. 185 Jack Mounting and No. 262 Lamp Socket Mountings on relay rack.
62B	1/4	" " "	
62C	3/8	" " "	
63A	1/2	" " "	
63B	3/4	" " "	
63C	1 1/4	" " "	
63D	2 1/8	" " "	
164A	5/8	" " "	Intended to mount in place of Nos. 133, 134 and 135 Jack Mountings in Nos. 105A and B Switchboards.

KEYS



Singly Mounted Type



FIG. A MAKE ONE

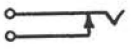


FIG. B BREAK ONE

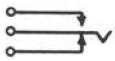


FIG. C ONE BREAK BEFORE MAKE

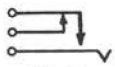


FIG. D ONE MAKE BEFORE BREAK

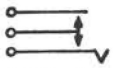
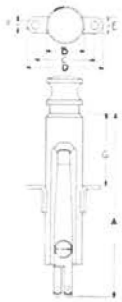


FIG. E MAKE-MAKE



Dimensional Drawing

The above contact spring arrangements represent the normal or unoperated contact spring positions of the keys listed below.

Singly Mounted Type Keys

LOCKING TYPE

(Button locks up when depressed to operated position)

Code No.	No. of Springs	Spring Arrangement	Dimensions (Inches) (See Dimension Cut) A	B	C	D	E	F	*G			
92B (1)	6	2 Sets Fig. C	3 5/32	21/32	1 1/32	1 5/16	9/32	5/32	5/8	11/16	7/8	1 1/4
92D	9	3 Sets Fig. C	3 5/32	21/32	1 1/32	1 5/16	9/32	5/32		11/16	7/8	1 1/4
92H (2)	8	1 Set Fig. A, 2 Sets Fig. C	3 5/32	21/32	1 1/32	1 5/16	9/32	5/32		11/16	7/8	1 1/4
92N (3 & 4)	3	1 Set Fig. C	3 5/32	21/32	1 1/32	1 5/16	9/32	5/32		11/16	7/8	1 1/4
92P (3 & 5)	2	1 Set Fig. A	3 5/32	21/32	1 1/32	1 5/16	9/32	5/32		11/16	7/8	1 1/4
92AA	6	2 Sets Fig. D	3 5/32	21/32	1 1/32	1 5/16	9/32	5/32		11/16	7/8	1 1/4
424B	6	3 Sets Fig. A	3 7/32	21/32	1 1/32	1 5/16	9/32	5/32		11/16	7/8	1 1/4

See notes on next page.

TCI Library: www.telephonecollectors.info

KEYS—*Continued*

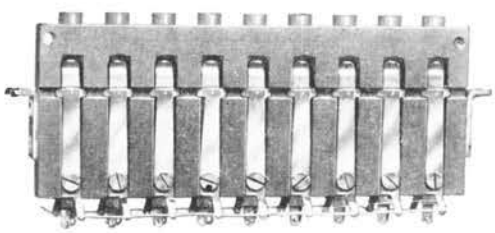
NON-LOCKING TYPE

(Regular Push Button Operation)

Code No.	No. of Springs	Spring Arrangement	Dimensions (Inches) (See Dimension Cut) A	B	C	D	E	F	*G			
92A (1)	6	2 Sets Fig. C	3 5/32	21/32	1 1/32	1 5/16	9/32	5/32	5/8	11/16	7/8	1 1/4
92J	6	1 Set Fig. A 2 Sets Fig. B	3 5/32	21/32	1 1/32	1 5/16	9/32	5/32		11/16	7/8	1 1/4
92W	6	2 Sets Fig. D	3 5/32	21/32	1 1/32	1 5/16	9/32	5/32		11/16	7/8	1 1/4
92Y (6)	4	2 Sets Fig. A	3 5/32	21/32	1 1/32	1 5/16	9/32	5/32	1/2	11/16	7/8	1 1/4
92AN	8	1 Set Fig. A 2 Sets Fig. C	3 5/32	21/32	1 1/32	1 5/16	9/32	5/32		11/16	7/8	1 1/4
188A (1)	4	2 Sets Fig. A	3 7/32	9/16	15/16	1 7/32	9/32	5/32	1/2	11/16	7/8	1 1/4
188D (1)	6	2 Sets Fig. C	3 7/32	9/16	15/16	1 7/32	9/32	5/32	1/2	11/16	7/8	1 1/4
188E (1 & 7)	4	2 Sets Fig. A	3 7/32	9/16	15/16	1 7/32	9/32	5/32	1/2		7/8	1 1/4
424A (1)	6	3 Sets Fig. A	3 7/32	21/32	1 1/32	1 5/16	9/32	5/32		11/16	7/8	1 1/4
464A	2	1 Set Fig. B	3 3/32	1/2	7/8	1 5/32	9/32	9/64			7/8	
464B	2	1 Set Fig. A	3 3/32	1/2	7/8	1 5/32	9/32	9/64			7/8	

(*) Arranged for thickness of shelf as indicated.
(1) Keys arranged for 7/8" shelf will be furnished unless otherwise specified.
(2) Top of button engraved "MON".
(3) Keys arranged for 11/16" shelf will be furnished unless otherwise specified.
(4) Top of button engraved "E".
(5) Top of button engraved "C".
(6) Keys arranged for 1/2" shelf will be furnished unless otherwise specified.
(7) Provided with a plunger retaining screw. Engraved as specified in order.

Group Mounted Type Keys



Group Mounted Type Keys

These are group mounted type, push-button, order wire keys for use with various key mountings. The keys are equipped with colored plunger buttons as noted. Key mountings are listed elsewhere.

LOCKING TYPE

Code No.	Color	No. of Springs	Spring Arrangement	Key Mounting Code Numbers
248A	Black	2	1 Set Fig. C	211, 212, 232, 260, 299 and 320

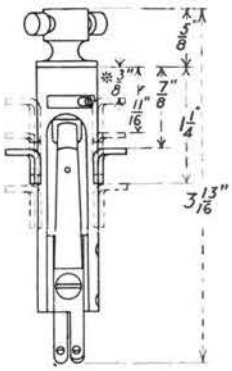
NON-LOCKING TYPE

69A	Red	4	2 Sets Fig. A	233, 235 and 347
492A	Red or Black	2	1 Set Fig. A	342, 343, 344 and 346

TCI Library: www.telephonecollectors.info

KEYS—*Continued*

Keys Equipped with Rotating Cams



Nos. 272 and 406 Types
*406C Only



Nos. 272 and 406 Types



Nos. 377 and 378 Types



375 Type



Nos. 392 and 393 Types

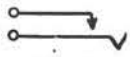


Fig. A
Make One

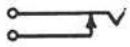


Fig. B
Break One

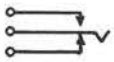


Fig. C
One Break
Before Make

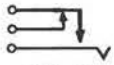


Fig. D
One Make
Before Break

The above contact spring arrangements represent the normal or unoperated spring positions of the keys listed below.

Singly mounted metal shell keys having hard rubber rotating cam which, when operated, breaks and makes contacts and locks in its operated position, otherwise having same construction as No. 92 Type Keys. Overall dimensions, length $3\frac{13}{16}$ inches, width $1\frac{5}{16}$ inches.

Code No.	No. of Springs	Contact Spring Arrangement	Key Shelf Mounting
272A	6	2 Sets Fig. C	$\frac{11}{16}$, $\frac{7}{8}$ or $1\frac{1}{4}$ inch as spec.
272C	9	3 Sets Fig. C	$\frac{11}{16}$, $\frac{7}{8}$ or $1\frac{1}{4}$ inch as spec.
272G	3	1 Set Fig. C	$\frac{11}{16}$, $\frac{7}{8}$ or $1\frac{1}{4}$ inch as spec.
406A	2	1 Set Fig. B	$\frac{3}{8}$, $\frac{11}{16}$, $\frac{7}{8}$ or $1\frac{1}{4}$ inch as spec.
406C	4	2 Sets Fig. A	
406P*	4	1 Set Fig. B 1 Set Fig. A	$\frac{11}{16}$, $\frac{7}{8}$ or $1\frac{1}{4}$ inch as spec.

* Cam engraved as specified in order. Furnished unengraved unless otherwise specified.
Note: Keys arranged for $\frac{7}{8}$ inch shelves will be furnished unless otherwise specified.

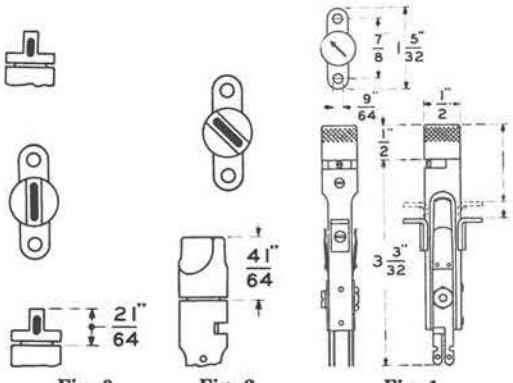
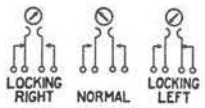


Fig. 3 Fig. 2 Fig. 1

No. 498A Key
For thickness of keyshelf, see tabulation following

Rotating Button Type Keys



Spring Arrangement No. 498A

The No. 498 Type Keys are singly mounted rotating button type keys intended for switching.

The button of the No. 498A Key is arranged to rotate 90 degrees clockwise and 90 degrees counter-clockwise from normal position. All other keys listed of the No. 498 series are arranged to rotate 90 degrees clockwise from normal position. Keys are provided with mounting screws.

TCI Library: www.telephonecollectors.info

KEYS

Rotating Button Type Keys—*Continued*

Code No.	Fig. No. (See Illus.)	Color Button	Color Engraving	Contact Spring Arrangement	Thickness of Keyshelf
498A	1	Red	Black	2 sets Fig. A	7/8"
498B	1	Red	Black	1 set Fig. A	7/8"
498C	1	Red	Black	2 sets Fig. A	7/8"
498F	1	Black	White	1 set Fig. C 1 set Fig. B	5/8" or 7/8"
498K	3	Black	White	1 set Fig. C 1 set Fig. A	7/8"
498M	1	Black	White	2 sets Fig. C	3/4" or 7/8"
498S	1	Black	White	2 sets Fig. C	13/16" or 1 1/16"
498T	1	Black	White	2 sets Fig. B	13/16" or 1 1/16"
(a) 498U	1	Black	White	2 sets Fig. B	13/16" or 1 1/16"
498Y	1	Black	White	1 set Fig. C	7/8"
498AB	1	Red	Black	1 set Fig. B	7/8"

(a) Equipped with heavy platinum contacts.

Plunger Type Keys

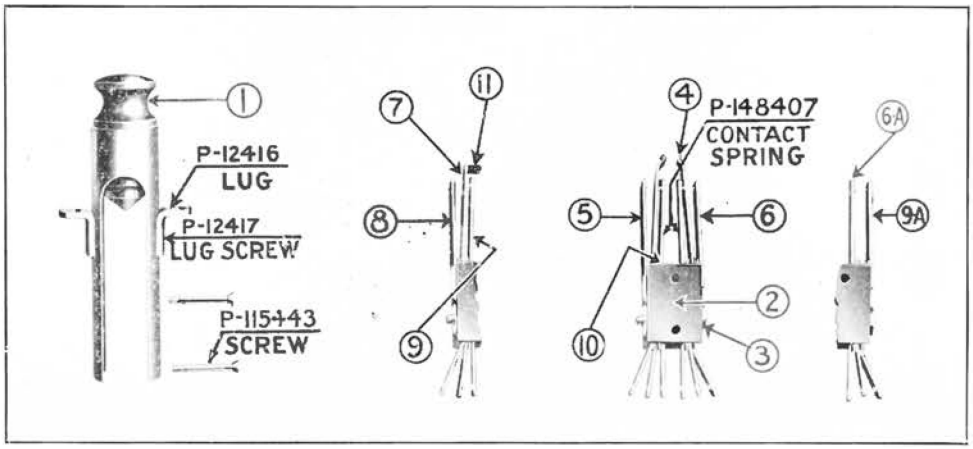
FOR USE WITH KEY LEVERS

The following plunger type keys each have but one plunger rod for its operation. The No. 375A Key is a push button type. All other type keys listed below are arranged for use with No. 6A or similar type key lever and are either locking or non-locking according to the type of key lever used. (Key levers are listed elsewhere.)

Code No.	No. of Springs	Spring Arrangement	Code No.	No. of Springs	Spring Arrangement
375A	6	2 sets Fig. C	392F	24	8 sets Fig. C
377A	4	2 sets Fig. A	393A	9	3 sets Fig. C
378A	6	2 sets Fig. C	393D	10	4 sets Fig. B 1 set Fig. A
392A	12	4 sets Fig. C			
392D	14	4 sets Fig. C 1 set Fig. B	511A	20	10 sets Fig. A
			511B	30	10 sets Fig. C

TCI Library: www.telephonecollectors.info

KEYS—*Continued*



Replacement Parts for Push Button and Rotary Lever Keys Nos. 92, 188, 272, 406, 424 and 464 Types

Key No.	(1) Plunger or Cam Black	(1) Plunger or Cam Red	(2) Spring Mounting Block	(3) Mounting Block Screw	(4) Plunger Springs	(5) Contact Springs with Mounting Block Screw Head (3) at Right	(6) & (6A) Contact Springs with Mounting Block Screw Head (3) at Right
92A	P-143908	P-166912	P-163582	P- 19297	P-148403	P-148698	P-149565
92B	P-143909	P-166906	P-163582	P- 19297	P-148403	P-148698	P-149565
92D	P-143909	P-166906	P-163585	P-111381	P-148403	P-148675	P-149565
92J	P-143908	P-166912	P-163582	P- 19297	P-149572	P-148535	.....
92R	P-143908	P-166912	P-163589	P-147982	P- 39347	P-142468	.....
92T	P-143908	P-166912	P-163582	P-113884	P-149572	.....	P-149565
92Y	P-143908	P-166912	P-163582	P- 19297	P-148253	P-148698	P-149565
188D	P- 42188	P-166918	P-163595	P- 19297	P-149332	P-149335	P-148698
188E	P-163928	P-166922	P-163595	P- 16583	P-147930	P-147931	P-147932
272A	*P-208278	*P-208279	P-163582	P-113884	P-147881	P-148372	P-148372
272C	*P-208278	*P-208279	P-163585	P-111381	P-147881	P-148675	P-148372
272D	*P-208278	*P-208279	P-163585	P-111944	P-147881	P-148675	P-148675
272G	*P-208278	*P-208279	P-163582	P- 19297	P-147881	.....	P-148372
406A	*P-208278	*P-208279	P-163582	P- 16583	.....	P-147887	P-208713
406C	*P-208407	*P-208409	P-163589	*P-113884	P-149170	P-148372	P-149170
424A	P-143908	P-166912	P-163589	P- 29620	P-148235	P-148673	P-149565
424B	P-143909	P-166906	P-163589	P- 29620	P-148235	P-149566	P-149565
424C	P-143909	P-166906	P-163589	P-111381	P-148235	P-148656	P-147902
424D	P-143908	P-166912	P-163589	P-107721	P-148235	P-149416	P-149416
464A	P-100050	P-165497	P-163595	P-100172	P-149198	P-148485	.....
464B	P-100050	P-165497	P-163595	P-121480	P-148336	P-100009	.....

Key No.	(7) Contact Springs (With Mounting Block Screw Head (3) at Right)	(8) Contact Springs (With Mounting Block Screw Head (3) at Right)	(9) and (9A) Contact Springs (With Mounting Block Screw Head (3) at Right)	(10) Hard Rubber Insulators Large	(10) Hard Rubber Insulators Small	(11) Separator
92A	.....	.....	.....	P-109716	P-109717	.....
92B	.....	.....	.....	P-109716	P-109717	.....
92D	P-148699	P-148535	P-148675	P-162422	P-162420	P-113755
92J	P-163471	.....	P-163471	P-162422	P-162420	P- 23975
92R	P-142469	P-162430	.....	P-162422	P-162420	P-142472
92T	P-163471	P-148535	.....	P-162422	P-162420	P- 23975
92Y	.....	.....	.....	P-109716	P-109717	.....
188D	.....	.....	.....	P-109716	P-109717	.....
188E	.....	.....	.....	P-109716	P-109717	.....
272A	.....	.....	.....	P-162422	P-162420	.....
272C	P-147893	P-355511	P-147894	P-162422	P-162420	P-107684
272D	P-147894	P-355511	P-147894	P-162422	P-162420	P-107684
272G	.....	.....	.....	P-162422	P-162420	.....
406A	.....	.....	.....	P-162422	P-162420	.....
406C	.....	.....	.....	P-162422	P-162420	.....
424A	P-148693	P-148537	.....	P-162422	P-162420	P- 34308
424B	P-148693	P-148537	.....	P-162422	P-162420	P- 34308
424C	P-148693	P-148537	P-147903	P-162422	P-162420	P- 34308
424D	P-149420	P-149513	P-147903	P-162422	P-162420	P- 34308
464A	.....	.....	.....	P-109716	P-109717	.....
464B	.....	.....	.....	P-109716	P-109717	.....

* **Note:** The following parts are not included with the above cams, but must be ordered separately:

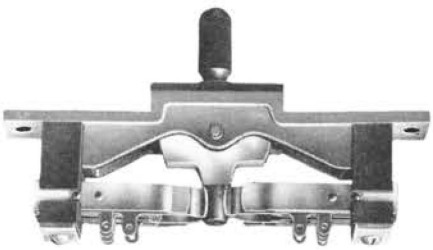
Combined Stud and Nut Assembly..... P-208280
Stop Pin..... P- 32819

TCI Library: www.telephonecollectors.info

KEYS—*Continued*

Lever Type Keys

FOR LISTENING AND RINGING SERVICE ON SWITCHBOARDS



No. 136A



Fig. A
Make One



Fig. B
Break One

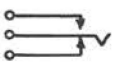


Fig. C
One Break
Before Make

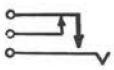


Fig. D
One Make
Before Break

The above contact spring arrangements represent the normal or unoperated contact spring positions.

Single Lever Type

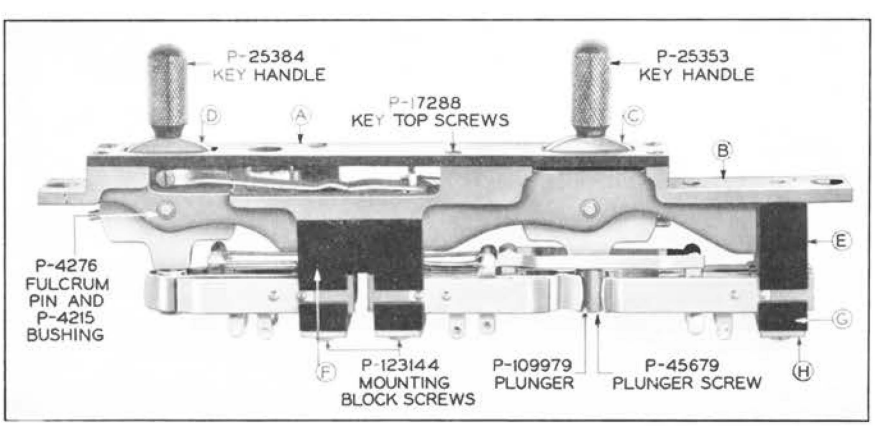
LOCKING IN BOTH POSITIONS

Size of top 1½ x ¾ inches

Code No.	No. of Contacts	Contact Spring Arrangement		Corresponding Key Space Code No.
		Position 1	Position 2	
136A, *136B	12	2 sets Fig. C	2 sets Fig. C	104B
155A	12	.....	2 sets Fig. C	104B

* This key has common strap wire connections between main springs.

KEYS AND PARTS FOR SINGLE AND DOUBLE LEVER TYPE KEYS



See listing on following page

TCI Library: www.telephonecollectors.info

KEYS

KEYS AND PARTS FOR SINGLE AND DOUBLE LEVER TYPE KEYS—*Continued*



Symbol Key No.	A Key Top Plate	B Key Base	C Lever Assembly	D Lever Assembly	E Spring Mounting Block	F Spring Mounting Block	G Spring Clamp Block	H Spring Clamp Plate	I Spring Separator
102A, B, C	P-163323	P-122755	P- 25363	P- 25360	P- 4252	P- 4305	P- 4254	P-112188	.....
103A	P-163323	P-122756	P- 25360	P- 25360	.....	P- 4305	.....	P-112188	.....
104A	P-112730	P-122757	P- 25355	.....	P- 4252	P- 4252	P- 4254	P-112188	P- 4264
110A	P-163323	P-122755	P- 25363	P- 25360	P- 33686	P- 4305	P- 33688	P-112188	.....
110D	P-163324	P-122755	P- 25363	P- 25360	P- 33547	P- 4305	P- 33548	P- 5802	.....
115A	P-122730	P-122757	P- 25354	.....	.....	P- 4252	.....	P-112188	P- 4264
118A, B	P-122734	P-122762	.....	P- 25354	.....	P- 16739	P- 4254	P-112188	.....
121A	P-122737	P-122762	P- 25356	.....	P- 4252	.....	P- 4254	P-112188	.....
123A	P-122737	P-122762	P- 25354	.....	.....	P- 16739	.....	P-112188	.....
131A	P-122737	P-122762	P- 25355	.....	P- 4252	P- 16739	P- 4254	P-112188	.....
135A, B	P-122730	P-122757	P- 25362	.....	P- 4252	P- 4252	P- 4254	P-112188	P- 4264
136A	P-122730	P-122757	P- 25358	.....	P- 4252	P- 4252	P- 4254	P-112188	P- 4264
150A	P-122731	P-122761	P- 25358	.....	P- 33547	P- 4252	P- 33548	P- 5802	.....
155A	P-122730	P-122757	P- 25356	.....	.....	P- 4252	.....	P-112188	.....
156A	P-122733	P-122762	P- 25355	P- 25354	P- 33686	P- 4305	P- 33688	P-112188	P- 33495
164A	P-122737	P-122762	P- 25355	.....	P- 33686	P- 16739	P- 33688	P-112188	.....
165A	P-122733	P-122762	P- 25354	P- 25354	.....	P- 4305	.....	P-112188	.....
177A	P-122730	P-122757	P- 25355	.....	P- 33686	P- 4252	P- 33688	P-112188	P- 4264 P-103845
178A	P-122731	P-122761	P- 25355	.....	P- 33547	P- 4252	P- 33548	P- 5802	P- 4264
184A, B	P-122730	P-122757	P- 25355	.....	P- 4252	P- 4252	P- 4254	P-112188	P- 4264
196A	P-122731	P-122761	P- 25358	.....	P- 33547	P- 4252	P- 33548	P- 5802	.....
198A	P-122730	P-122757	P- 25358	.....	P- 33686	P- 4252	P- 33688	P-112188	.....
247A	P-122730	P-122757	P- 25358	.....	P- 33686	P- 4252	P- 33548	P-112188	.....
249A	P-122730	P-122757	P- 25358	.....	P- 33686	P- 4252	P- 33688	P-112188	P- 33495
256B	P-122733	P-122762	P- 25355	P- 25354	P- 33686	P- 4305	P- 33688	P-112188	.....
264A	P-122731	P-122761	P- 25355	.....	P- 33547	P- 4252	P- 33548	P- 5802	.....
369A	P-122730	P-122757	P- 25358	.....	P- 33686	P- 4252	P- 33688	P-112188	P- 4264
415A	P-122731	P-122766	P- 25358	.....	P-129820	P-129820	P-129821	P- 8216	.....

CONTACT SPRING PARTS

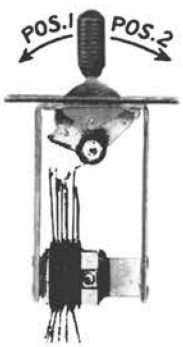
Symbol Key	J	K	L	M	N	O	P	Q	R	S	T	U
	Plunger Springs				Main Contact Springs							
104A	P-148505	P-148505	P-148508	P-148686	P-129033	P-129034	P- 17132	P- 17131	.....	.....	P-129032	P-129031
115A	.....	.....	P-148508	P-148686	.....	.....	P- 17132	P- 17131	.....	.....	P-129031	P-129032
135A, B	P-148507	P-148507	P-148508	P-148686	P- 17131	P- 17132	P- 17132	P- 17131	P-129032	P-129031	P-129032	P-129031
136A	P-131275	P-131276	P-131275	P-131276	P-129033	P-129034	P-129034	P-129033	P-131273	P-131274	P-131274	P-131273
150A	P-131275	P-131276	P-131275	P-131276	P-129033	P-129034	P-129034	P-129033	P-148444	P-148445	P-131274	P-131273
155A	P-131275	P-131276	.....	.....	P-129033	P-129034	.....	.....	P-131273	P-131274	.....	.....
156A	P-148423	P-148422	P-148508	P-148686	P-129033	P-129034	P- 17132	P- 17131	P-148365	P-148366	P-129031	P-129032
177A	P-147934	P-148505	P-148508	P-148686	P-129033	P-129034	P- 17132	P- 17131	P-148365	P-148366	P-129032	P-129031
178A	P-148423	P-148422	P-148508	P-148686	P-148367	P-148436	P- 17132	P- 17131	P-148365	P-148366	P-129031	P-129032
184A, B	P-148506	P-148506	P-148508	P-148686	P-129033	P-129034	P- 17132	P- 17131	P-131273	P-131274	P-129032	P-129031
196A	P-147937	P-147938	P-147937	P-147938	P-129033	P-129034	P-129034	P-129033	P-148361	P-148360	P- 33494	P-148361
198A	P-148422	P-148433	P-131275	P-131276	P-129033	P-129034	P-129034	P-129033	P-148365	P-148366	P-131274	P-131273
247A	P-148422	P-148513	P-131275	P-131276	P-129033	P-129034	P-129034	P-129033	P-148365	P-148366	P-131274	P-131273
249A	P-148422	P-148423	P-148422	P-148423	P- 17133	P-129034	P-129034	P-129033	P-148365	P-148366	P-148366	P-148365
264A	P-148506	P-148506	P-148508	P-148686	P-129034	P-129033	P- 17132	P- 17131	P-148444	P-148443	P-153484	P-153483
369A	P-148422	P-148513	P-148422	P-148513	P-129033	P-129034	P-129034	P-129033	P-148365	P-148366	P-148366	P-148365
415A	P-148511	P-148512	P-148512	P-148511	P-148368	P-148371	P-148371	P-148368	P-148494	P-148493	P-131274	P-131273

Note: Above key springs cannot be furnished assembled.

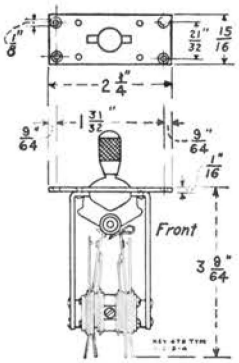
TCI Library: www.telephonecollectors.info

KEYS

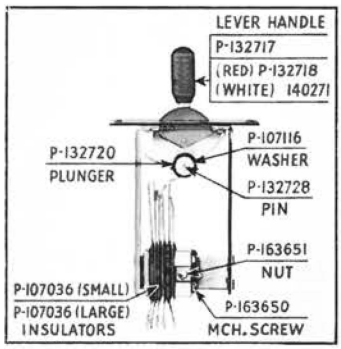
Lever Type—*Continued*



No. 479 Key Position 1 and Position 2



General Dimensions of No. 479 Type



Replacement Parts

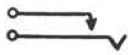


Fig. A Make One

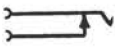


Fig. B Break One

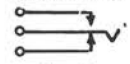


Fig. C One Break Before Make

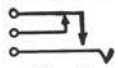


Fig. D One Make Before Break

A maximum of 14 contact springs can be included in each position of the key.

The above contact spring arrangements represent the normal or unoperated contact spring position of the keys listed below.

The No. 479 Type Keys consist essentially of spring combinations mounted in a metal frame having a black finished metal top plate 2¼ inches long by 15/16 inches wide. Four No. 4 Oval Head Wood Screws are furnished with each key for mounting. A wide variety of spring combinations are available in this type of key, some of the more popular combinations being listed below. For spring combinations other than shown, please consult your nearest distributor.

LOCKING TYPE
Locking in one or both positions

Code No.	No. of Contact Springs	Contact Spring Arrangement — Position 2 Figures A	B	C	D	Position 1 Figures A	B	C	D
479B	10	..	..	..	..	2	..	..	2
479F	5	1	..	..	1	..	..	..	..
479G	8	2	..	..	..	2	..	..	..
479H	12	..	..	..	2	..	..	..	2
479K	12	..	..	2	..	..	..	2	..
479Y*	12	..	..	2	..	..	..	2	..
479AP	5	..	..	..	..	..	1	1	..
479AU*	12	..	..	4	..	..	..	..	..
479AW	20	2	..	2	..	2	..	2	..
479AY*	6	..	..	..	..	..	..	..	2
479BN	24	..	..	4	..	..	..	4	..
479CW	18	..	..	4	..	..	..	..	2
479DU	22	..	1	3	..	..	1	3	..
479EL	12	..	..	4	..	..	..	..	..
479HL	20	1	1	2	..	1	1	2	..

* Equipped with platinum contacts.

NON-LOCKING TYPE
Non-Locking in one or both positions

Code No.	No. of Contact Springs	Contact Spring Arrangement — Position 2 Figures A	B	C	D	Position 1 Figures A	B	C	D
479AD	6	..	..	2	..	..	..	..	..
479BD	8	2	..	..	..	2	..	..	..
479CG	14	1	..	2	..	..	..	2	..
479CS	12	..	..	2	..	..	..	2	..

COMBINATION LOCKING AND NON-LOCKING TYPES

		Locking				Non-Locking			
479D	14	2	1	..	..	1	..	2	..
479E	12	2	..	..	..	1	..	2	..
479T	8	..	..	1	..	..	..	1	..
479AK	12	..	..	2	..	..	..	2	..
479CH	16	1	1	2	..	..	..	2	..
479CM*	12	..	2	..	..	1	..	..	2
479FC	14	..	1	2	..	..	..	2	..

* Equipped with platinum contacts.

TCI Library: www.telephonecollectors.info

KEYS

Lever Type Keys—*Continued*

No. 501 TYPE

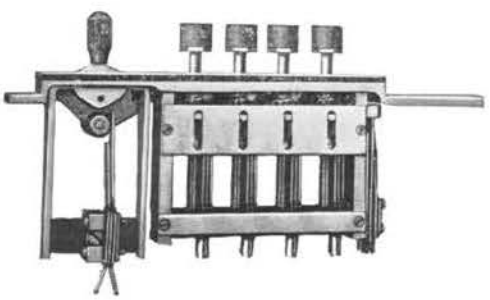
The No. 501 Key is a lever type key similar in construction to the No. 479 Type but arranged for mounting in the universal type of keyshelf; also may be used for general purposes. Keys are equipped with black handles and may be obtained with various spring combinations. Moving lever forward operates rear set of springs and vice versa. Mounting screws are furnished.

No. 510 TYPE

The No. 510 Type Keys are for use in Western Electric switchboards employing Harmonic Ringing Systems.

Replaces No. 468 Type Key for new and additional equipments.

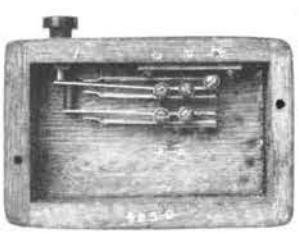
When ordering No. 468 Type Keys for replacement purposes the code number of the key now used should be given. This number is stamped on the frame of each key. Our factory will then either make shipment, or suggest a suitable No. 510 Type Key if advisable. Consists of four-party restoring type harmonic ringing key unit and a lever key unit mounted in a base $7\frac{5}{16}$ inches long having a hard rubber key top $5\frac{1}{4}$ x .840 inches.



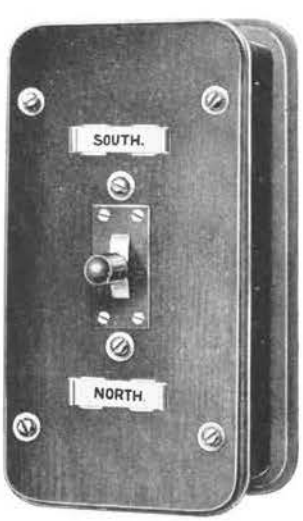
No. 510 Type Key

Code No.	Description
510A	For use as a one-way, individual, four-party manual ringing key with listening combination arranged for circuits with flashing recall on both cords.

Mounted Type Keys



No. 465C. Bottom View



No. 6000B

Code No.	Description
465A	Push button type key mounted in oak box. Size of box $4^{11}\frac{1}{16}$ x $3\frac{1}{16}$ x $1\frac{13}{32}$ inches. Non-locking. Makes three and breaks one contact when operated.
465C	Non-locking. Makes two and breaks one contact when operated. Similar to No. 465A.
465E	Non-locking. Makes three and breaks two contacts when operated. Similar to No. 465A.

No. 6000 TYPE

6000A	Wooden box equipped with one No. 377A Key and one No. 6A Key Lever. Size of box (including key lever) $4\frac{3}{4}$ x $3\frac{5}{8}$ x $1\frac{13}{16}$ inches. Locking. Makes two contacts when operated. For use in dispatcher's telephone circuits.
6000B	Wooden box (No. 334 Key Mounting) equipped with one No. 136B Key. Size of box $6\frac{1}{4}$ x $3\frac{7}{16}$ x $2\frac{11}{16}$ inches. Locking in both positions. Makes two and breaks two contacts in both positions when operated. For use in railroad service for connecting a telephone to any one of three separate lines.

TCI Library: www.telephonecollectors.info

KEYS

Mounted Type Keys—*Continued*

No. 6017 TYPE

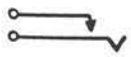


Fig. A
Make One



Fig. B
Break One

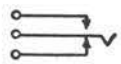


Fig. C
One Break
Before Make

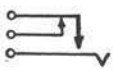
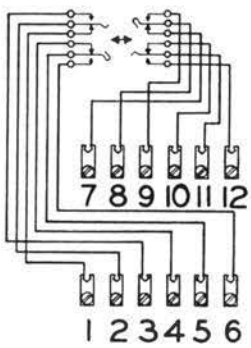
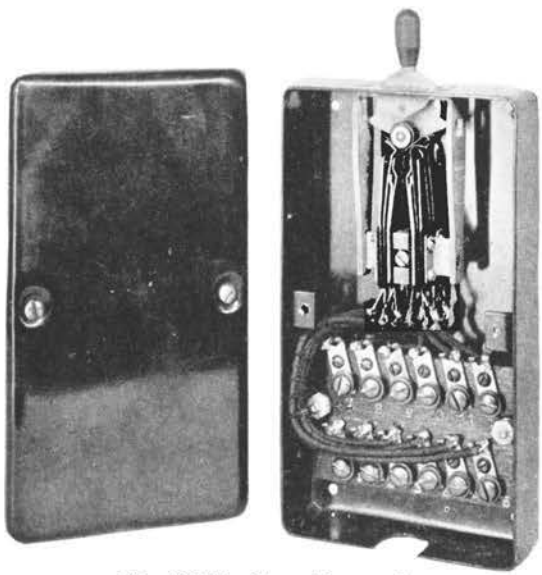


Fig. D
One Make
Before Break



Wiring Diagram Spring Combinations, No. 6017E

The above contact spring arrangements represent the normal or unoperated contact spring position of the keys listed below.



No. 6017E—Cover Removed

The No. 6017 Type Key consists of a key unit and connecting block, mounted in a black finished metal box. Overall dimensions: length 7½ inches; width 3 13/16 inches; depth 1 3/16 inches.

The No. 6017A-6017E Keys replace the No. 6002 Type Keys of corresponding code letter.

Code No.	No. of Contact Springs	Spring Combination	Contact Spring Arrangement Position 1	Position 2
6017A	8	Locking-Locking	2 sets Fig. A	2 sets Fig. A
6017B	6	Locking	2 sets Fig. C	.....
6017C	6	Non-locking	2 sets Fig. C	.....
6017D	9	Locking	.....	3 sets Fig. C
6017E	12	Locking-Locking	2 sets Fig. C	2 sets Fig. C
6017G	12	Locking	.....	2 sets Fig. C 3 sets Fig. B
6017H	10	Locking	2 sets Fig. C 2 sets Fig. A	....
6017J	12	Locking	4 sets Fig. C	.....
6017K(a)	6	Locking	2 sets Fig. C	.....
6017L	17	Locking-Locking	1 set Fig. C 1 set Fig. A	2 sets Fig. C 3 sets Fig. A
6017M	7	Non-locking	2 sets Fig. D 1 set Fig. A	....
6017P	6	Non-locking	.....	2 sets Fig. C
6017R	28	Non-locking	2 sets Fig. C 4 sets Fig. A	2 sets Fig. C 4 sets Fig. A

(a) The Nos. 6017B and 6017K Keys are the same except that on No. 6017B the No. 2GP Key Unit is adjusted for break before make, whereas on the No. 6017K the No. 2GP Key Unit is adjusted for make before break.

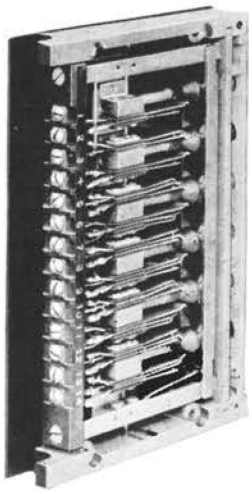
TCI Library: www.telephonecollectors.info

KEYS

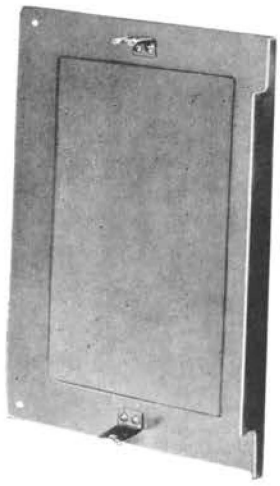
No. 6021 Type Push Button Keys



Front View

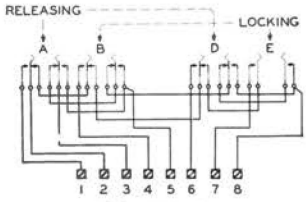


Rear View

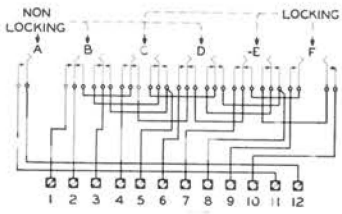


Side Removed

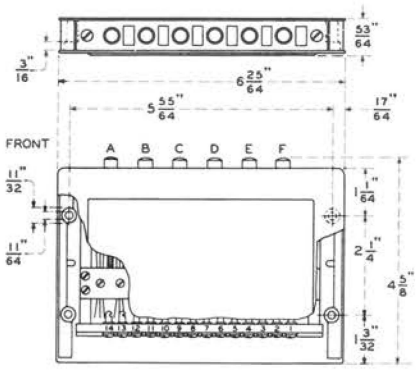
No. 6021 Type Key



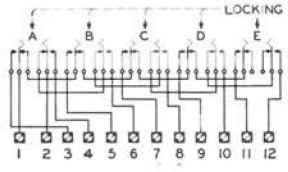
No. 6021A



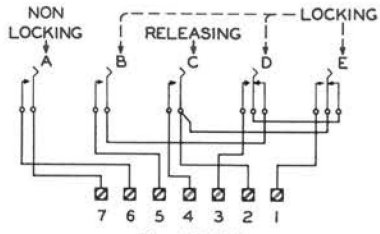
No. 6021B



Dimensional Drawing



No. 6021C



No. 6021E

The No. 6021 Type Keys are intended for use at subscriber stations in connection with various station wiring arrangements. Each key consists of a key unit enclosed in a black finished metal box and is equipped with push buttons as indicated below and a terminal strip to which the contact springs are strapped for outside connection. Designation card frame is provided above each button.

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 non-locking push buttons do not release any locked button and return to normal position.

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. Cover is attached by screws and is provided with two holes for cable entrance.

The overall dimension of the 6021 Type Key is length $6\frac{25}{64}$"; width $\frac{53}{64}$"; depth 5".

TCI Library: www.telephonecollectors.info

KEYS

No. 6021 Type—*Continued*

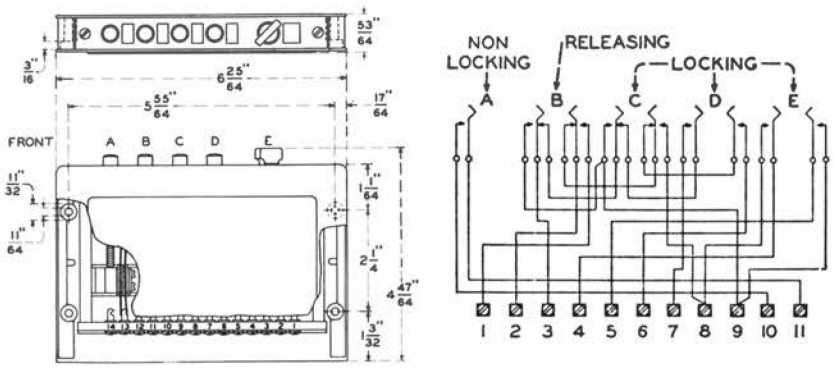
Code No.	Push Buttons A	B	C	D	E	F	Replaces No.
*6021A-3	Red	Black	—	Red	Black	—	6009A
*6021B-3	Yellow	Red	Black	Red	Black	Black	6009B
6021C-3	Black	Black	Black	Black	Black	—	6009C
6021E-3	Black	Yellow	Blue	Green	Red	—	6009E

* Equipped with platinum contacts.

No. 6022A-3 KEY



No. 6022A-3 Key



No. 6022A-3

The No. 6022A-3 Key is intended for use in subscriber stations in connection with station wiring plans. It consists of a key unit enclosed in a black finished metal box, equipped with a rotating plunger and push buttons as indicated and a terminal strip to which the contact springs are strapped for outside connection.

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 non-locking push buttons do not release any locked buttons and return to normal position. The rotating plunger in position E as illustrated above cannot be released by any other button. The box may be reversed with respect to the key unit in order to permit mounting on either the right or left side of desk or table. Has a snap-on cover and is provided with two holes for cable entrance. A designation card frame is provided above each key position.

	Push Buttons				Rotating Plunger
Code No.	A	B	C	D	E
6022A-3	Yellow	Red	Black	Black	Black

TCI Library: www.telephonecollectors.info

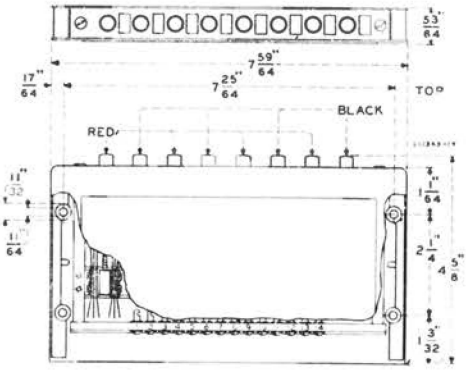
KEYS

Lever Type Keys

No. 6023A-3 KEY



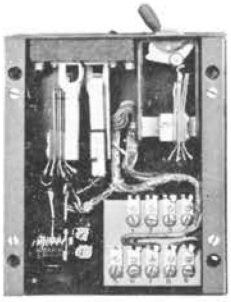
No. 6023A-3 Key



No. 6023A-3 Key

The No. 6023A-3 Key is intended for use at subscriber stations in connection with station wiring plans. It consists of a key unit enclosed in a black finished metal box and is equipped with eight push buttons and a terminal strip to which the contact springs are strapped for outside connections. The black push buttons when depressed release any operated button and remain locked in the operated position. The red buttons when depressed release any operated button but return to the normal position. A designation card frame is provided above each button. 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. It has a snap-on cover and is provided with two holes for cable entrance.

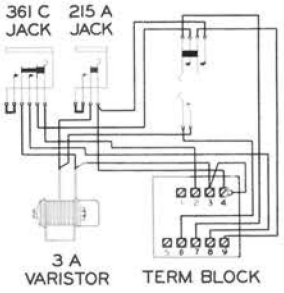
No. 6026 TYPE KEYS



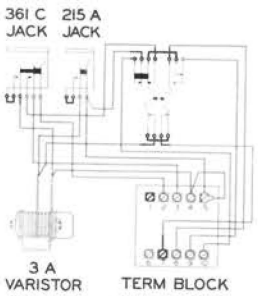
No. 6026A



No. 6026A



No. 6026A



No. 6026B

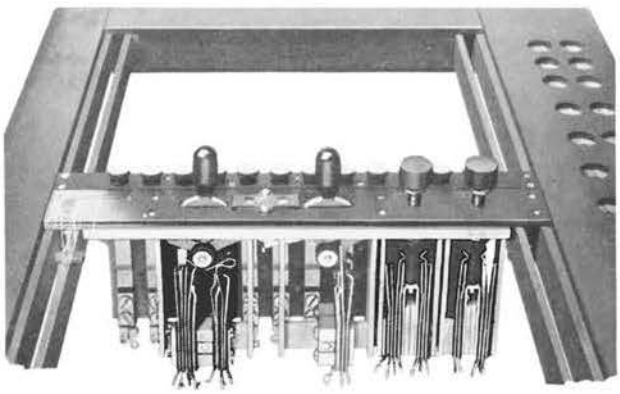
The No. 6026 Type Keys are intended for use in connection with No. 137, 289A or similar plugs in station key equipments. It consists of one key unit, one No. 361C Jack, one No. 215A Jack, one No. 3A Varistor and a terminal block to which the apparatus is wired for outside connections (see illustration). All mounted in a black finished box. The box is arranged so that the key may be mounted on either the left or right side of a desk or table with the key unit at the top. Has a snap-on cover and hole for cable entrance. Equipped with a designation strip mounted between the key unit and jacks.

Code No.	Ordinarily Used For
6026A	Talking
6026B	Talking and Holding

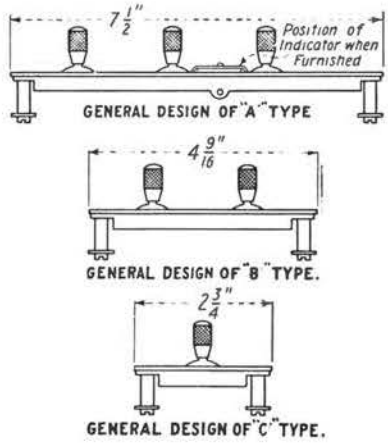
TCI Library: www.telephonecollectors.info

KEYS—*Continued*

UNIVERSAL TYPE KEYS



Nos. A2 and A3 type keys in Universal keyshelf



Universal type keys are arranged to mount in a Universal type keyshelf, which, instead of being drilled and tapped for a definite location for each key, is provided with two mounting slots running lengthwise of the keyshelf and registering with a mounting stud at each end of the key as shown in the illustration above.

In coding these Universal keys they have been divided into three types according to the length of the base: A Type, 7½ inches; B Type, 4 9/16 inches; C Type, 2¾ inches.

All of these types of keys are made in a variety of models mounting lever key units, and push button key units in varying numbers and combinations.

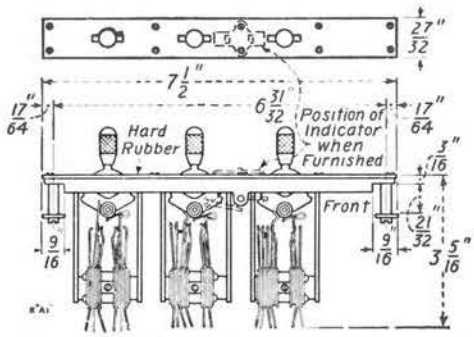
Key units are supplied mounted with or without indicators which show the last key operated. The units are manufactured in non-locking form and the lever units in both locking and non-locking arrangements.

Universal type keys of the same length base will mount in any keyshelf designed for that length of key and apparatus blanks can be supplied either to take the place of keys at non-equipped positions in the switchboard, or to fill the space remaining in the Universal keyshelf after the required keys have been placed in it.

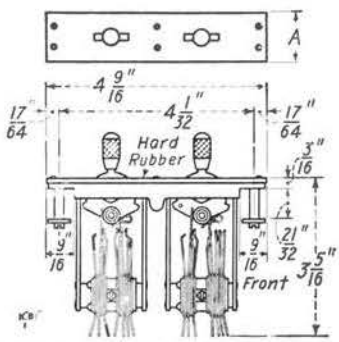
Several hundred forms of the Universal key are available, and it is, therefore, not practicable to list them all in this catalog. For detailed information regarding these keys refer to our Distributor.

The Universal type keys shown below are not complete or comprehensive and are not intended to be a guide in the selection of the actual keys required, but will serve for identification of Universal key types referred to in switchboard specifications or proposals.

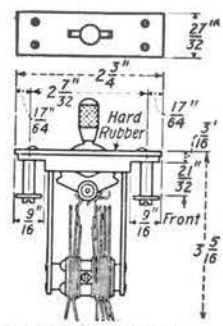
Western Electric equipment using this type of key will be found to contain complete information for obtaining replacement, and in placing orders for this purpose, or for extension to the existing equipment, the customer should refer to the code number, which is stamped upon the keys already in service, or to the information given in the drawings accompanying the equipment.



General Design and Dimensions of No. "A1A" Type



General Design and Dimensions of No. B-1C Type



General Design and Dimensions of No. C-1A Type

TCI Library: www.telephonecollectors.info

Key Levers



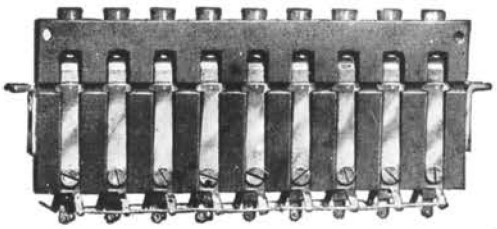
No. 6A
Key Lever

Code No.	Operated Position of Lever	Description
6A	Vertical	Used with lever type keys. Black handle, metal parts nickel plated. Locking.
14A	Horizontal	Otherwise same as No. 6A.
23A		Intended for use with the 378 or similar type keys and when so used are adapted for keyshelves ranging from $1\frac{1}{16}$" to $1\frac{7}{16}$" thick, the hard rubber plungers being cut to proper length by the installer. When the lever is in the position shown (vertical) all contacts of the key are locked. When the lever is thrown to the left, the inner contacts are closed, and when the lever is thrown to the right, the outer contacts are closed. The lever locks in all positions.



No. 23A
Key Lever

KEY MOUNTINGS



Side View of No. 69A Keys Mounted in a Typical Key Mounting

A complete line of Mountings arranged for use with any of our standard keys are manufactured; further information will be supplied upon request.

Also refer to listings under "Group Mounted Type" Keys.

Code No.	No. of Keys per Strip	Size of Face (Inches)	Keys Used with
235	10	$9\frac{3}{16}$ x $\frac{1}{2}$	69A
320	20	$10\frac{1}{2}$ x $\frac{7}{16}$	248A
338	10	$7\frac{23}{32}$ x $\frac{3}{8}$	490A
339	20	$7\frac{23}{32}$ x $\frac{3}{8}$	490A
340	10	$9\frac{3}{16}$ x 1	92 & 424 Types
342	20	$9\frac{3}{16}$ x $\frac{7}{16}$	492A
343	20	$9\frac{3}{16}$ x $\frac{1}{2}$	492A
344	10	$7\frac{23}{32}$ x $\frac{7}{16}$	492A
376A	10	$11\frac{3}{16}$ x $\frac{1}{2}$	69A
378A	5	$7\frac{23}{32}$ x $2\frac{1}{4}$	5 No. 6 Type Key Levers 5 No. 377A 5 No. 1B Number Plates

Key Spaces

These are intended for use in place of keys where the full equipment of keys for which the keyshelf is arranged is not installed or to fill in space between two keys. Key Spaces can be furnished which correspond to our standard keys in respect to the size and finish of the top.

The following list represents a few of the most commonly used Key Spaces.

Code No.	Size of Top (Inches)	Corresponding Key	Code No.	Size of Top (Inches)	Corresponding Key
A5A	$7\frac{1}{2}$ x $\frac{5}{32}$	A1 Type	A27A	$7\frac{1}{2}$ x $\frac{27}{32}$	A1 Type
A6A	$7\frac{1}{2}$ x $\frac{3}{16}$	A1 Type	B33A	$4\frac{9}{16}$ x $1\frac{1}{32}$	B1 Type
A12A	$7\frac{1}{2}$ x $\frac{3}{8}$	A1 Type	C27A	$2\frac{3}{4}$ x $\frac{27}{32}$	C Type
A13A	$7\frac{1}{2}$ x $\frac{13}{32}$	A1 Type	E24A	$11\frac{1}{16}$ x $\frac{3}{4}$	E Type

TCI Library: www.telephonecollectors.info

Key Units

No. 2 TYPE

We have available No. 2 Type Key Units which are the same in operation as the No. 479 Type Keys described on the preceding pages of this catalog, except that they are arranged for rear of panel mounting instead of face of panel mounting, the face plate as shown on the No. 479 Type Keys being omitted. For further information regarding these Key Units write our nearest distributor.

LAMPS



No. 2

The manufacture of switchboard Lamps is a highly refined and specialized art. The Western Electric Company has been active in this field for many years and the problems involved have been studied continuously and extensively in its Research and Engineering Laboratories. Methods of manufacture and special treatments for filaments have been perfected which give the Lamps long life, uniform quality and high illuminating power. A bright, dependable signal can only be obtained by the use of a Lamp of the best quality. Western Electric Lamps represent the latest development of the art and will give the highest class of service.

The following switchboard Lamps are $1\frac{3}{4}$ inches in length and .3075 inch (approximately $\frac{5}{16}$) in diameter. The bulb is made from clear glass and is tipless.

Every Lamp is tested for current consumption and for illuminating power.

Carbon Filament Lamps

These Lamps are intended for use with Nos. 12, 30, 34 or similar type lamp sockets.

Code No.	Voltage	Current Consumption—Minimum Amperes	Current Consumption—Maximum Amperes	Code No.	Voltage	Current Consumption—Minimum Amperes	Current Consumption—Maximum Amperes
2C	15	.103	.120	2K	30	.09	.12
2E	20	.09	.12	2R	18	.09	.12
2F	12	.105	.120	2T	40	.034	.046
2G	24	.075	.115	2U	24	.035	.0475
2J	24	.018	.033	2W	18	.035	.045
				2Y	48	*.025	*.035

*Current at 40 volts

Tungsten Filament Lamps

These Lamps are intended for use with Nos. 12, 30, 34 or similar type lamp sockets.

Code No.	Voltage	Current Consumption—Minimum Amperes	Current Consumption—Maximum Amperes	Replaces	Code No.	Voltage	Current Consumption—Minimum Amperes	Current Consumption—Maximum Amperes	Replaces
A1	24	.033	.045	..	E3	6	.12	.16	2N
A2	24	.075	.105	..	F1	4	.17	.21	2A
B2	18	.036	.048	..	F2	4	.27	.31	2B
C2	36	.032	.044	..	G1	8	.085	.10	2P
E1	6	.033	.045	..	G2	8	.035	.050	..
E2	6	.27	.31	2H	H1	16	.27	.31	2D
					J1	10	.23	.27	2L
					K1	30	.033	.045	..

The No. 2 Lamps are now standard for use in the No. 16 Type Lamp Sockets instead of the No. 4 Lamps previously used. To permit of this, an adapter has been designed which may be inserted into the mounting through the lamp cap opening. The No. 2 Type Lamp together with a sufficient number of adapters should be ordered when replacements of No. 4 Type Lamps are to be made. In ordering specify:

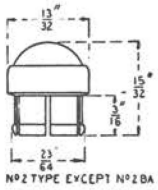
Lamp Socket Adapter per D-12279

TCI Library: www.telephonecollectors.info

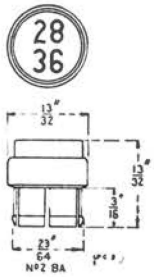
LAMP CAPS



No. 2C



No. 2 Type except No. 2 BA



The lenses of Western Electric Lamp Caps are thick and substantial, being made from specially selected and treated glass. These lenses are held firmly in place in the cap cases by spinning the edges over the lenses. The cases are slotted to give a spring fit for the cap in a socket.

No. 2 TYPE—USED WITH Nos. 12 AND 13 LAMP SOCKETS
DIAMETER 13/32 INCH

Code No.	Symbol	Color	Code No.	Symbol	Color
2A		White opalescent	2AF	U	White opalescent
2B		White opalescent	2AG	W	White opalescent
2C		White opalescent	2AH	D	White opalescent
2D		White opalescent	2AJ	B	White opalescent
2E		White opalescent	2AK	N	White opalescent
2F		White opalescent	2AL		Green opalescent
2G		White opalescent	2AM	S	White opalescent
2H		Red opalescent	2AN	V	White opalescent
2J		White opalescent	2AP	X	White opalescent
2K		White opalescent	2AS	P	White opalescent
2L		Green opalescent	2AT	T	White opalescent
2M		White opalescent	2AU		White opalescent
2N		Red opalescent	2AW		White opalescent
2P		Jeweled red	2AY		White opalescent
2R		Jeweled blue	2AZ		Red opalescent
2S		Jeweled green	2BA*	28 36	White opalescent
2T		Red opalescent	2BC	F	White opalescent
2U		Amberopalescent	2BD		White opalescent
2W		Blue opalescent	2BE		Green opalescent
2Y		Green opalescent	2BF	C	White opalescent
2Z	M	White opalescent	2BG	P	Green opalescent
2AA		Red opalescent	2BH		Green opalescent
2AB	A	White opalescent	2BJ	R	White opalescent
2AC		Red opalescent	2BN		Clear
2AE	P	Red opalescent	2BP		Clear Amber

* Numbered as specified in order. Lens has flat top.

TCI Library: www.telephonecollectors.info

LAMP CAPS—*Continued*

No. 4 Type—Used with Nos. 16, 32, 33 and 34 Lamp Sockets Overall Diameter 37/64 Inch



No. 4A

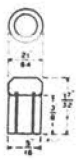
Used in the No. 34 Lamp Socket for all such special cases as pilot signals, fire alarms, supervisor's signals, and for other classes of work in which the mounting of a large signal is desirable.

Code No.	Symbol	Color	Code No.	Symbol	Color
4A	◯	White opalescent	4D	◯	Red opalescent
4B	◉	*Red opalescent	4F	◯	Green opalescent
4C	◉	*Green opalescent	4G	⊕	White opalescent
*Jeweled			4L	⊕	Green opalescent

NO. 8 TYPE



No. 8 Type, except No. 8BD



No. 8BD Type

No. 8 TYPE—USED WITH No. 30 LAMP SOCKET, OVERALL DIAMETER 21/64 INCH

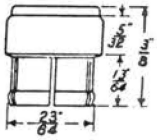
Code No.	Symbol	Color	Code No.	Symbol	Color
8A 8B	◯	White opalescent Clear	8Y	⊕	Green opalescent
8D	◯	Red opalescent	8AA	⊖	Red opalescent
8E	◉	White opalescent	8AC	◉	Red opalescent
8F	⊕	White opalescent	8AS	⊖	Green opalescent
8G	⊖	White opalescent	8AU	Ⓢ	White opalescent
8H	⊖	White opalescent	8AY	Ⓢ	White opalescent
8J	⊕	White opalescent	8BC	Ⓒ	White opalescent
8K	⊙	White opalescent	*8BD	●	White opalescent
8L	◯	Green opalescent			

* White opalescent painted black except for raised bar across the face.



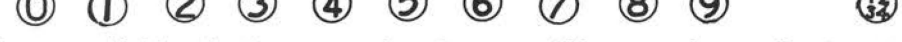
NO. 72 TYPE

No. 72 Type (Translucent Numbers on Black Background except Nos. 72L, M and N, which have White, Red and Green Backgrounds with Black Characters)



Used with Nos. 12 and 13 Type Lamp Sockets:

Code No.....	72A	72B	72C	72D	72E	72F	72G	72H	72J	72K	72L	72M	72N
Symbol.....	0	1	2	3	4	5	6	7	8	9	*	*	*



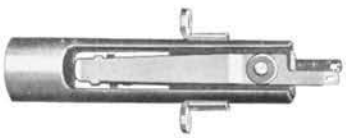
* Characters as specified in order. One, two, or three characters will be arranged on one line, four characters on two lines.

TCI Library: www.telephonecollectors.info

Lamp Sockets



No. 49A Lamp Socket



No. 34 Lamp Socket

MOUNTED SINGLY

These sockets are made of brass and are supplied with nickel silver springs, which are insulated with hard rubber. They mount individually and can, therefore, be ordered entirely separate from their mountings. The springs are insulated from the frame. The lamp mounts close to the lens of the lamp cap, giving the greatest possible amount of useful illumination.

Code No.	Used with Lamp No.	Used with Lamp Cap No.	Used with (Thickness of Shelf in Inches)
34	2	4	5/8, 7/8, 1, 1 3/16, 1 1/4, 1 13/16
47A	2	2 and 72	*35/64
**49A and 49B	2	2 and 72	7/8
50A	2	2 and 72	5/8

* Intended for use on the No. 184 and 185 Jack Mountings. Arranged to mount in the same drillings as the 217A, 242CK and similar jacks.

** 49B same as 49A except shell has a nickel plate finish.

MOUNTED IN STRIPS

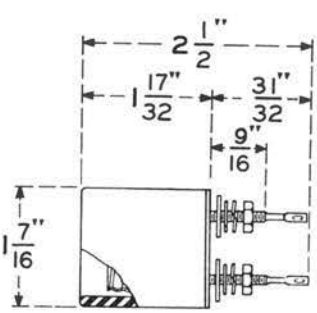
These sockets are made of brass, and have nickel silver springs with hard rubber insulation. They are equipped in mountings containing 5, 10 or 20 sockets per strip and will not be supplied as a separate item, but must be ordered in connection with lamp socket mountings. (See description under Lamp Socket Mountings.)

Code No.	Used with Lamp No.	Used with Lamp Cap No.	Suitable for Lamp Socket Mounting No.
12	2	2 and 71	101, 102, 105, 111, 122, 123, 125, 134, 136, 137, 144, 259
30	2	8	101, 102, 105, 111, 123, 125, 257, 258
43A	2	8	263, 264, 265, 290A

46A Lamp Socket



No. 46A Lamp Socket



No. 46A Lamp Socket

The No. 46A Lamp Socket is intended to mount No. 8 and similar type resistance lamps on fuse and power panels. It has a shell of insulating material with a metal inner sleeve which is threaded for medium screw base lamps. Equipped with mounting studs, nuts, washers and terminals for mounting.

TCI Library: www.telephonecollectors.info

Lamp Socket Mountings



No. 12 Lamp Socket with No. 102 Mounting



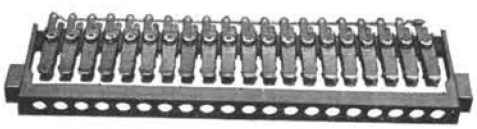
No. 12 Lamp Socket with No. 136 Mounting



No. 12 Lamp Socket with No. 137 Mounting



No. 12 Lamp Socket with No. 144 Mounting



No. 30 Lamp Socket with No. 102 Mounting



No. 43 Lamp Socket with No. 290A Mounting

In ordering specify the number of lamp sockets and the code number, together with the code number of the lamp socket mounting. The proper number of lamp sockets should be ordered to fully equip the mountings.

Lamp socket mountings when equipped with No. 12 Lamp Sockets may have numberings stamped on the face of the strip, if desired, but will be furnished unnumbered unless otherwise specified in the order.

NOT ARRANGED FOR NUMBER PLATES

Code No.	Arranged for Lamp Sockets Nos.	No. per Strip	Face Dimensions (Inches) Length	Face Dimensions (Inches) Width	Will Mount with Jack Mountings Nos.	Type of Switchboard Used with
101	12 and 30	10	$9\frac{3}{16}$	$\frac{7}{16}$	1, 2 and 21	.....
*102	12 and 30	20	$9\frac{3}{16}$	$\frac{7}{16}$	114	No. 1
111	12 and 30	10	$7\frac{23}{32}$	$\frac{7}{16}$	138 and 139	.....
136	12	10	$11\frac{3}{16}$	$\frac{7}{16}$	109 and 137	No. 1962, No. 10
137	12	20	$11\frac{3}{16}$	$\frac{7}{16}$	112	No. 1962, No. 10
144	12	20	$11\frac{3}{16}$	$\frac{7}{16}$	112	No. 1
259	12	10	$9\frac{3}{16}$	$\frac{7}{16}$	21, 77, 114, 141, 142, 143, 144, 163 and 165	.....
**290A	43A	20	$9\frac{3}{16}$	$\frac{7}{16}$	114	.....
264	43A	10	$7\frac{21}{32}$	$\frac{7}{16}$	...	.....
***265	43A	20	$7\frac{23}{32}$	$\frac{7}{16}$	113	.....

*The mounting is made of hard rubber when supplied with No. 12 Lamp Sockets and is of metal when used for No. 30 Lamp Sockets.

**When equipped with lamp sockets, lower row of terminals will be strapped and connected to terminals on end of frame. Furnished without strapping when specified.

***No. 12AR Jack Space is intended for use as insulator between No. 113 Jack Mounting and No. 265 Lamp Socket Mounting.

TCI Library: www.telephonecollectors.info

Lamp Socket Mountings—*Continued*

ARRANGED FOR NUMBER PLATES



No. 122 with No. 12 Lamp Socket



No. 134 with No. 12 Lamp Socket

Code No.	Arranged for Lamp Sockets Nos.	No. per Strip	Face Dimensions (Inches) Length	Face Dimensions (Inches) Width	Arranged for Plates Nos.	Will Mount with Jack Mountings Nos.	Type of Switchboard Used with
122	12	10	$9\frac{3}{16}$	$\frac{7}{16}$	31, 32, 59	21, 22, 141, 142	No. 1
132	12	10	$10\frac{1}{2}$	$\frac{7}{16}$	4, 31, 32, 59	116	No. 9
134	12	10	$7\frac{23}{32}$	$\frac{7}{16}$	60, 108	138, 139	No. 1

LOADING COILS

Voice Frequency



M Type
Loading Unit
Phantom Group



No. 623
Loading Coil



No. 622
Loading Coil

The economies and other service advantages derived from the use of telephone cables in place of open-wire circuits involve the acceptance of substantially increased attenuation resulting from the much higher series resistance of the cable circuits, and their higher capacitance and reduced inductance. Fortunately, and at a reasonably low cost, the cable attenuation may be largely reduced and made much more nearly uniform over a predetermined band of voice frequencies by inserting coils having uniform inductance values at regularly recurring intervals, provided that the coil inductance and spacing are properly related to each other, and to the wave length of the top frequency of the frequency band which must be transmitted efficiently. This practice, known as "loading", is accomplished by use of inductance coils called "loading coils." These loading coils are made available by the Western Electric Company for a large variety of uses.

By the application of loading coils on telephone cable circuits the unit loss can usually be reduced to the order of one-third to one-fourth the non-loaded value. The reduction is less than this amount at low frequencies and more at high frequencies, resulting in a nearly constant loss at all important voice frequencies. This contributes to the fidelity of reproduction, which is dependent largely upon a uniform transmission of the various frequencies required for intelligibility and naturalness. The loaded circuit is superior to the non-loaded circuit with respect to both loss and transmission distortion. To obtain equally good transmission performance without loading, it would be necessary to use much larger cable conductors and auxiliary equalizing networks, or to use telephone repeaters (amplifiers) and associated equipment. For example, by the use of suitable loading, a No. 19 gauge cable pair may be made as satisfactory as a non-loaded No. 10 gauge cable having 8 times as much copper.

The economic advantage of loading results in being able, for a given transmission objective, to:

1. Employ smaller, less expensive cable conductors, for a given distance.
2. Avoid the use of repeaters in many cases by extending the transmission range using a given size conductor.
3. Employ fewer repeaters in cases where repeaters would still be required.

TCI Library: www.telephonecollectors.info

LOADING COILS—*Continued*

Using a new and substantially improved magnetic core material which is the culmination of several years of intensive research and development activity, the Western Electric Company now have available for use in voice-frequency telephone circuits a complete new series of loading coils which provide a wide range of standards graded to the requirements of the different types of repeatered and non-repeatered circuits on which loading is economically advantageous.

The voice-frequency loading coils listed below are those which have been designed for use on two-wire type telephone circuits in non-quadded or quadded paper insulated cables manufactured by the Western Electric Company. They may be used on other types of cable when suitable allowance is made for the differences in cable characteristics. Other types of loading coils are available for use on program transmission circuits that require an extra wide frequency band, on four-wire telephone cable circuits operated in conjunction with telephone repeaters, and on terminal or intermediate cables occurring in open-wire lines that have carrier telephone or carrier telegraph systems working at frequencies above the voice range.

For descriptive purposes, the loading coils listed in the following table may be grouped into several classes, in terms of their relative size and their principal fields of use, as follows:

I-a "Midget", non-phantom type coils, designed primarily for fine wire, non-quadded cables, used for inter-office trunks or for long subscribers' lines and for relatively short toll circuits. These coils have an outside diameter of about 1.5 inch and an axial length of 0.65 inch.

I-b Intermediate size, non-phantom type, coils for higher grade non-quadded cables, used for long toll connecting trunks, and for short toll circuits.

II "Toll" size coils, designed and manufactured in phantom group combinations of two side-circuit coils and one phantom coil and coded and sold as LOADING UNITS; intended for use on quadded toll cables, or quadded toll entrance or intermediate cables in open-wire lines, in circuits generally operated in conjunction with telephone repeaters.

The largest of these coils are small in actual size (outside diameter about 2.6 inch and axial length about 1.0 inch). All designs are substantially smaller than the older designs which they have recently superseded as standard for new plant facilities.

The following table lists the code numbers of the individual coils and loading units which comprise the different classes as defined above, and include their nominal design inductance values.

AVAILABLE VOICE FREQUENCY LOADING COILS AND LOADING UNITS FOR TWO-WIRE TELEPHONE CIRCUITS

Class	Code No.	Nominal Inductance—Henry
I-a	622	0.088
	628	0.044
	629	0.022
I-b	623	0.135
	624	0.175
	625	0.250

		Nominal Inductances—Henry	
Class	Loading Units	Each Side Circuit	Phantom Circuit
II	M1	0.172	0.063
	M3	0.044	0.025
	M4	0.031	0.018
	M5	0.011	0.007
	M6	0.027	0.016
	M9	0.088	0.050
	M10	0.044	0.025
	M11	0.088	0.050

LOADING COIL CASES

Potting arrangements for the loading coils and units listed above are available for a wide range of installation conditions and circuit complement sizes.

TCI Library: www.telephonecollectors.info

LOADING COILS—*Continued*

When only a few loaded circuits are required, the very small size of the non-phantom type coils make it especially economical to pot these coils in individual containers suitable for installation within cable splice sleeves in aerial and underground installations. For larger groups of non-phantomed circuits, up to about 100 Class I-a coils and 25 Class I-b coils, or for locations where conditions may be difficult for "Splice Sleeve" loading, low cost types of lead sleeve cases are available. These designs are suitable for aerial and underground installations. For larger loading complements, welded steel case designs are available; these differ in finish and minor installation details, for aerial and underground installations. Also, a limited number of case designs are available for small complement office installations on apparatus racks.

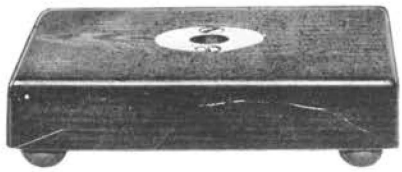
For phantom loading units, lead sleeve type case designs are available for 1, 2, and 3 loading units and welded steel designs provide for complements in the range of 4 to 80 loading units.

More complete data regarding loading coils and cases may be obtained from your nearest distributor.

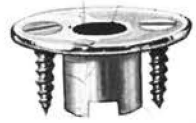
MESSAGE REGISTERS AND COUNTERS



No. 10A



No. 12004



No. 12005

Manually Operated Counters

This mechanically operated, nickel-finished message register is primarily designed for making traffic peg counts. It is $1\frac{5}{8}$ x $1\frac{1}{4}$ inches at the base, and mounts in a socket which is flush in the top of the switchboard keyshelf or the socket can be supplied mounted in a portable mahogany finished base ($2\frac{3}{4}$ x $2\frac{1}{4}$ inches). The mechanism is strong and compact. The plunger being on the top of the case, is easily located by the operator and its action when depressed clearly indicates when the register has counted. The numbers appear in white on a black background and are easily read. The counter is of the cumulative type, registering up to 9,999 and then repeating, and it cannot be reset. This non-resetting feature increases the accuracy of readings through the elimination of errors in setting and also saves time in operating.

Code No.	Description
10A	Message register (counter only).
12004	Portable base for No. 10-A Message Register.
12005	Flush socket for permanently mounting No. 10-A Message Register.

Electrically Operated Registers

No. 5 TYPE

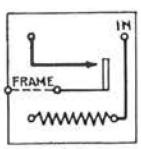


FIG. 1

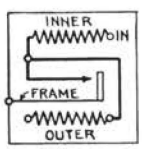
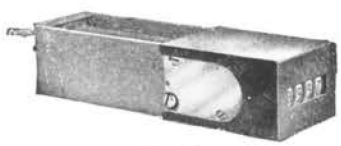


FIG. 2



No. 5L

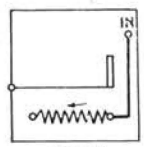


Fig. 3

Electrically operated counters, primarily designed for use in connection with special central office circuits, and usually operated by means of a push button key mounted in the switchboard keyshelf.

TCI Library: www.telephonecollectors.info

MESSAGE REGISTERS AND COUNTERS

No. 5 Type—*Continued*

The No. 5H is designed for use in making peg counts, and the No. 5L is designed for association with an individual subscriber's line, and when so used is controlled by the switchboard operator to register the number of calls over that line.

The Nos. 5H and 5L may be arranged so as to give simultaneous peg count service and individual line call registering.

These message registers mount on steel mounting plates as listed under the heading of "Mounting Plates." The overall dimensions are 5⅞ inches long (including terminals), 1 3/16 inches high and 1½ inches wide.

Code No.	Windings	Rated Resistance (Ohms)	Operates On	Non-Operate On	Wiring Fig. No.
5H	Single	.27	1.4 amps.	1.25 amps.	Fig. 1 (Frame Connection)
5L	Inner	37.5	*25.5 volts	23.9 volts	Fig. 2
	Outer	463.			
5S	Single	5.	.313 amp.	.271 amp.	Fig. 3
5AA	Single	6000.	.012 amp.	.0108 amp.	Fig. 3

* With both windings in series.

No. 12 Type

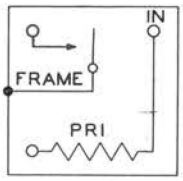


FIG. A

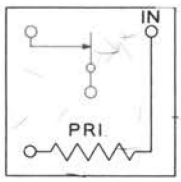


FIG. B

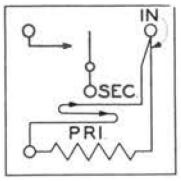


FIG. C

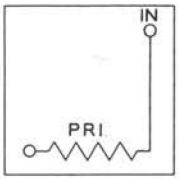


FIG. D

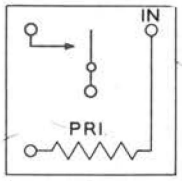
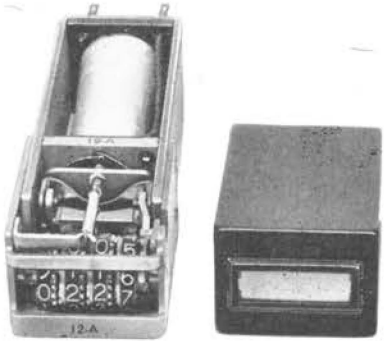


FIG. E



No. 12A Message Register

The meter end of the No. 12 Type Message Register is enclosed in a black finished cover which is provided with a glass window. It is of the heavy duty type. Insulated from the mounting plate, unless otherwise indicated by a footnote. Closest recommended mounting centers are 1⅝ inches. Equipped with heavy platinum contacts, except Nos. 12D and 12G which are not provided with contacts. The figures on the register are white on a black background.

Registers listed on the next page do not vary more than ± 5% from the rated resistance.

Code No.	Schematic Figure	Windings	Rated Resistance (Ohms)	Operate (Ampere D.C.)	Non-Operate (Ampere D.C.)	Replaces
*12A	A	Single	1000	.028	.023	5U
12B	B	Single	1000	.028	.023	5AD
12C	C	Primary	1000	—	—	5AF
		Secondary	1000	—	—	
		Pri. and Sec. in Multi.	500	.059	.043	
*12D	D	Single	1000	.028	.023	5T
12E	E	Single	1000	.028	.023	5Y
12F	E	Single	280	.036	.032	5M
*12G	D	Single	2500	.014	.012	5AB
12H	C	Primary	355	—	—	5AC
		Secondary	600	—	—	
		Pri. and Sec. in Multi.	223	.065	.055	

* Not insulated from the mounting plate.

TCI Library: www.telephonecollectors.info

MOUNTING PLATES

The term "Mounting Plates" refers in general to a milled steel plate arranged for mounting relays, resistances, condensers and message registers. These Mounting Plates must not be confused with mountings for drops, keys, lamp sockets, etc., which are listed elsewhere under their respective titles.

Plates of different capacities and sizes other than those listed can be furnished; also plates arranged for mounting combinations of relays, resistances, etc., information on which will be furnished upon request.



Punched Frame Type



Drilled Plate Type

Mounting Plates for Relays

These Plates are available in punched frame and drilled plate types. All punched frame types are equipped with dust-proof covers and are recommended when individual relay covers are not furnished or where the relays are to be mounted in an exposed location.

Punched Frame Type—Relay Mounting

Galvanized finished metal plates $1\frac{23}{32}$ inches in width, with black finished dust-proof covers $3\frac{1}{2}$ inches in depth.

Code No.	Relays per Plate	Mounting Centers	Length (Inches)	Arranged for Relays	Will Mount Interchangeably with Mtg. Plates
*737A	20	$\frac{3}{4}$	19	A, E, or F Types	600 Type
737B	10	$1\frac{1}{2}$	19	A, E, F, or R Types	600 Type
**737C	20	$\frac{3}{4}$	19	A, E, or F Types	600 Type
745A	24	$\frac{3}{4}$	$21\frac{5}{8}$	A, E, or F Types	606, 607 and 756
745B	18	1	$21\frac{5}{8}$	A, E, F, or R Types	606, 607 and 756
750A	24	$\frac{3}{4}$	23	A, E, or F Types	602 Type
750C	20	1	23	A, E, F, or R Types	602 Type
‡750F	20	1	23	A, E, F, or R Types	602 Type

*Provided with battery and ground clips.

**Same as 737A except not provided with battery and ground clips.

‡Same as 750C except not provided with cover pulls.

TCI Library: www.telephonecollectors.info

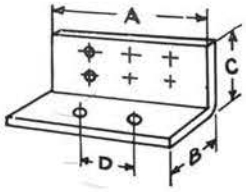
MOUNTING PLATES—*Continued*

Drilled Plate Type—Relay Mounting

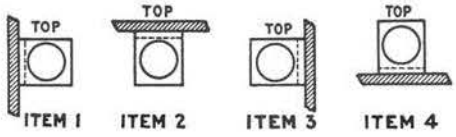
Black finished steel plates 7/32 inch thick, not equipped with covers unless otherwise indicated. When ordering, specify the exact code number of relays to be mounted, as each position must be drilled for the particular relay specified.

Code No.	Relays per Plate	Mounting (Inches) Centers	Length	Width	May be Ordered Drilled for Relays
600A	10	1 3/4	19	1 23/32	Nos. 114, 124 and 198 Types
606S	16	1 1/4	21 3/8	1 23/32	Nos. B, G, H or J Types of Relays
606T	15	1 11/32	21 5/8	1 23/32	Nos. B, G, H or J Types of Relays
*609B	12	1 3/4	23	1 23/32	Same as specified 600A
609K	17	1 1/4	23	1 23/32	Drilled as specified
627C	19	1 1/4	26	1 23/32	Drilled as specified
677Y	15	1 5/8	27	1 23/32	Same as specified for 600A. Has cover
677AB	22	1	27	1 23/32	Nos. A or E Type Relays. Has cover
823A	1	. . .	4 1/4	2 23/32	No. 18 Type Connecting Block and Nos. 209A or 215A Relays—Mounts vertically
823B	1	. . .	4 1/4	2 23/32	Nos. 209A or 215A Relays—Mounts horizontally
829D	8	1 1/4	14 1/8	1 23/32	Drilled as specified

* Recommended in place of No. 609A.



Dimensions



Drilling Positions

ANGLE TYPE—RELAY MOUNTING

Black Finished 1/8-Inch Steel

In ordering this angle type relay mounting plate, it is necessary to give the exact code numbers of both the mounting plate and relay to be mounted, also in which one of four positions the relay is to be mounted by specifying the particular item number shown above.

These plates are for all types of relays that come within the plate dimensions.

Code No.	No. of Condensers	No. of Relays	No. of Resistances	Dimensions (Inches) A	B	C	D
628A		1		1 23/32	1 25/32	2 23/32	1 1/4
628D		2		1 23/32	1 25/32	2 23/32	1 1/4
628E	1		3	1 23/32	1 25/32	3 1/4	1 1/4

Mounting Plates for Resistances

RELAY RACK TYPE

1 23/32 Inches Wide

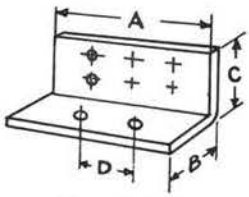
Code No.	Resistances per Plate	Mounting Centers	Length (Inches)
*601A	10	1 3/4	19
601B	20	7/8	19
**601C	40	7/16	19
644A	20	7/16	10 3/4

* Recommended in place of 601E, F and G.
** Recommended in place of No. 601D and H.

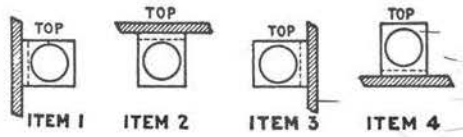
TCI Library: www.telephonecollectors.info

MOUNTING PLATES—*Continued*

Mounting Plates for Resistances—Angle Type



Dimensions



Drilling Positions

ANGLE TYPE

Black Finished—1/8-Inch Steel

In ordering this angle type resistance mounting plate, it is necessary to give the exact code numbers of both the mounting plate and resistance to be mounted, also in which one of four positions the resistance is to be mounted by specifying the particular item number as shown above.

Code No.	No. of Resistances	Centers	Dimensions (Inches) A	B	C	D	For Resistances
*629A	5	7/16	1 23/32	1 11/16	2 23/32	1 1/4	19 Type
629C	8	5/8	1 23/32	1 1/8	2 23/32	1 1/4	1 Type
682A	2	...	1 23/32	1 1/8	1 1/8	21/32	19 Type
690F	8	7/16	1 23/32	1 11/16	4	1 1/4	18 or 19 Type

* Replaces No. 629B.



Mounting Plates for Message Registers

RELAY RACK TYPE

Black Finished Steel Mounting Plates 3/8 Inch Thick and 1 1/4 Inch Wide

Code No.	Registers per Strip	Mounting (Inches) Centers	Length	Drilled for Message Registers
*628A	1	...	...	No. 5 Type as required
671B	10	1 5/8	19	No. 5H
671C	10	1 5/8	19	Nos. 5L, 5S and 5T
743A	20	1 5/8	35 3/8	Nos. 5 or 12 Types

* Recommended in place of 674A.

Miscellaneous Mounting Plates

Code No.	Type	Dimensions (Inches)	Use
943A	Drilled	27/32 x 19 x 7/16	To mount No. 57 Type Condensers.
943B	Drilled	27/32 x 19 x 7/16	Used in pairs to mount 4 No. 77 Retardation Coils per pair.
943E	Drilled	27/32 x 19 x 7/16	To mount 8 No. 62 Type Repeating Coils.
943K	Drilled	27/32 x 19 x 7/32	Used in pairs to mount 20 No. 57N or similar Type Condensers per pair.

TCI Library: www.telephonecollectors.info

NUMBER PLATES



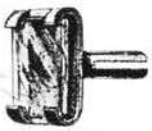
No. 1B



No. 5B



No. 23C



No. 30A

Code No.	Description	Size (Inches)	Used in
*1B	White ivory with engraved black numbers; 1/4 inch high.	5/8 diam.	Wooden stile casings and panel numbers.
*5B	Hard rubber, black face, with white engraved characters 1/8 inch high.	1/2 x 5/16	No. 110 Jack Mounting.
*12B	White ivory, black engraved characters.	3/8 diam.	Plug shelves and key shelves to designate plugs and keys.
*21B	Hard rubber, black face with white engraved characters.	11/16 x 5/16	No. 135 Jack Mounting.
*23A *23C	Aluminum plates with engraved black characters; 9/32 inch high. Escutcheon pins furnished for mounting. (1/4 inch figures when specified.)	25/32 diam.	Flat iron stile casings.
*23D	Aluminum plate with engraved black characters; 7/32 inch high. Machine screws furnished for mountings.	25/32 diam.	Stile Strips.
**30A	Metal holders with a celluloid cover; furnished with numbers printed on paper sheets of 0 to 511, inclusive, etc., as specified in order.	3/8 x 1/4	Nos. 19, 86 and 88 Jack Mountings.
**31A		7/16 x 5/16	Nos. 2, 34 and 87 Jack Mountings.
59B	Hard rubber. Black face with white characters.	7/16 x 5/16	Nos. 2, 34 and 142 Jack Mountings.



No. 21B Number Plate



General Design of No. 59B, 60D and 102A Number Plates



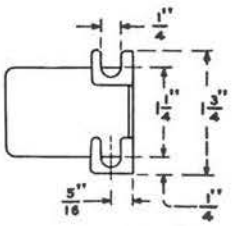
No. 107B Number Plate



No. 108A Number Plate



No. 128B Number Plate



Dimensional Drawing No. 146A Number Plate

Code No.	Description	Size (Inches)	Used in
*60D	Hard rubber, black face with white numbers; 1/8 inch high.	3/8 x 1/4	Nos. 19 and 139 Jack Mountings.
102A	Celluloid, white face with black numbers.	3/8 x 1/4	Nos. 19, 86 and 87 Jack Mountings.
*107B	Aluminum disc with a dull, satin finish and black characters; 1/4 inch high. Furnished with escutcheon pin for mounting.	19/32 Diam.	Used on stile casings.
**108A	Metal number plate arranged to hold a strip of printed figures, black finish. Numbers are furnished as printed sheets of 0 to 511, inclusive, etc.	25/32 x 15/64	No. 19 Jack Mountings.

(Continued on page 168)

TCI Library: www.telephonecollectors.info

NUMBER PLATES—*Continued*

Code No.	Description	Size (Inches)	Used in
126A	Marked "Out of Service."		No. 50 Type Coin Collectors.
*127A	Metal, satin aluminum finish, black characters.	$1\frac{13}{32}$ x $\frac{25}{32}$	No. 4 Toll Test Boards.
128B	Metal, black finish, paper card with celluloid covering.	$2\frac{11}{32}$ x $1\frac{13}{16}$	Face of transmitters.
146A	Metal plates.	$1\frac{3}{4}$ x $1\frac{3}{4}$	On relay racks to designate bay.
146B	Metal plates.	$1\frac{1}{4}$ x $1\frac{3}{4}$	On relay racks to designate bay.

*Engraved as specified in order.
**Numbers from 0 to 9727, inclusive, are furnished on printed sheets, 512 numbers to a sheet. Sheets desired must be specified in order. For number plates for machine switching, telephone dials, see listing of "Dial Number Plates."

PLUGS



No. 47



Nos. 109 & 110



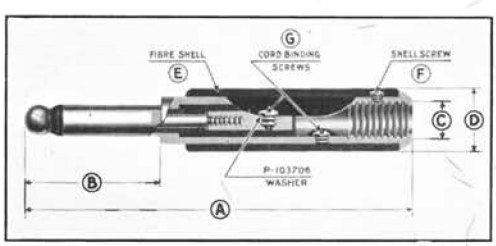
No. 151



No. 283B-4



FIG. 1



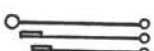


FIG. 3



FIG. 2

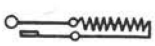


FIG. 4

Dimensions and Replacement Parts

Code No.	Conductors	Dimensions (Inches) A	B	C	D	Used with Jack Nos.	Used with Cords	Notes	Replacement Parts (See Cut) E	F	G
47A	Fig. 2	$3\frac{5}{16}$	$1\frac{3}{16}$	$\frac{5}{16}$	$\frac{9}{16}$	99, 200, 201-203, 208, 215-221, 223, 225-227, 230-237, 281, 297, 303A, 309, 327, 353, 355, 361, 364	P2A, W2F, P1B, P2T, 768	No. 47A has Red Shell	P-81335	P-82233	P-82239
47B	Fig. 2	$3\frac{5}{16}$	$1\frac{3}{16}$	$\frac{5}{16}$	$\frac{9}{16}$	99, 200, 201-203, 208, 215-221, 223, 225-227, 230-237, 281, 297, 303A, 309, 327, 353, 355, 361, 364	P2A, W2F, P1B, P2T, 768	No. 47B has Black Shell	P-110576	P-82233	P-82239
109	Fig. 3	$3\frac{1}{32}$	$1\frac{3}{32}$	$\frac{9}{32}$	$\frac{3}{8}$	92, 292, 246, 248, 249, 323, 358A		*Has Red Shell	P-81319	P-81212	P-82341
110	Fig. 3	$3\frac{7}{32}$	$1\frac{9}{64}$	$\frac{5}{16}$	$\frac{27}{64}$	49, 50, 70, 141, 259, 260, 274, 275 & Types 238-245, 267, 280, 284, 285, 289-291, 293, 295, 300, 308, 324, 326, 347, 358B, 359, 360, 362, 363, 365	S3A, S3B, P2B, W3C, W2C, S2B, S1B, P1C, P3E	*Has Red Shell	P-81200	P-81299	P-82341
116	Fig. 1	$3\frac{5}{16}$	$1\frac{3}{16}$	$\frac{5}{16}$	$\frac{9}{16}$	Same as for 47 Plug	P1A, S1A	*Has Red Shell	P-81335	P-82233	P-84662

TCI Library: www.telephonecollectors.info

PLUGS

DIMENSIONS AND REPLACEMENTS—Continued

Code No.	Conductors	Dimensions (Inches) A	B	C	D	Used with Jack Nos.	Used with Cords	Notes	Replacement Parts (See Cut) E	F	G
136	Fig. 2	3 5/16	1 3/16	3/16	9/16	99, 152	369	Has Red Shell	P-81335	P-82233	P-82239
144	Fig. 1	3 3/8	1 3/16	9/64	9/16	Same as for 47 Plug	W1A	Has Cord Bushing	P-81335	P-82233	P-84662
145	Fig. 2	3 1/4	1 3/32	19/64	7/16	32C Comb. J. and S.	S2D	.....	P-81200	P-81299	P-82341
150	....	3 7/32	1 9/64	..	27/64	Same as for 110 Plug	None required	For plugging out signals in lines in trouble	P-141633	P-124071	.....
151A 151B	....	3 19/64	1 3/16	..	35/64	Same as for 47 Plug	None required	**For plugging out signals in lines in trouble	P-141307	P-123581	.....
153D									P-236705		
153E 153F	Fig. 4	5 5/64	1 3/16	..	37/64	Same as for 47 Plug	None required	See Note 1	P-236706 P-231940	P-297959	.....
165C 165D	....	2 3/32	1 13/64	..	7/16	Same as for 47 and 116	.....	See Note 2	.....	.....	.....
221	Fig. 2	3 29/64	1 3/16	5/16	23/32	Same as for 47 Plug	Same as for 47 Plug	Has Large Red Insulating Shell	P-203388	P-82233	P-82239
258C 258D	....	1 39/64	1 9/64	..	27/64	Same as for 110 Plug	.....	258C has Black Insulating material. 258D has Red Insulating Material	.....	.....	.....
283B-4	Two							Ivory Finish	P-458292	.....	
283B-6 283B-9	Fig. 2's	1 9/32	31/64	..	..	403 and 404 Type	.....	Old Brass Finish Brown Finish	P-458293 P-258294	.....	P-237684
309	Fig. 3	3 1/16	1 3/32	9/32	3/8	Same as for 109	Same as for 109	*Long Red Shell	P-218570	P-235305	P-82341
310	Fig. 3	3 1/4	1 9/64	5/16	27/64	Same as for 110	Same as for 110	*Long Red Shell	P-218716	P-235303	P-82341
347A 347B	Fig. 2	3 13/32	1 7/32	5/16	9/16	Same as for 47 Plug	Same as for 47 Plug	Long Red Shell Long Black Shell	P-243875 P-243876	P-82233	P-82341

Note 1. The No. 153 Type Plug has a resistance unit connected so that when the plug is inserted in a jack the resistance unit is bridged across the tip and sleeve spring. The values are as follows: No. 153D Plug, 400 ohms. No. 153E Plug, 600 ohms. No. 153F Plug, 800 ohms. Intended for limiting the current in telegraph circuits. Equipped with a thermostatic device which short-circuits the tip and sleeve if the current becomes too great, thus operating the protective device in the circuit. The butt ends of the plugs are colored red, white or blue so that the different plugs can be readily identified.

Note 2. The No. 165C and D Type Plugs are the same except that the No. 165C is made of black insulating material and No. 165D is made of red insulating material. Dummy plugs for use with jacks which take the No. 47 or No. 116 Plugs.

* The following shells can be furnished for the Nos. 109, 110, 116, 309 and 310 Plugs when specified on order:

Plug No.	Gray Shell	Black Shell
109	P- 90065	P- 91143
110	P-107882	P-107872
116	.....	P-110576
309	P-237244	P-237243
310	P-237246	P-237245

** No. 151A has red shell. No. 151B has black shell.

TCI Library: www.telephonecollectors.info

PLUGS—*Continued*



No. 289B Plug

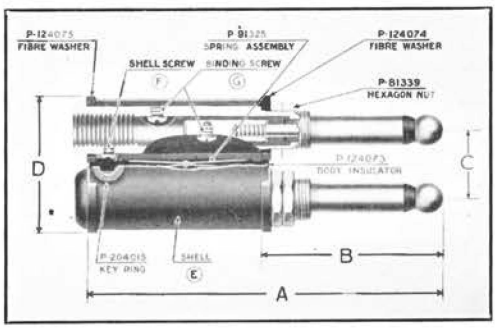


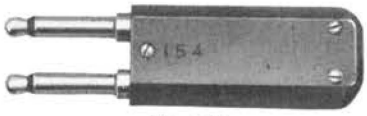
No. 154 & 289 No. 241A & B



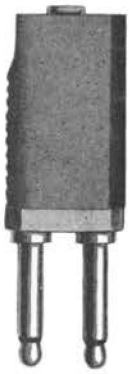
No. 241C Nos. 211 & 213 No. 217

Circuit Arrangements





No. 154



No. 241

TWIN PLUGS

When an operator's headset is to be used at a switchboard, it is convenient to wire two adjacent jacks for providing the necessary connections into the switchboard circuit and to use a twin plug in these two associated jacks in order that the necessity for the operator handling two separate plugs may be avoided. This practice is now standard and jack mountings are designed for use with jacks so mounted that a twin plug may be inserted only in those jacks which are to be used together.

These plugs include a self-adjusting or flexible feature which allows sufficient movement of each plug in the shell to take up any slight off-centering present in the jacks.

Code No.	Conductors (Each Plug)	Dimensions (Inches) A	B	C	D	Used with Jack Nos.	Used with Cords	Used for	Replacement Parts (See Cut) E	F	G
154	2	3 13/16	1 13/64	5/8	1 9/64	236A, 236C, 236D, and Types 215 to 220 incl., 223, 225, 226, 227, 230 to 235 incl., 237 and 297A	S4A	Grooved to mark proper way of inserting plug in jack	P-211353	P-82233	P-82239
186	2	1 27/32	21/32	7/16	1 19/64	19C Test Set	R2CD	19C Test Set	P-205776	P-158989	.....
211	3	3 7/32	1 9/64	7/16	15/16	49	.....	.....	P-163952	P-81299	P-82341
213	3	3 7/32	1 9/64	11/16	1 3/16	49, 50, 70, 141, 238-245, 259, 260, 274, 275, 295	.....	.....	P-164090	P-81299	P-82341
217D	2	4 13/16	1 3/16	5/8	1 9/64	215, 216, 217, 218, 223, 225, 226 and 227 Types	.....	See Note 1	P-167708	P-82233	P-82239
241A	2	3 17/32	1 13/64	5/8	1 3/16	215, 297 and similar types	P3N, S3F, P2AA, P2T, P3J (See Note 2)	Black Shell	P-206009	P-229777	.....
241B								Red Shell	P-206010		
241C								Black Shell	P-206009		
*289B	2	2 11/16	1 3/16	5/8	1 1/4	364 or similar types	L2K, L4P, P4L, P4N, L4R, L6E, L2P or similar	Operators' Telephone Sets	**	P-238143	P-82341

Note 1. The No. 217D has a resistance bridged across the tip springs. Approximate resistance 600 ohms ± .85. Engraving on end 600 NL.

**Shell half (grooved) P-371708
Shell half P-371707

Note 2. The No. 241 Type Plug has brass frames of the two plugs electrically connected to the two plug sleeves. No. 241A and B tips separately insulated. No. 241C tip conductors connected electrically.

*The No. 289B Plug replaces and is interchangeable with Nos. 137, 152, 246A and 289A Plugs so far as use with jacks is concerned, but cannot be used on cords arranged for these plugs. Used with No. 364 or similar type jack mountings on No. 199A or similar jack mountings.

TCI Library: www.telephonecollectors.info

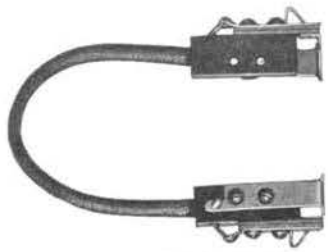
PLUGS, PLUG SEATS AND PLUG TROUBLE CAPS



No. 13 Plug Seat



No. 252A Plug



No. 135 Plug



No. 1A Trouble Cap

Test Plugs

Code No.	No. of Conductors	Ordinarily Used with Cords Nos.	Use	Notes
135	2		No. 76 Heat Coils and Nos. 89, 1168 and 1169 Type Protectors.	Consists of two receptacles for holding heat coil and flexible leads for cross-connection. Used to reverse a subscriber's line with respect to the central office battery.
234	4	838 841 P2R P2S	No. 36 or similar type terminal strips.	Used in making connections with terminal strips on intermediate distributing frames. Replaces No. 132.
252A	4	W4N W4P	Main distributing frames in manual and dial offices.	Intended for use with Nos. W4N and W4P Cords as Test Plugs in connection with protectors at main frames. Has "T" stamped on both sides of Plug. Replaces Nos. 206 and 225 Plugs.
252B	4	W4N W4P	Same as No. 252A.	Same as No. 252A, except that it has "R" stamped on both sides of Plug.

Plug Seats

These red fibre plug seats are furnished complete with No. 4 Round Head Wood Screws, $\frac{1}{2}$ inch long, for mounting.

Code No.	Mount on Center (Inches)	Used with Plug Nos.
12	$\frac{3}{4}$	110
13	$\frac{3}{4}$	109
15	$\frac{27}{32}$	47
16	....	43, 141, 209, 241
17	....	133, 212

Plug Trouble Caps

Split fibre tubes, 1 inch long, which will slip over plugs. They are used as temporary markers for cord circuits in which there is trouble.

Code No.	Color	Used with Plug Nos.
1A	Black	109
1B	Red	109
2A	Black	47 and 110
2B	Red	47 and 110

TCI Library: www.telephonecollectors.info

PROTECTORS



No. 62C Protector



No. 98A Protector

Telephone Set Protection

Protection of central office and magneto telephone sets against lightning and abnormal electric currents is an important feature of telephone practice. The Protector must be simple in construction so that the parts can be easily replaced when necessary, and reliable in operation in order that it may give the desired protection when needed. Western Electric fuses act at one and one-half times their rated current values and open space cut-out Protectors will discharge across their air-gaps at a definite voltage value because of the accurate manufacture of the Protector Blocks.

The wide application of carbon block cut-out (air-gap) Protectors makes particularly important the use of Protector Blocks requiring minimum attention for renewal and cleaning. The following types of Protectors are designed to reduce maintenance and give the highest grade of protective service. Each Protector has a porcelain base and is equipped with our new design Nos. 26 and 27 Protector Blocks. These Blocks embody several advances in construction and operation as described in detail under "Protector Blocks."

Code No.	Line Protection	Consists of: Protector Mountings	Consists of: Protector Blocks	Consists of: Fuses	Protects Central Battery and Magneto Telephones Against
62C	1-Wire	1 No. 50C	.....	*{1 No. 35A / 1⅓ Amp.}	Abnormal currents.
62D	1-Wire	1 No. 22B	.....	**{1 No. 24A / 1⅓ Amp.}	Abnormal currents.
98A	2-Wire	.....	{2 No. 26 / 2 No. 27}	2 No. 11C	{High potential (lightning) and abnormal current. Replaces No. 58AP.
98B	2-Wire	.....	{2 No. 26 / 2 No. 30}	2 No. 11C	{High potential (lightning) and abnormal current. Replaces No. 58BP.

* Furnished with a No. 35C (2 Amp.) or a No. 35F (½ Amp.) fuse if so specified.

** Furnished with a No. 24A (½ Amp.) or a No. 24C (2 Amp.) fuse if so specified.

TCI Library: www.telephonecollectors.info

PROTECTORS—*Continued*

No. 99A PROTECTOR

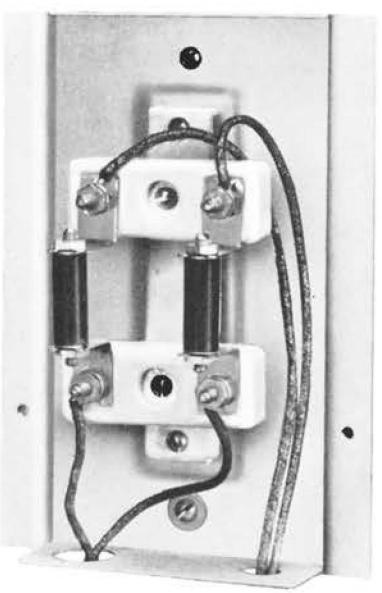


No. 99A Protector

The No. 99A Protector consists of three carbon electrodes mounted on a porcelain base and enclosed in a metal case. It is intended for use with open wire subscriber lines on higher voltage joint use poles, or as lightning protection for one pair of conductors having high dielectric insulation such as "U" bridle wire.

No. 1093AW PROTECTOR

The No. 1093AW Protector consists of a No. 98A Protector assembled in a No. 93A Protector Mounting. It is intended for use as a station protector where outside installation is required. Provides protection for one pair of wires.



No. 1093AW Protector



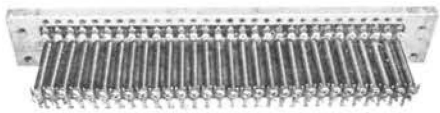
No. 1094A Protector

No. 1094A PROTECTOR

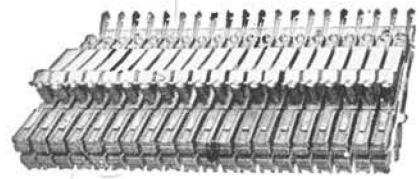
The No. 1094A Protector consists of a formed galvanized sheet steel base 4 5/8" long by 1" wide on which are mounted two No. 94A Protector Mountings and two No. 60D Fuses. It is intended for limiting the current through No. 320 Type telephone sets when these sets are used in explosive atmospheres. The overall dimensions of the assembled protector are approximately 4 5/8" long by 2 1/2" wide by 2 3/16" high.

TCI Library: www.telephonecollectors.info

PROTECTORS—*Continued*



No. 1078A Protector



20 No. 1269A

Telephone Exchange Protection

These Protectors are designed for central battery and local battery exchange protection against high potential (lightning), abnormal and sneak currents, in accordance with the type selected.

No. 1078 TYPE PROTECTOR

The No. 1078A Protector consists of a fuse mounting so designed that the fuses are mounted on $^{11}/_{16}$ inch centers. It is supplied in standard lengths of 42, 62, 82 and 102 Protectors per strip. The base of the Protector Mounting is designed to act as a fanning strip.

In ordering, the number of Protectors per strip should be specified, and if they are to be mounted on a distributing frame, sufficient information for the drilling desired should be given. If the frame is one which we have furnished and installed, the name of the exchange and the location of the Protectors on the frame will be sufficient.

Code No.	Consists of
1078A	1 No. 7A Fuse (7 ampere) and No. 78A Protector Mounting. (For one wire protection.) Specify number of Protectors per strip required.

No. 1177A AND B TYPE PROTECTORS

The No. 1177A and B Type Protectors are high potential and sneak current arresters designed to mount on "B" Type main distributing frames in common battery offices. The No. 1177A Protectors are furnished only in lengths of 101 Protectors per strip on $^{3}/_{8}$ inch centers. The No. 1177B Protectors are furnished only in lengths of 51 Protectors per strip on $^{3}/_{8}$ inch centers.

Code No.	Consists of		
	Protector Mounting	Protector Blocks	Heat Coils
1177A	1 No. 77A	2 No. 28, 2 No. 29	2 No. 76A
1177B	1 No. 77B	2 No. 28, 2 No. 29	2 No. 76A

No. 1268 AND No. 1269 TYPE PROTECTORS

Each Protector provides for one pair of wires. The No. 1268 Type Protector terminals are so arranged that the line wires may be connected directly at one side of the Protector and jumpers, extending to a switchboard cable terminal block connected to the terminals on the other side of the mounting. These units are used on Type "B" main distributing frames.

The No. 1269 Type is similar to the No. 1268, except that the terminals are arranged for connecting the switchboard cable wires directly to one side, jumpers being used from the other side of the Protector to an outside line terminal block. These units are used on Type "A" main distributing frames.

The Nos. 1268 and 1269 Type Protectors may be mounted on walls or partitions by means of the No. 736A Mounting Plate. Where required, one or more of these mounting plates should be ordered as indicated under "Protector Mounting Plates."

Code No.	Furnished Only in Strips	Consists of		
		Protector Mounting	Protector Blocks	Heat Coils
1268A	20 Protectors	1 No. 68A	2 No. 26, 2 No. 27	2 No. 76A
1268B	23 Protectors	1 No. 68B	2 No. 26, 2 No. 27	2 No. 76A
1269A	20 Protectors	1 No. 69A	2 No. 26, 2 No. 27	2 No. 76A

TCI Library: www.telephonecollectors.info

PROTECTORS—*Continued*

86 Type

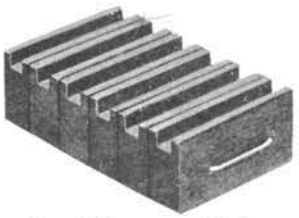
Large Carbon Block Protector

The No. 86B (Large Carbon Block) Protector consists of a porcelain base having two-line terminals and one ground terminal, three large carbon blocks (which are so placed as to form a high voltage protector) and a metal cover. It is designed to protect telephone lines against high potential and abnormal currents.



No. 86B Protector Cover Removed

Protector Blocks



No. 15 Protector Blocks

The No. 15 Protector Block is a paraffined wood dummy which is used with Nos. 44, 47 and 77A Protector Mountings.

Code No.	Description
15	Paraffined wood dummy



No. 26 Protector Block



No. 27 Protector Block



Nos. 26 and 27 Protector Blocks (Full Size)

The following Protector Blocks are of new design and embody several advances in construction which greatly reduce maintenance costs and provide better telephone service through fewer interruptions of operation. They are used together without a separator (protector mica) and form an open space cut-out which will afford the highest grade of protection against high potentials due to lightning.

The No. 26 Protector Block is a solid piece of hard non-dusting carbon. The face of the block is especially ground to present a smooth surface. The No. 26 Protector Block is mounted on the ground side of the protector mounting.

The No. 27 Protector Block consists of a porcelain frame with a countersunk hard carbon plug which is fastened in place with low temperature fusing cement. The surface of the frame which bears against the No. 26 Block, when assembled in a mounting, is finished by grinding. The air gap between the carbon insert in the No. 27 Block and the face of the No. 26 Block is held to close limits by this grinding process and the consistent operation of the cut-outs at the proper voltage is thereby insured.

Ordinary lightning discharges will cause an arc across the air gap between the carbon blocks but will not heat them sufficiently to melt the cement used for holding the carbon plug in place. A cross with an electric light or power line, however, will cause a discharge or repeated discharges of such duration that the heating of the carbon insert of the No. 27 Blocks will melt the cement holding it in place and allow the mounting spring to push it into direct contact with the No. 26 Block, thus permanently grounding the line.

TCI Library: www.telephonecollectors.info

PROTECTOR BLOCKS

Nos. 26 AND 27 TYPES—Continued

The Nos. 26 and 27 Protector Blocks are interchangeable with the old combinations of Nos. 1 and 2 Protector Blocks and No. 3 Protector Mica both at subscribers' stations and central offices, and are therefore available for improving protective equipment already in service. This practice will result in fewer visits of the trouble man. All orders for replacements of Nos. 1 and 2 Protector Blocks and No. 3 Protector Micas should specify the Nos. 26 and 27 Protector Blocks; no separator (protector mica) is needed for the new design of block.

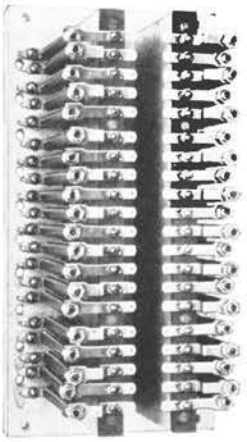
The Nos. 28 and 29 Protector Blocks are similar in construction to the Nos. 26 and 27 except that they are arranged for use in central office protectors with $\frac{3}{8}$″ centers instead of $\frac{1}{2}$″.

In addition to the above replacements, tests on cable protection have shown that Nos. 26 and 30 Protector Blocks require less attention and replacement due to grounded blocks than the Nos. 19 and 20 Blocks with the regulation .010-inch mica separators; therefore, the Nos. 26 and 30 Protector Blocks can be used advantageously wherever metal (Nos. 19 and 20) blocks are now used.

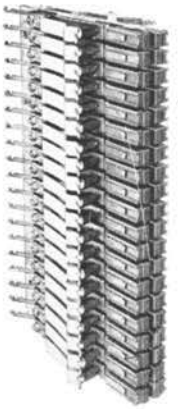
Code No.	Description	Color	Use
26	Carbon block	.....	With No. 27 and 30 Type protector blocks.
27	Porcelain frame with carbon insert	White	In central office protectors on $\frac{1}{2}$″ centers and in sub-station protectors.
28	Carbon block	.....	With No. 29 Protector Blocks.
29	Porcelain frame with carbon insert	White	In central office protectors on $\frac{3}{8}$″ centers.
30	Porcelain frame with carbon insert	Blue	In cable protector.

PROTECTOR GROUPS

For Distributing Frames



No. 1435U



No. 1269A Protector



No. 1435R & Y

TCI Library: www.telephonecollectors.info

PROTECTOR GROUPS

For Distributing Frames—*Continued*

These protector groups may be used for either central battery or magneto telephone lines and are intended to mount on various types of distributing frames and cabinets listed elsewhere in this catalog.

They consist of a mounting of proper size, for attaching to the frame, on which the protector apparatus as listed below is assembled:

Code No.	Protects	Consists of	Used with Distributing Frame No.
1435R	25 metallic outside lines where fuse protection is unnecessary.	A terminal strip mounted on a base which serves as a fanning strip.	1420B 1430D, E, F 1431A
1435U	20 metallic outside lines against abnormal current.	20 protectors equipped with No. 7A Fuses and mounted on a base which serves as a fanning strip.	
1435W	20 metallic inside lines against high potential and sneak currents.	20 No. 1269A Protectors mounted on a base which serves as a fanning strip.	1420B 1430D, E, F 1431A
1435Y	20 metallic outside lines where fuse protection is unnecessary.	A terminal strip mounted on a base which serves as a fanning strip.	

PROTECTOR MOUNTINGS



No. 84A Protector Mounting



No. 93AW Protector Mounting



No. 83A Protector Mounting

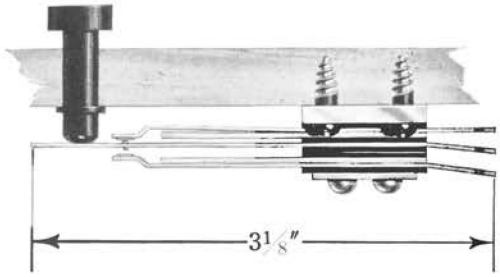
Code No.	Description
22B	Porcelain base equipped with clips and screws for holding a No. 24 or similar type fuse. Part of the No. 62D Protector.
50C	Porcelain base equipped with clips and screws for holding a No. 35A Fuse. Part of the No. 62C Protector.
68A	For use in mounting protective apparatus of No. 1168 Type Protectors. Furnished only in one length, 20 per strip. Arranged to mount on "B" Type Distributing Frames and No. 736A Mounting Plates.
68B	Same as No. 68A except furnished in only one length, 23 per strip.
69A	For use in mounting protective apparatus of No. 1269A Type Protectors. Arranged to mount on "A" Type Distributing Frames and No. 736A Mounting Plates. Furnished only in one length, 20 per strip.
77A	For mounting protective apparatus of (101) No. 1177A Protectors.
77B	For mounting protective apparatus of (51) No. 1177B Protectors.
78A	For mounting protective apparatus of No. 1078A Protectors.

TCI Library: www.telephonecollectors.info

PROTECTOR MOUNTINGS—*Continued*

Code No.	Description
83A	Designed to protect drop wires between the overhead lines and the subscriber's telephone set from lightning. This Protector Mounting consists of an iron box approximately 8¾ x 3½ x 2½ inches with a hinged cover having a No. 84A Protector Mounting within it. Arranged for pole mounting. Intended to be equipped with Nos. 26 and 30 Protector Blocks for cable protection for five pairs of wires. The box mounts directly underneath the crossarms on the poles. Two mounting lugs are provided for this purpose.
84A	Forms a part of the No. 83A Protector Mounting. Consists of an "L" shaped metal base and ground plate on which is mounted a porcelain terminal block and springs for holding protector blocks.
84B	Terminal block and springs for use as a replacement part in the No. 84A Protector Mounting. Furnished with mounting screws and washers.
87A	Consists of a metal mounting strip equipped with metal mounting brackets and wooden fanning strips. Will mount six No. 84A Protector Mountings. Intended for use in Nos. EA26 and EU26 Cable Terminals. Furnished with screws for mounting the Protector Mountings and also for mounting the assembly in the Cable Terminal.
91A	Intended for use as a part of multigrounding short circuiting relay protectors to connect to bridle wires attached to open wire telephone lines. Consists of a metal plate bent to form two legs at right angles having the base leg equipped with a No. 84B Protector mounting, and the other leg equipped with contact springs and a plug in the form of a handle. It provides a ready means in the field for disconnecting the telephone lines from the protector groups. Arranged for holding Nos. 26 and 27 Protector Blocks between the No. 84B Protector Mounting and the contact spring. Has a ten wire capacity.
93AW	Consists of a galvanized metal box having a slip cover with locking screws and two screws for mounting the Protector in the box. The cover includes a shield of insulating material which protects the line terminals from gases expelled during fuse operation. Intended for use in housing the No. 98A Protector in outdoor installations. When equipped with a No. 98A Protector entirely replaces the No. 1086A Protector. Overall dimensions 7¾ x 5$^{7}/_{32}$ x 2$^{15}/_{16}$ inches.
94A	Intended for use in connection with No. 98A Protector for sneak current protection. It has a porcelain base equipped with clips for mounting of the No. 60A Jacks and having binding posts for one pair of wires. Together with the No. 98A Protector will mount two No. 60A Fuses.

Push Buttons



No. 1006A Push Button

These push buttons are suitable for general telephone use, but are primarily intended for use in magneto telephones for "central office selective signaling" service.

The springs are of nickel silver and are backed up with brass stop springs. The ends of the springs are notched and tinned in order to permit wires being readily soldered to them. The button is made of hard rubber.

Note. The No. 465 Type Keys consist of push buttons mounted in small wooden boxes suitable for use in connection with telephone apparatus. See page 148.

Code No.	Spring Combination	Buttons Furnished for Woodwork Thickness	Principal Use
1002A	Five springs arranged for one break two make contacts.	$^{13}/_{32}$, ½ or $^{9}/_{16}$ inch as specified.	Used in magneto telephones for central office signaling.
1004A	Six springs arranged for two break-make contacts.*	½ inch.	Used in magneto telephones for "signaling central secretly."
1006A	Three springs arranged for one break-make contact.	$^{13}/_{32}$, ½ or $^{9}/_{16}$ inch as specified.	Used in magneto telephones for "central office signaling."

* The No. 1004A is in effect two No. 1006A Push Buttons.

TCI Library: www.telephonecollectors.info

RECEIVERS



No. 515 Receiver

The No. 515 Receiver is a permanent magnet receiver and is intended for use with the No. 1017B, 1017C and 1017E Test Sets. It has a black finished metal case and hard rubber earpiece. D.C. resistance approximately 45 ohms.

The No. 528 Receiver is intended for use in operators' telephone sets, common battery switchboards and in public address systems. It is furnished equipped with a No. 11 Type Head Band. D.C. resistance approximately 56 ohms. Impedance at 800 cycles approximately 260 ohms. Black finished metal case and hard rubber earpiece.



No. 528 Receiver with No. 11 Type Head Band



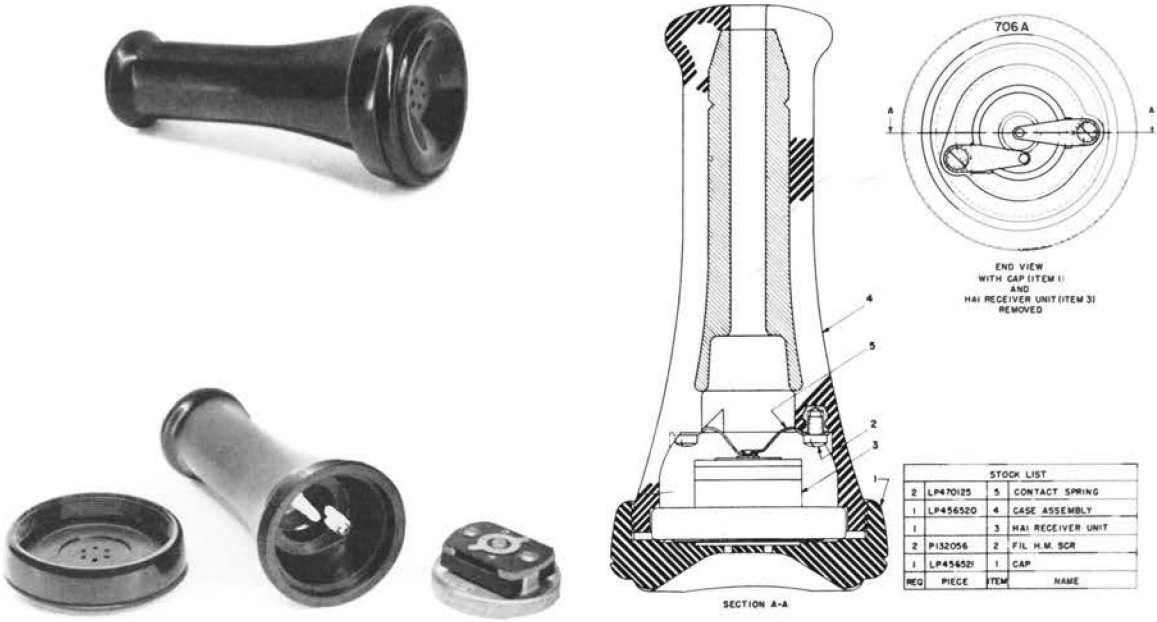
No. 558 Receiver

The No. 558 Receiver is intended for use in the No. 1536E Telephone Set in mines where explosive gases are present. It is furnished equipped with one No. R2CL Cord. Provided with a special cord bushing which reduces the possibility of breaking the conductors. Resistance approximately 84 ohms. Impedance at 800 cycles approximately 215 ohms.

TCI Library: www.telephonecollectors.info

RECEIVERS—*Continued*

No. 706 TYPE



The Western Electric No. 706-A Receiver contains the new and modern HA-1 Receiver Unit which is of the controlled diaphragm magnetic type used in the combined hand telephone sets. It provides higher quality speech reproduction than former deskstand types of receivers and is arranged so that the receiver units are easily replaceable.

It consists of a moulded case equipped with an HA-1 Receiver Unit. Springs for making electrical contact with the receiver unit and a cap for holding the unit in place are provided with the receiver.

The No. 706-A Receiver entirely replaces the Western Electric No. 144 and D-99638 Receivers.

The above layout shows the component parts and stock list of the No. 706A Receiver for identification purposes.

TCI Library: www.telephonecollectors.info

RECEIVERS—*Continued*

Replacement Parts

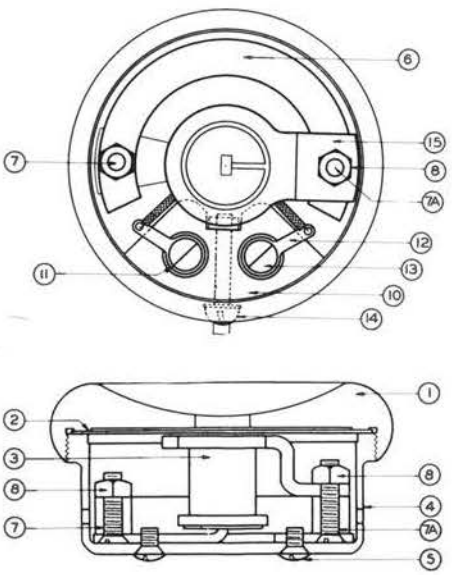


Fig. 1

Symbol	Name of Piece Part	Receiver Code Nos. 515 (See Fig. 1)	528 (See Fig. 1)
1	Receiver Cap	P-94545	P-213314
2	Diaphragm	P-95225	P-98387
3	Coil	P-207461	P-230413
4	Case	P-215905	P-99849
5	Case Screws	P-97053	.....
6	Magnet	P-97064	P-99862
7	Magnet Machine Screws	P-97055	P-99541
7A	Magnet Machine Screws	P-97056	P-99541
8	Magnet Machine Screw Nuts	P-132958	P-122656
9	Receiver Block Assembly	.....	.....
10	Binding Post Block	P-98974	P-233887
11	Cord Fastener	.....	P-98353
12	Terminal Lugs	P-97062	P-229679
13	Terminal Lug Machine Screws	P-93540	P-99794
14	Round Head Machine Screw	P-98975	P-99098
	Nut	P-92609	P-99100
		.....	*P-99101
15	Ring Pole Piece	P-97066	.....

* Locking Nut.

TCI Library: www.telephonecollectors.info

RECEIVERS

Replacement Parts—*Continued*

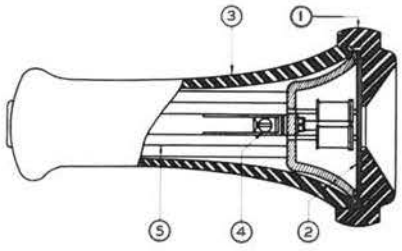


Fig. 2

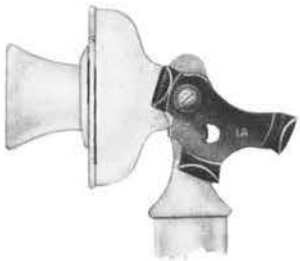
Symbol	Name of Piece Part	Receiver Code No. 558 (See Fig. 2)
1	Receiver Cap	P-98948
2	Diaphragm	P-95114
3	Case	P-222158
4	Machine Screw	.....
5	Inner Unit	P-94436

Receiver Holder

No. 1 TYPE

Code No.

1A This is designed for use on No. 1040 Type Desk Stands for holding a No. 146AW Receiver, in cases where this receiver is connected in multiple with the regular desk stand receiver. It is designed so that the receiver may be easily removed but is normally held so firmly that it will not be dislodged accidentally or rattle. This receiver holder is so arranged that it can be mounted by means of the screw which holds the transmitter in place. It has a black finish.



No. 1A Receiver Holder

Receiver Units

No. HA-1



No. HA-1 Receiver Unit Front and Rear View

The No. HA-1 Receiver Unit is a "controlled diaphragm" magnetic type receiver unit in that the permeability of the diaphragm, the distance between the diaphragm and the pole pieces and the strength of the magnets are carefully controlled to produce a receiver having the maximum efficiency.

Designed for use in the "F" Type Hand Sets. Impedance at 1,000 cycles approximately 140 ohms.

TCI Library: www.telephonecollectors.info

RECEIVER UNITS

No. HA-1 RECEIVER UNIT—Continued

The No. HA-1 Receiver Unit is arranged to make contact with the hand set handle by means of two concentric terminals on the back of the receiver unit which make contact with two springs which form a part of the hand set handle.

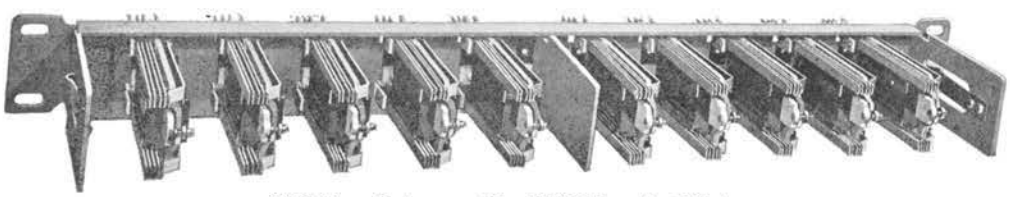
Dimensions: diameter $1\frac{13}{16}$", thickness $\frac{3}{4}$".

Note. The No. HA-1 Receiver Unit is more sensitive to superimposed direct currents of either polarity showing large losses in efficiency for the current values usual to common battery lines. For this reason it should not be used in circuits where the line current flows through the receiver. When the No. HA-1 Receiver Unit installed in the No. F1A Hand Set is used on local battery circuits, not more than two dry cells should be connected with it in series.

No. HA-2

The No. HA-2 Receiver Unit is the same as the No. HA-1 except that it has different coils so that its impedance is approximately 275 ohms at 1,000 cycles.

RELAYS



"E" Type Relays on No. 737B Mounting Plate

Relays—General

The relay is an essential and important piece of telephone equipment and the correct design of this class of apparatus, not only materially affects the quality of service rendered by the entire telephone plant, but also the expense incurred in securing that service. The increasing use of central battery equipments necessitates relays suitable for operation on direct, pulsating, and alternating current in circuits not only calling for a wide variety of spring arrangements and combinations, but also for slow acting as well as fast acting types. Relays of high impedance and those of low impedance have very definite fields of application and polarized relays are necessary for accomplishing certain results. To meet these varying conditions, the Western Electric Company have developed a number of relay types, each type being supplied with the character of windings and arrangement of contacts to meet the requirements of the circuits in which it is to be placed. It is impracticable to catalog them all here, a few of the representative types only being described in this catalog. For information on other types available please consult your nearest distributor.

Flat Type Relays

The expense of installation, operation and maintenance are reduced to a minimum by the use of standardized forms of apparatus. After careful analysis of the circuit conditions under which relays are most commonly used, the "Flat Type Relay" form of construction has been evolved which lends itself readily to a great variety of slight changes through winding modifications and contact arrangements, producing a relay ideally suited to a multiplicity of applications and requirements. The advantages of Flat Type Relays are briefly indicated on the following page.

TCI Library: www.telephonecollectors.info

RELAYS

Flat Type Relays—*Continued*

1. Efficiency of Operation. Each relay requires the minimum amount of current consistent with the conditions under which it operates. These conditions cover the contact pressures necessary both during operation and in its non-operative position, the speed or time of operation and the requirements as to high or low impedance which its position in the circuit makes necessary. High efficiency is attained through a careful choice of materials and the correct proportioning of the parts.

2. Permanent and Easy Adjustments. All Flat Type Relays have their spring contacts and armature air gaps at the front end of the relay where they are clearly visible while being adjusted when in place on their mountings. The adjustments are permanent over long periods of service, being maintained under widely varied conditions of heat, cold and humidity.

3. Insulation of Contact Springs. "Phenol Fibre" is used for spring insulation. This material in addition to having the high dielectric strength of hard rubber has the advantage of not being affected by heat, moisture or deterioration like rubber.

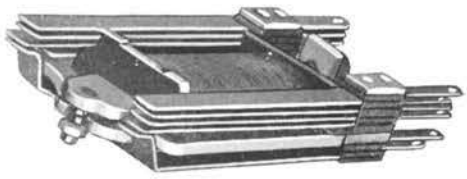
4. Self Cleaning Contacts. All contacts are so mounted that their surfaces are in a vertical plane, allowing dust to fall out of, rather than settle on, the contacts. Maintenance is reduced by this construction and difficulties due to poor contacts avoided.

5. Armature Suspension. A flat, reed type spring is used for armature suspension in all Flat Type Relays. This feature of design secures a continuous and unvarying magnetic path between the armature and the core. By the selection of suitable springs, extremely sensitive relays are obtained with this type of construction.

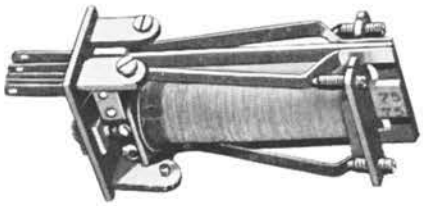
6. Durability of Parts. All steel parts are galvanized. The special alloy steels used are not only the best material, electrically, for the parts in which they are utilized, but are mechanically strong materials from which small parts having great strength may be made. The spoolheads are of Phenol Fibre and the windings are highly insulated. All windings will carry continuously without injury currents greater than required for operation.

7. Small Size and Ease of Mountings. Compact in design, these relays are light in weight and occupy a small amount of space. Their terminals are all at one end and conveniently arranged for making soldered connections. Mounting plates for placing groups of relays under common dust-proof covers and also mounting plates for use when individual cross-talk proof covers are required on each relay are listed elsewhere, as all flat type relays are insulated from their mountings and are fastened in place by means of two screws; their stability and ruggedness when mounted reduces maintenance costs.

The "A", "B", "E", "F", "G", "H", "J", "R", "U" and "Y" Type Relays are all of the Flat Type form of construction and can be supplied to meet a great variety of circuit conditions. They are insulated from the mounting plate.



"A", "E" and "H" Type Relay



"B" and "G" Type Relay with Cover Removed

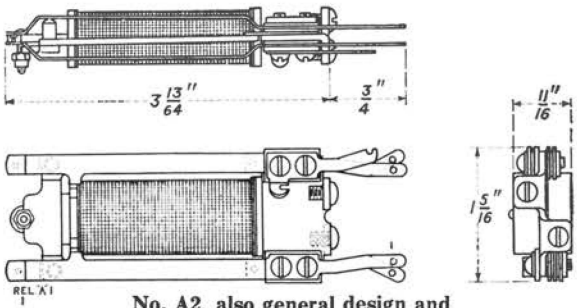
"A" TYPE RELAYS

The "A" Type Relays are designed for use as line and cut-off relays only. These relays will mount on $\frac{3}{4}$ and $\frac{7}{8}$ inch horizontal and $1\frac{3}{4}$ vertical centers. Intended to mount on mounting plates provided with dust-proof metal covers.

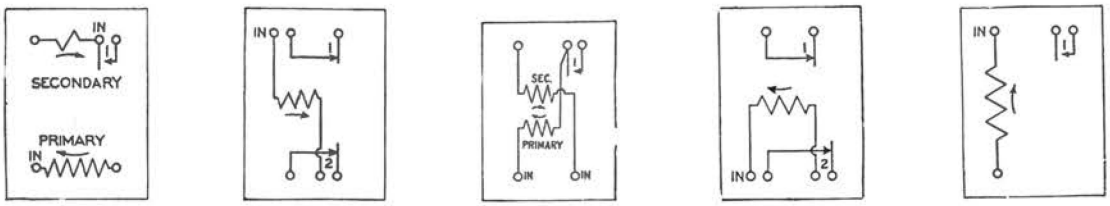
TCI Library: www.telephonecollectors.info

RELAYS

"A" TYPE—Continued



No. A2, also general design and dimensions of "A" Type



A-1 **A-2** **A-25** **A-26** **A-50**

Schematics Showing Windings

Code No.	Windings	Rated Resistance (Ohms)	Operate (Ampere)	Release (Ampere)
A-1	Primary Secondary	1000 1000	.0058	.0024
A-2	Single	34	.060	....
*A-25	Primary Secondary	1000 1000	.0058	.0024
A-26	Single	34	.047	....
A-50	Single	34	.040	.020

* Equipped with platinum contacts.

"B" TYPE RELAYS

"B" Type Relays differ from the above "A", "E", and "H" Types in that they are provided with a micrometer screw adjustment feature which permits of extremely accurate adjustments being made. They are used as supervising relays in switchboard cord circuits and in other places where a sensitive, highly efficient and reliable relay is required. When used as a series supervisory relay, the transmission loss is very low. These relays have superior "flashing" ability and will operate in a line having as high as 1,000 ohms resistance.

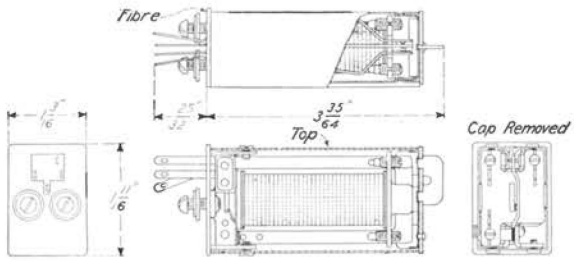
"B" Type Relays are provided with individual covers, each having a removable cap which may be placed in position without affecting the adjustment of the relay. The individual covers are dust-proof and cross-talk proof on all "B" Type Supervisory Relays. For purposes in which the cross-talk shielding is not required, dust-proof covers are supplied. These relays may be mounted on 1¼ inch horizontal and 1¾ inch vertical centers.

TCI Library: www.telephonecollectors.info

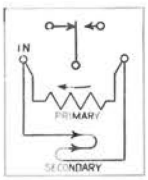
RELAYS

"B" TYPE—Continued

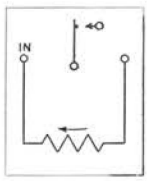
The use of a supervisory relay of the "B" Type secures the operating advantages which are obtained through sensitive adjustment, small operating current, low transmission loss, and reduced maintenance.



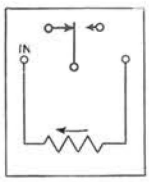
General Design and Dimensions of "B" Type



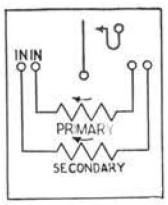
B-3



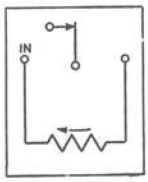
B-10



B-22 and 46



B-105



B-223

Schematics

Code No.	Windings	Rated Resistance (Ohms)	Operate (Ampere)	Release (Ampere)
B-3	Primary Secondary-Non. Ind. Combined	16.4 31 10.7	.015	.005
B-10	Single	(a) 1.7	.022	.002
B-22	Single	96	.016	(b)
B-46	Single	220	.0028	.0009
(c) B-105	Primary Secondary	27 5000	.013 .0015	.0005
B-223	Single	1000	.006	.0035

(a) Plus or minus 10 per cent.
(b) Non-operating current .012 Amp.
(c) Equipped with a flexible front contact spring.

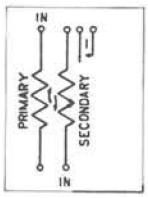
"E" TYPE RELAYS

The "E" Type Relays are designed for heavy duty, all-around purpose telephone relays. The relays are designed for two sets of contact springs which may be duplicates or may differ in contact arrangement, making it possible, in many cases, to use one of these relays where two or more of another style would be required. May be mounted in groups on punched type mounting plates (see listings elsewhere) which are provided with common dust-proof metal covers on $1\frac{3}{4}$ inch vertical and $\frac{3}{4}$ inch or 1 inch horizontal centers (depending upon the number of contact springs). When an individual dust-proof cover for each relay is desired the E1 Relay Cover should be specified. In this case the relay will mount on $1\frac{1}{4}$ inch horizontal centers and $1\frac{3}{4}$ inch vertical centers.

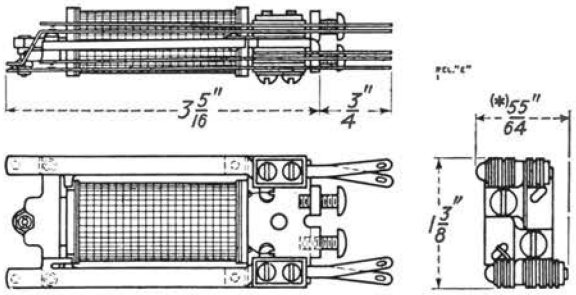
TCI Library: www.telephonecollectors.info

RELAYS

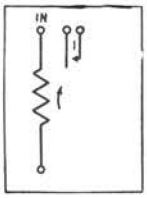
"E" TYPE—Continued



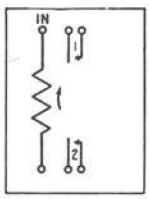
No. E-4



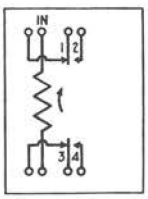
General Design and Dimensions of "E" Type



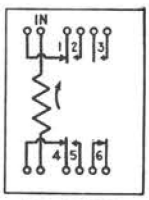
No. E-5 and No. 114



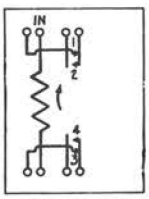
No. E-31 and No. 525



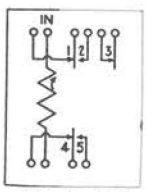
No. E-65 and No. 148



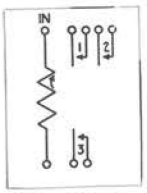
No. E-82



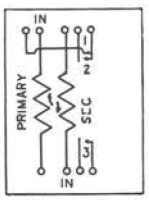
No. E-127



No. E-216 Relay



No. E-370 Relay



No. E-1083

Schematics

Code No.	Windings	Rated Resistance (Ohms)	Operate (Ampere)	Release (Ampere)
E-4	Primary	250	.0131	....
	Secondary	700	(a) .008	....
E-5	Single	1000	.008	.003
E-31	Single	500	.012	....
E-65	Single	1000	.013	....
(b) E-82	Single	34	.070	(c)
E-114	Single	500	.0099	.0032
E-127	Single	500	.018	....
E-148	Single	350	.018	....
E-216	Single	500	.022	....
E-370	Single	500	.018	....
E-525	Single	220	.020	....
(d) E-1083	Primary	650	.016	....
	Secondary	1000	.028	....

(*) This dimension varies according to the number of contact springs and winding terminals on the individual relays.

(a) Non-operate .006 ampere.

(b) Has not armature stop pins.

(c) Holds on .031 ampere.

(d) Equipped with platinum contacts.

TCI Library: www.telephonecollectors.info

RELAYS—*Continued*

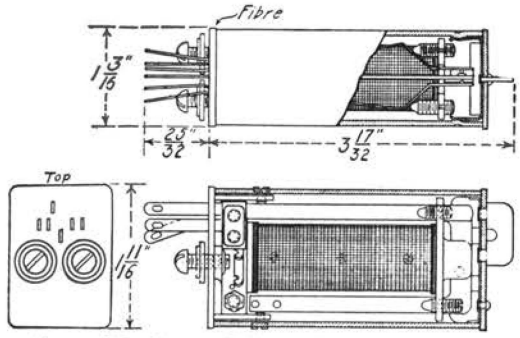
"F" TYPE RELAYS

The "F" Type Relays are similar to the "E" Type except that they are slow releasing due to a winding of bare copper wire over the core, and are equipped with an adjustable armature stop pin to regulate time of release. They can be mounted on either drilled or punched type mounting plates with either common or individual dust-proof covers as required.

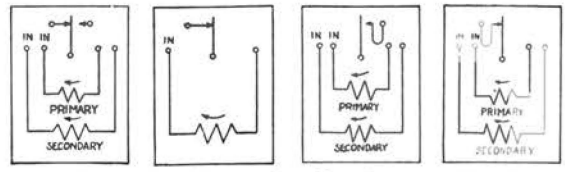
When not equipped with individual covers will mount on 1¾ inch vertical centers and ¾ inch or 1 inch horizontal centers. For further information on various types available, consult your nearest distributor.

"G" TYPE RELAYS

The relays of the "G" Type are similar to the "B" Type Relays except that they have a higher impedance at talking frequencies due to the laminated construction of their cores. Each relay is equipped with a cross-talk proof shell with removable cap and will mount on 1¼ inch horizontal and 1¾ inch vertical centers.



General Design and Dimensions of "G" Type



No. G-1 | No. G-28 and No. G-32 | No. G-29 | No. G-41

SCHEMATICS

Code No.	Windings	Rated Resistance (Ohms)	Operate (Ampere)	Release (Ampere)
G-1	Primary Secondary	75 75	(a) .010	(a) .005
G-28	Single	(b) 365	.0037	.001
(c) G-29	Primary Secondary	500 3500	.0022 .0025	.0003 ....
G-32	Single	900	.003	.0008
G-41	Primary Secondary	250 250	(a) .0104	(a) .0066

(a) Both windings in series aiding.
(b) Plus or minus 10 per cent.
(c) Equipped with a flexible front contact spring.

"H" TYPE RELAYS

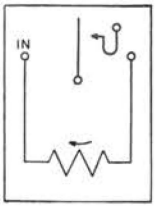
"H" Type Relays are similar to the "E" Type except that they have increased impedance at talking frequencies due to a laminated core. They are equipped with E-2 (cross-talk proof) relay covers. Will mount on 1¾ inch vertical and 1¼ inch horizontal centers. For further information concerning the various "H" Type Relays available, consult your nearest distributor.

TCI Library: www.telephonecollectors.info

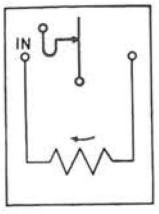
RELAYS—*Continued*

"J" TYPE RELAYS

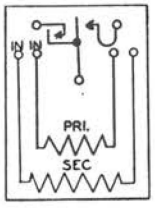
"J" Type Relays are flat type relays and are designed for use with alternating current and are otherwise similar to the "B" Type Relays but having different core, spoolhead and adjusting plate characteristics. Each relay is equipped with a metal dust-proof cover with removable cap and will mount on $1\frac{1}{4}$ inch horizontal and $1\frac{3}{4}$ inch vertical centers.



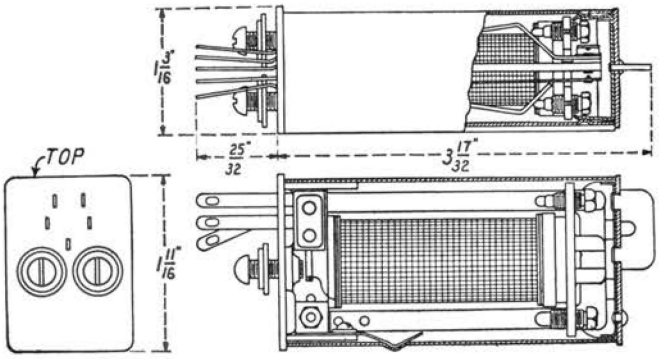
Nos. J-3, 6, 20 and 32



No. J-15



No. J-54



General Design and Dimensions of "J" Type

Code No.	Windings	Rated Resistance (Ohms)	Operate (Ampere) *A.C.	Operate (Ampere) D.C.	Non-Operate (Ampere) *A.C.	Non-Operate (Ampere) D.C.
(a) J-3	Single	1090	.006	....	....	....
(a) J-6	Single	1090	.0079	....	.003	....
(b) J-15	Single	1600	.004	....	....	....
(a) J-20	Single	1600	.004	....	....	....
(a) J-32	Single	187	.013	....	.0049	....
(c) J-54	Primary	420	....	.0147	....	....
	Secondary	3120	.0041	.0042	....	.0034

* Operating and non-operating values apply at ringing frequencies of from 16 to 20 cycles.

(a) Equipped with heavy contacts and flexible front contact spring.

(b) Equipped with flexible back contact spring.

(c) Equipped with heavy front contacts; also equipped with a pendulum type (weighted) flexible front contact spring.

"R" TYPE RELAYS

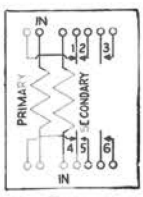
The "R" Type Relays are similar to the "E" Type except that the core, although having the same cross-sectional area, is of a semi-elliptical shape which affords a greater winding space and permits of a shorter length of turn than is possible on the "E" Type Core.

TCI Library: www.telephonecollectors.info

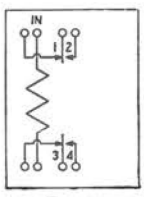
RELAYS

"R" TYPE—Continued

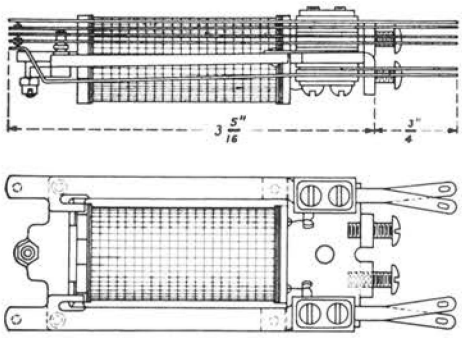
These relays mount on drilled type mounting plates on $1\frac{3}{4}$ inch vertical centers and 1 inch horizontal centers unless provided with individual dust-proof covers, in which case they mount on $1\frac{1}{4}$ inch horizontal centers. Will also mount on punched type mounting plates, except where the horizontal mounting centers of the relay exceed 1 inch.



R-49

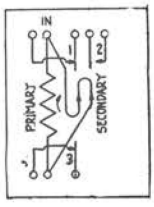


R-286

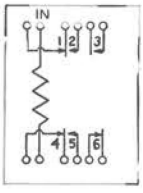


General Design and Dimensions of "R" Type

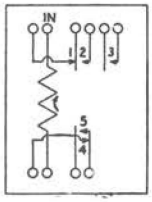
(*) This dimension varies according to the number of contact springs and winding terminals on the individual relays.



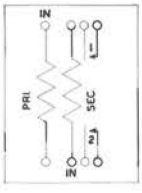
R-503



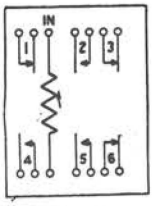
R-851



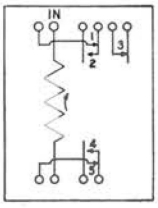
R-852



R-913



R-966



R-1333

Code No.	Windings	Rated Resistance (Ohms)	Operate (Ampere)	Release (Ampere)	Non-Operate (Ampere)
(a) R-49	Primary	225	.055	....	....
	Secondary	275	.056	....	....
(a) R-286	Single	275	.019	....	....
(b) R-503	Primary	2100			
	Secondary N.I.	2800	.0175	....	....
	Combined	1200			
R-851	Single	365	.028	....	.017
(b) (c) R-852	Single	1200	.0107	....	....
(b) (e) R-913	Primary	550	(d) .0185	....	(d) .010
	Secondary	550	.0415	....	.020
(b) (e) R-966	Single	155	.057	....	.021
(a) R-1333	Single	50	.064	....	....

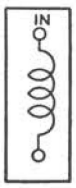
(a) Equipped with heavy contacts.
(b) Has no armature stop pins.
(c) Equipped with platinum contacts.
(d) Through primary and secondary windings in series aiding.
(e) Has a winding of bare copper wire over core.

TCI Library: www.telephonecollectors.info

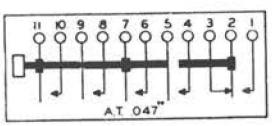
RELAYS

Flat Type Relays—*Continued*

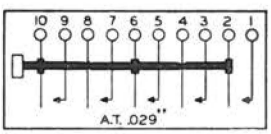
"U" TYPE RELAYS



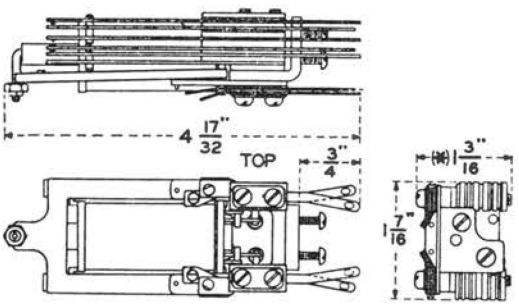
No. U-50



Top of No. U-50

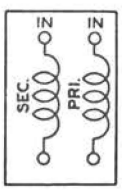


Bottom of No. U-50

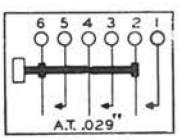


General Design and Dimensions of "U" Type

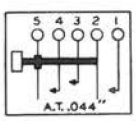
(*) This dimension varies according to the number of contact springs and winding terminals on the individual relays.



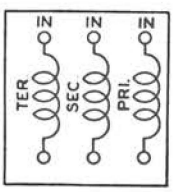
No. U-244



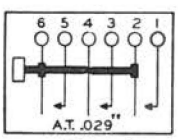
Top of No. U-244



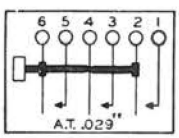
Bottom of No. U-244



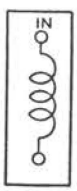
No. U-629



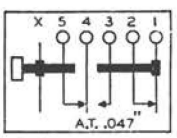
Top of No. U-629



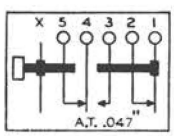
Bottom of No. U-629



No. U-706



Top of No. U-706



Bottom of No. U-706

The "U" Type Relays are flat type, round core, twin contact, general purpose relays capable of operating large spring combinations.

Armature stop pins are .005 inch high unless otherwise indicated.

Can be mounted on either drilled or punched type mounting plates.

The "U" Type Relays will mount on 1¾ inch vertical centers either with or without individual or common cover. When not equipped with individual covers will mount on horizontal centers listed under detailed information for each relay. When individual U3, U4 or U5 relay covers are used, the horizontal mounting centers are 1½, 1¾ or 2⅛ inches respectively. "U" Type Relays are insulated from the mounting plate.

Code No.	Windings	Rated Resistance (Ohms)	Operate (Ampere)	Non-Operate (Ampere)	Horizontal Mounting Centers (Inches)	Individual Relay Cover
U-50	Single	2500	.0089	....	1¾	U-5
U-244	Primary	850	.0165	....	1¼	U-3
	Secondary	1750	.0128			
U-629	Primary	370	.038	....	1¼	U-3
	Secondary	400	.040			
	Tertiary	400	.0425			
*U-706	Single	1300	.024	.013	1¼	U-4

*Slow acting relay having a short circuited sleeve over the core.

TCI Library: www.telephonecollectors.info

RELAYS

Flat Type Relays

"Y" TYPE RELAYS—Continued

The "Y" Type Relays are flat type, round core, twin contact relays capable of operating large spring combinations. They are essentially of the same construction as the "U" Type Relays except that they are especially designed for slow release operation.

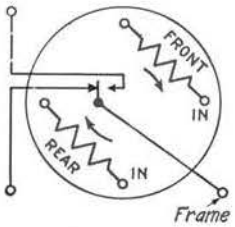
For information concerning the various types of "Y" Type Relays available, consult your nearest distributor.

No. 114 TYPE RELAYS

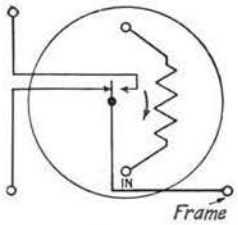
Relays of the No. 114 Type operate on direct current and have one or two operating windings. They are provided with cross-talk proof shells. One contact is made and one broken when the relay is operated.



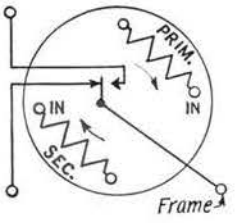
No. 114 Type



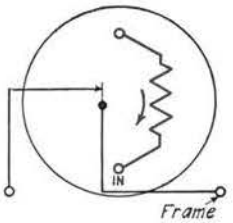
No. 114B



No. 114G
No. 114AU



No. 114K



No. 114AK

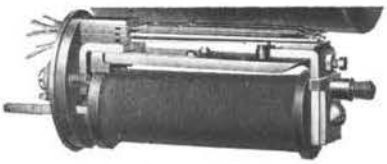
Code No.	Windings	Rated Resistance (Ohms)	Operate (Ampere)	Non-Operate (Ampere)
114B	Front Rear	97 97	*.010	*.009
114G	Single	520	.006	.0055
114K	Primary Secondary	72 33	.016 **	.0145 - - - -
(a) 114AK	Single	188	(b)	(c)
114AU	Single	520	.029	.026

* Through both windings in series aiding.
** Holds on .034 ampere.
(a) Intended for use as tripping relay in machine ringing circuits.
(b) Operates in series with 940 ohm non-inductive resistance.
(c) Non-operates in series with 1130 ohms non-inductive resistance.

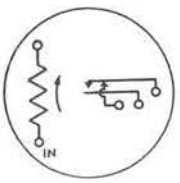
No. 149 AND No. 178 TYPE RELAYS

The No. 149 Type Relays are slow-release cut-off relays. Equipped with dust-proof metal covers and will mount on $1\frac{23}{32}$ inch centers.

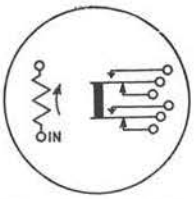
The No. 178 Type Relays are similar in design to the No. 149 Types and in addition are designed for slow operation. Will mount on $1\frac{23}{32}$ inch centers.



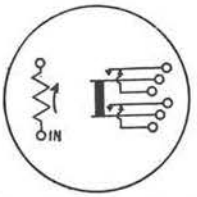
Nos. 149 and 178 Types



Nos. 149C, D and E



Nos. 178S and BN



Nos. 178AG and BY

TCI Library: www.telephonecollectors.info

RELAYS

No. 149 AND No. 178 RELAYS—Continued

Code No.	Windings	Rated Resistance (Ohms)	Operate (Ampere)	Non-Operate (Ampere)	Release (Ampere)
149C	Single	99	.017	....	.005
149D	Single	485	.010	....	.003
149E	Single	9.5	.100	.060	....
178S	Single	320	.056	.048	....
178AG	Single	320	.030	....	.002
*178BN	Single	1050	.030	.020	....
**178BY	Single	2000	.0075	....	.0006

* Has a copper sleeve over core. Has no armature stop pins. Equipped with platinum contacts.

** Has a copper head on end of core. Has no armature stop pins. Equipped with platinum contacts.

No. 196 TYPE RELAYS

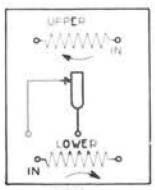


FIG 1

Nos. 196A and E

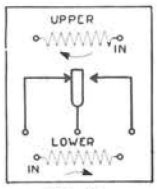
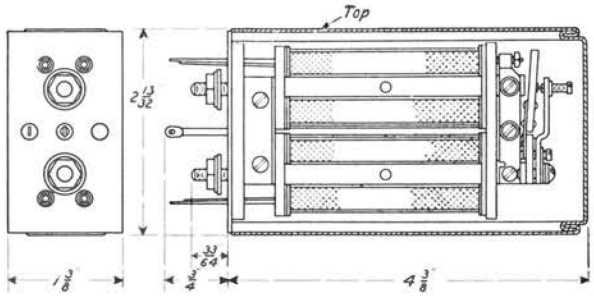


FIG 2

No. 196B



No. 196A Relay also General Design and Dimensions of No. 196 Type

The No. 196 Type Relays are return pole piece Relays and are equipped with dust-proof covers. They have a rectangular laminated "U" shaped core provided with two form wound coils. Will mount on 2 1/16 inch vertical and 1 7/16 inch horizontal centers.

Code No.	Windings	Rated Resistance of each Coil (Ohms)	Operate (Ampere)	Release (Ampere)
*196A	Upper Lower	(b) 1600	(a)	(c)
*196B	Upper Lower	(b) 1600	(a)	(c)
*196E	Upper Lower	240	(d)	(e)

(*) Equipped with heavy contacts.

(a) Operates with windings connected in parallel aiding on 75 volts ± 2 volts, 19½ or 20 cycles per second, in series with 700 ohms and shunted by 72 ohms.

(b) Plus 5%, minus 12½%.

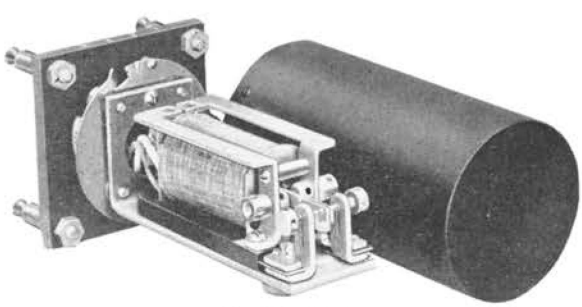
(c) Non-operates with windings connected in parallel aiding on 75 volts ± 2 volts, 19½ or 20 cycles per second, in series with 700 ohms and shunted by 72 ohms.

(d) Operates with the windings connected in series aiding on 75 volts ± 2 volts, 19½ or 20 cycles per second, in series with 1180 ohms and shunted by 120 ohms.

(e) Non-operates with windings connected in series aiding on 75 volts ±2 volts, 19½ or 20 cycles per second, in series with 1180 ohms and shunted by 72 ohms.

No. 215 TYPE RELAYS

The No. 215 Type Relays are polarized relays equipped with reed type armatures and dust-proof covers. They mount on No. 823, 824 or similar type Mounting Plates through the medium of No. 18B Connecting Blocks. They are insulated from the mounting plates and will mount mechanically on 2¾ inch vertical and horizontal centers but due to their sensitiveness to magnetic interference the mounting centers with respect to other relays or any other magnetic apparatus should be given special consideration in each case.



No. 215A Relay

The No. 215 A and 215FA Relays are equipped with anti-chattering armature.

TCI Library: www.telephonecollectors.info

RELAYS

No. 215 TYPE RELAY—Continued

Code No.	Windings	Resistance (Ohms)	Operating Ampere
215A	Parallel	85 each	(*)
215FA	Single	595	†

* For reliable operation in telegraph circuits, should receive an operating current of not less than .015 amperes through both windings in series aiding, but the relay is adjusted to operate at a speed not greater than 60 times per minute on current reversals of .002 amperes.

† For reliable operation for general use, should receive an operating current of not less than .00083 ampere, but the relay is adjusted to operate at a speed of approximately 60 times per minute on current reversals of .0005 ampere.

Relay Covers (Individual)

No. E1 RELAY COVER

The No. E1 Relay Cover is an individual dust cover for "E" Type Relays when used on mounting plates without the regular mounting plate cover. Has a black finish and is furnished with a support which attaches to the relay and holds the cover in place. The minimum centers on which the "E" Type Relays will mount when equipped with these covers are 1¼ inches horizontal and 1¾ inches vertical.



Relay Covers (on Mounting Plate)

No. E2 RELAY COVER

The No. E2 Relay Cover has a removable cap, which when removed gives access to the contacts for examination, otherwise same as No. E1 Relay Cover.

No. R1 RELAY COVER

The No. R1 Relay Cover is an individual dust-proof cover for "R" Type Relays when used on mounting plates without the regular mounting plate cover. Has a black finish and is furnished with a support which attaches to the relay and holds the cover in place. The minimum centers on which "R" Type Relays will mount when equipped with these covers are 1¼ inch horizontal and 1¾ inch vertical.

No. R2 RELAY COVER

The No. R2 Relay Cover is similar to the No. R1.

The "R" Type Relays will mount on 1⅜ inch horizontal, and 1¾ inch vertical centers when equipped with these covers.

No. R3 RELAY COVER

The No. R3 Relay Cover is similar to the No. R1. Intended for use with relays which require not more than 1 inch horizontal mounting centers when not equipped with covers. Minimum centers on which "R" Type Relays equipped with No. R3 Covers will mount are 1⅜ inch horizontal and 1¾ inch vertical.

"U" TYPE RELAY COVERS

The "U" Type Relay Covers are individual aluminum finished covers, intended to protect "U" and "Y" Type Relays from magnetic interference and dust when mounted on No. 600 or similar type mounting plates not equipped with common covers or in cabinets. Furnished with a support which attaches to the relay and holds the cover in place. Also provided with an insulator for insulating cover from mounting plate. "U" Type Relay Covers have removable caps which, when removed, gives access to the contacts for examination.

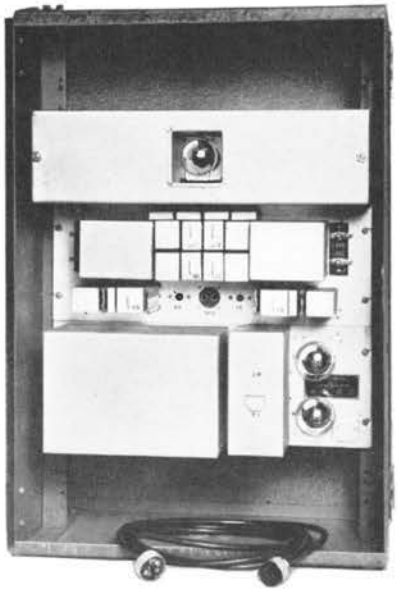
Code No.	Mounting Centers Vertical (Inches)	Mounting Centers Horizontal (Inches)
U3	1¾	1½
U4	1¾	1¾
U5	1¾	2⅛

TCI Library: www.telephonecollectors.info

REPEATERS

22 Type AC Operated Repeater

(PRECISION BALANCE)



Primary Unit
No. 22 Type A.C. Operated Repeater in Cabinet
Front View with Cabinet Door Open

The Western Electric No. 22 Type AC Operated Repeater (Precision Balance) with its various types of precision networks and associated equipment, has been developed to meet the wide variety of needs of telephone companies, railroads and pipe line companies requiring a limited number of repeaters for toll line and trunk line use.

Repeater installations of this kind, where various types of balancing and signaling arrangements are needed to meet the different line conditions, are usually very expensive per repeater unit. The use of the AC Operated Repeater, however, with the associated balancing and signaling arrangements, reduces these costs materially by eliminating to a large extent the special engineering usually required, and simplifying the installation.

The equipment is provided in two units, called a primary and secondary unit. At points where no signaling equipment is needed, that is, where the signaling is by-passed or amplified, only the primary unit is required. The primary unit includes the repeater, an AC power supply panel, line and balancing repeating coils, networks, by-pass set when specified and switching circuits to cut out the repeater and connect the lines through in case of power or tube failure. The secondary unit provides all the additional equipment necessary where the signaling is to be relayed. It includes an intermediate ringer, signaling source, and the AC power pack to furnish the needed power for the ringing relays, etc.

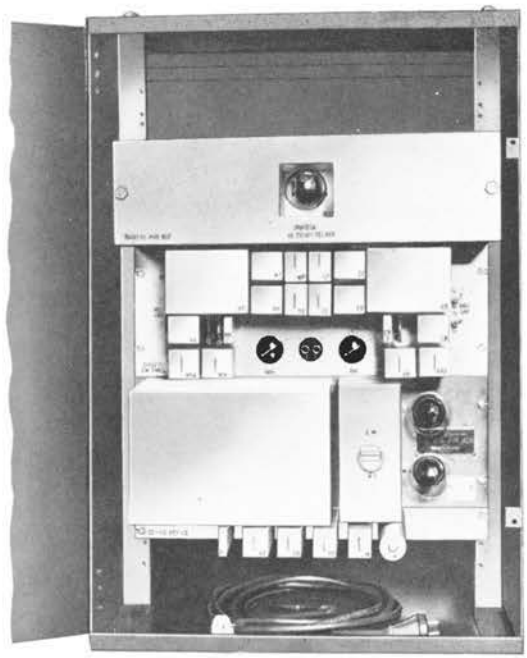
Each of these units may be obtained mounted in cabinets or assembled on a frame work for relay rack mounting. Both units are completely wired and assembled at the factory to meet the particular apparatus arrangements specified by the customer. Engineering information to determine what type of equipment is required to meet particular circuit conditions, as well as ordering information, may be obtained by consulting your nearest distributor.

TCI Library: www.telephonecollectors.info

REPEATERS—*Continued*

22 Type AC Operated Repeater

(APPROXIMATE BALANCE)



No. 22 Type AC Operated Repeater in Cabinet
Approximate Balance

The Western Electric No. 22 Type AC Operated Repeater (Approximate Balance) was developed specially for application on railroad dispatching circuits or message circuits of a similar nature.

This repeater provides a simple and economical form of repeater installation. It consists of a self-contained unit, the installation of which requires making only external connections to the two lines, to ground, and to a 50 or 60 cycle, 105 to 125 volt, AC lighting circuit. The signaling currents are by-passed around the repeater; thus no changes in the signaling systems in general are required. Relays are also included so that the repeater is automatically cut out of the circuit in event of failure of power or vacuum tubes.

Tests on railroad train dispatching circuits have demonstrated that No. 22 Type Repeaters with compromise balancing arrangements and without special engineering study of the line will ordinarily yield gains of 7 or 8 db, sufficient for many practical applications. Higher gains are generally obtainable by making minor modifications of the sub-station sets.

This repeater is not suitable for general use on railroad trunk circuits or on toll lines, because of the different signaling conditions and the requirements for toll line and network repeating coils and the precision type balancing equipment. For these conditions the No. 22 Type Repeaters with balancing networks are recommended and are described on page 196.

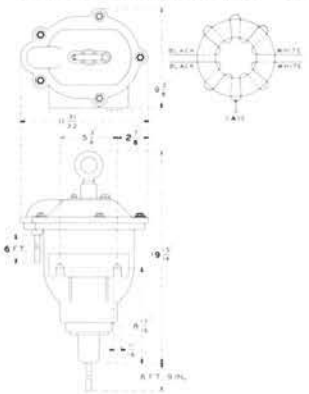
For further information concerning the above repeaters, please consult your nearest distributor.

TCI Library: www.telephonecollectors.info

REPEATING COILS



No. 50A



Wiring Diagram No. 50A



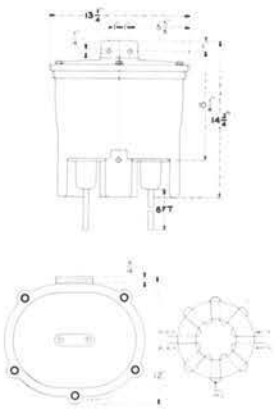
No. 121A

Nos. 50A and 121A Types

The Nos. 50A and 121A Types are toroidal type coils and are intended for use in telephone systems operated in connection with high voltage transmission lines.

50A Consists of two windings on a steel core which are insulated from each other and the line winding is insulated from the case to withstand high potential surges of 25,000 volts for one minute. The average D.C. resistance of the subscriber set winding is 31 ohms and of the line winding is 37 ohms. The impedance ratio between the subscriber set winding and the line winding is 1 to 1. The Coil is enclosed in a cast iron case with two porcelain bushings (large bushing P-143586, small bushing P-143585), for bringing out the leads from each winding. Case is furnished with six-foot leads. Dimensions of case 19 5/16 inches x 11 31/32 inches x 9 5/16 inches.

121A Similar to the No. 50A Coil except physical dimensions and dielectric strength. This Coil is designed to withstand a potential of 25,000 volts between the windings and between windings and case for a period of one minute.

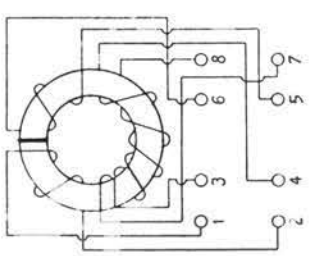


Wiring Diagram No. 121A

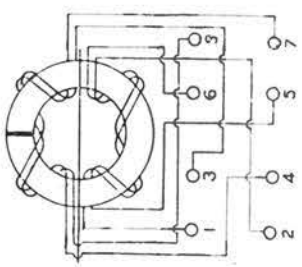
The following repeating coils are intended for use in cord, repeater, phantom and simplex circuits. For information on other types of coils available, consult your nearest distributor.

No. 74 Type Coil

The No. 74 Type Coils are toroidal type coils enclosed in cross-talk proof cases. Arranged to mount on mounting plates. They have four inductive windings. Overall dimensions, 4 17/32" x 2 9/16" x 4 3/16".



No. 74A



No. 74D



Code No.	Approximate Resistance of Windings (Ohms) 1-2	3-4	5-6	7-8	Impedance Ratio 1-2 and 5-6 to 3-4 and 7-8
*74A	22	23.5	22	23.5	1 to 1
†74D	15	15	15	15	600 to 600

*Equivalent to ½ of a No. 75A. Same as No. 58A except that the capacity between the windings is symmetrically distributed. Replaces No. 58A.

† Has an electrostatic shield between windings (1-2) (5-6) and (3-4) (7-8).

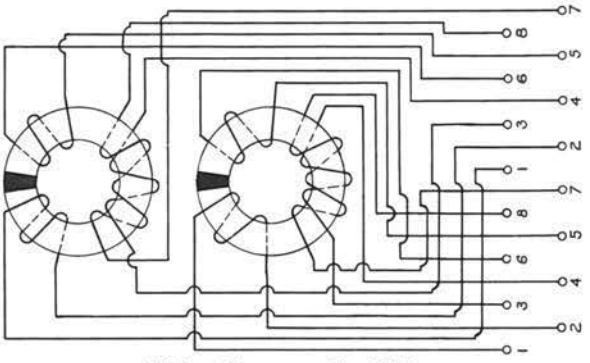
TCI Library: www.telephonecollectors.info

REPEATING COILS—*Continued*

No. 75 Type Coil



Nos. 75 and 76 Type

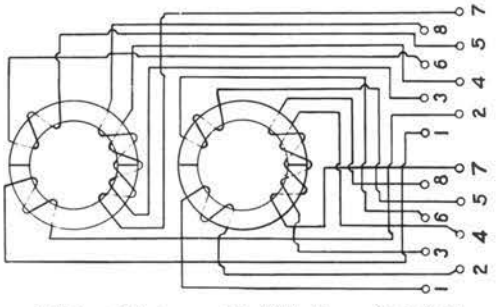


Wiring Diagram—No. 75 Type

The No. 75 Type Repeating Coils are toroidal type, phantom terminating repeating coils enclosed in cross-talk proof shells and mounted on wooden bases. Each coil has four inductive windings. The two units mounted on a common base are paired for use with repeaters. Overall dimensions, $10\frac{3}{4}$" x 4" x $2\frac{9}{16}$".

Code No.	Approximate Resistance of Windings (Ohms)				Impedance Ratio
	1-2	3-4	5-6	7-8	4-3 and 8-7 to 2-1 and 6-5
75A	22	23	22	23	1 to 1
75B	21	14	21	14	1 to 1.62
75F	21	44	21	44	1.62 to 1
75G	19	64	19	64	2.66 to 1

No. 76A Coil



Wiring Diagram—No. 76A Repeating Coil

The No. 76A Type Repeating Coil consists of two toroidal type phantom terminating repeating coils, each enclosed in a cross-talk proof shell and mounted on a wooden base. Approximate resistance of windings (1-2) and (5-6) is 20 ohms each and windings (3-4) and (7-8) is 21 ohms each. Impedance ratio is 1 to 1. Overall dimensions are $10\frac{3}{4}$" x 4" x $2\frac{9}{16}$".

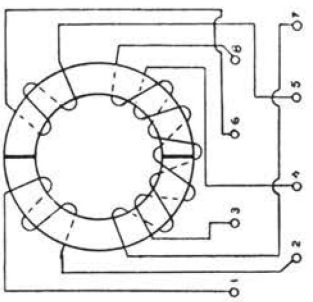
TCI Library: www.telephonecollectors.info

REPEATING COILS—*Continued*

No. 77A Coil



No. 77A Repeating Coil

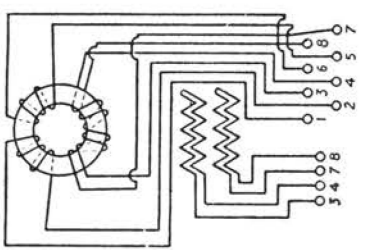


Wiring Diagram
No. 77A Repeating Coil

The No. 77A Repeating Coil is a toroidal type phantom terminating repeating coil, enclosed in a cross-talk proof shell and mounted on a wooden base. It has four inductive windings. Approximate resistance of windings (1-2) and (5-6) is 20 ohms each and windings (3-4) and (7-8) is 21 ohms each. The impedance ratio is 1 to 1. The No. 77A Repeating Coil is equivalent to ½ of a No. 76A Type Repeating Coil. Overall dimensions 6″ x 4″ x 2 9/16″.

No. 78A Coil

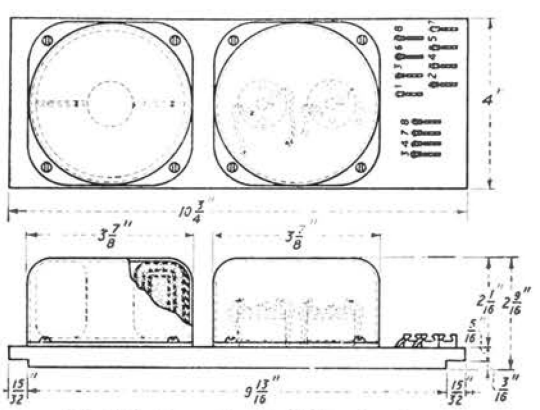
The No. 78A Repeating Coil is a toroidal type phantom circuit repeating coil enclosed in a cross-talk proof shell, together with two resistance units also enclosed in a cross-talk proof shell. Both are mounted on a wooden base. The repeating coil is equivalent to ½ of a No. 76A Repeating Coil. Has four windings, the approximate resistance of each winding being 21 ohms. The impedance ratio is 1 to 1.



Wiring Diagram
No. 78A Repeating Coil

Each resistance unit is non-inductively wound, adjusted to have approximately the same D.C. resistance as the repeating coil phantom line winding having the same terminal designations.

The No. 78A Repeating Coil is intended for use at intermediate stations on phantom lines where one side of the phantom circuit is terminated; the phantom circuit and the other side circuit going through.

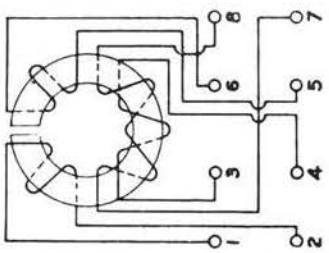


No. 78A Repeating Coil Showing Layout
Top and Side View

TCI Library: www.telephonecollectors.info

REPEATING COILS—*Continued*

No. 83B Coil

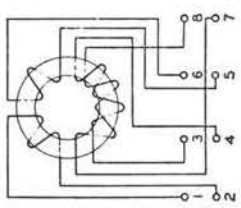


Wiring Diagram—No. 83B

The No. 83B Repeating Coil is a toroidal type coil enclosed in a cross-talk proof case, arranged to mount on mounting plates. It has four inductive windings. Approximate resistance of windings (1-2) and (5-6) is 22 ohms, and windings (3-4) and (7-8) 23 ohms. The impedance ratio of windings (1-2) and (5-6) to (3-4) and (7-8) is 1 to 1. Overall dimensions $4\frac{9}{16}$" x $4\frac{3}{16}$" x $2\frac{9}{16}$".

No. 91A Coil

The No. 91A Repeating Coil consists of two toroidal type coils, each enclosed in a metal case and assembled on a common metal base. Arranged to mount on mounting plates. It is intended for use at non-repeatered points in toll circuits; suitable for 20 cycle, 135 cycle and 1,000 cycle signaling. The arrangement and balance of line windings (4-3) (8-7) makes them suitable for use in deriving phantom circuits.



WINDING FOR EACH COIL



No. 91A Coil

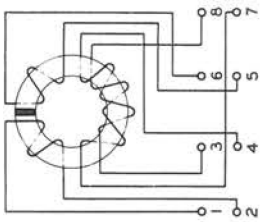
The approximate resistance of windings (1-2) (5-6) is 20 ohms each and windings (3-4) (7-8) is 21 ohms each.

Impedance ratio of windings (2-1) (6-5) to (4-3) (8-7) is 1 to 1. The No. 91A Type Repeating Coil is electrically equivalent to a No. 76A Coil. Overall dimensions, $4\frac{5}{8}$" x $4\frac{3}{16}$" x 5".

TCI Library: www.telephonecollectors.info

REPEATING COILS—*Continued*

No. 93 Type Coil



Wiring Diagram No. 93 Type Repeating Coil Winding for each coil

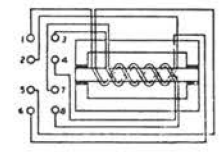
The No. 93 Type Repeating Coils consist of two toroidal type coils, each enclosed in a metal case and assembled on a common metal base. They are intended for use in toll circuits; suitable for 20 cycle, 135 cycle and 1,000 cycle ringing.

The impedances of each pair of coils are matched to permit use with 22 type telephone repeaters.

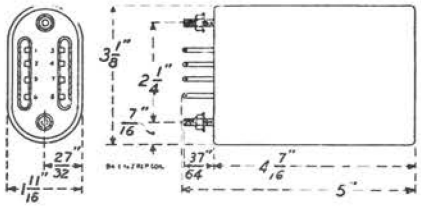
The arrangement and balance of line windings (4-3) (8-7) make them suitable for use in deriving phantom circuits. Overall dimensions, $4\frac{5}{8}$" x $4\frac{3}{16}$" x 5".

Code No.	Approximate Resistance of Windings (Ohms) 1-2	3-4	5-6	7-8	Impedance Ratio 4-3 and 8-7 to 2-1 and 6-5
93A	22	23	22	23	1 to 1
93B	21	14	21	14	1 to 1.62
93F	21	44	21	44	1.62 to 1
93G	19	64	19	64	2.66 to 1
93H	22.5	39.5	22.5	39.5	1.24 to 1
93J	17	55	17	55	2.28 to 1

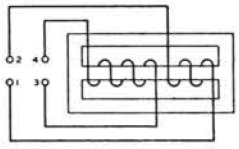
No. 94 Type Coil



Wiring Diagram Nos. 94E & F Type Coil



No. 94E Type Coil, also General Design and Dimensions of the 94F and 94L Type Coils



Wiring Diagram No. 94L Type Coil

The Nos. 94E and 94F Repeating Coils are shell type coils enclosed in metal cases. They are arranged to mount on mounting plates, the closest recommended mounting centers being $3\frac{3}{16}$" x $1\frac{3}{4}$".

The No. 94E Repeating Coil is primarily intended for use in magneto cord circuits to prevent ringing through.

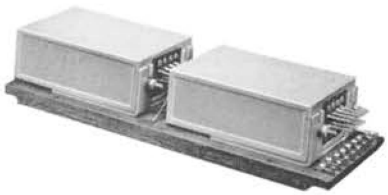
The No. 94L Repeating Coil is intended for use in carrier telephone terminal equipments. It will transmit 20 cycle signaling and presents a high attenuation for voice frequencies.

Code No.	Approximate Resistance of Windings (Ohms) 1-2	3-4	5-6	7-8	Impedance Ratio 2-1 and 6-5 to 4-3 and 8-7
94E	20	20	20	20	1 to 1
94F	30	20	30	20	1.5 to 1
94L	650	650	..	..	1 to 1

TCI Library: www.telephonecollectors.info

REPEATING COILS—*Continued*

Nos. 125 and 126 Types



No. 125A Type Coil

The following repeating coils are intended for use in the regular cord circuits and incoming trunk circuits in central battery switchboards.

The No. 125A Coil consists of two No. 94E Type Repeating Coils mounted on a wooden base designed for coil rack mounting.

The No. 126A Coil consists of one No. 94E Type Coil mounted on the same type base as the No. 125A. For general characteristics, see No. 94E Type Coil.

RESISTANCES



No. 1 Type Resistance



No. 18 Type Resistance



No. 19 Type Resistance

To meet changing conditions many types of Western Electric Resistances have been developed to meet varying circuit requirements. It is impractical to catalog them all here, the main types only being described. Further details on other types of Resistances will be supplied upon request.

No. 1 Type

The No. 1 Type Resistances are small, compact units having one winding on a brass core with fibre heads. Resistance values shown in tabulation below do not change more than ±5% unless otherwise indicated. These resistances are for use in talking circuits or networks only. They should not be directly connected to a battery nor should they carry direct current. They may be used in portable test boxes without reference to the restrictions outlined above, provided the normal wattage does not exceed 1.25 watts and the trouble wattage 3.0 watts.

These resistances are mounted by means of a round head machine screw passing through the core. The overall dimensions are, diameter $^{17}/_{32}$", length $1^{1}/_{4}$". A mounting screw is furnished with the resistance.

INDUCTIVELY WOUND

Code No.	Resistance (Ohms)	Code No.	Resistance (Ohms)	Code No.	Resistance (Ohms)	Code No.	Resistance (Ohms)
1A	400	1E	300	1J	20	1R	250
1B	2500	1F	1000	1K	30	1T	350
1C	500	1G	3000	1N	700	1U	45
1D	60	1H	200	1P	5	(a) 1AN	120

(a) Has a moisture-proof covering.

TCI Library: www.telephonecollectors.info

RESISTANCES

No. 1 Type—*Continued*

NON-INDUCTIVE WINDINGS

Code No.	Resistance (Ohms)	Code No.	Resistance (Ohms)	Code No.	Resistance (Ohms)	Code No.	Resistance (Ohms)
1L	100	(b) 1AL	1.0	1BJ	450	(*) 1CY	482
1W	2000	(*) (a) (c) 1AS	711	(*) 1BU	663	(b) 1DB	5000
(a) 1AD	8.5	(*) 1AT	606	(*) 1BW	1917	1DC	250
(a) 1AE	14.0	(*) 1AU	371	(*) 1CD	398	(c) (d) 1DE	190
(a) 1AF	22.0	(*) (a) (c) 1BD	1575	(*) 1CE	971	(c) (d) 1DF	337
(*) (a) 1AG	1000.0	(b) (c) 1BG	2144	(*) 1CH	631	(c) (d) 1DG	1295
(b) 1AK	2.4	1BH	565	(*) 1CL	1226	1DR	4000.0

(*) Plus or minus ½%.
(a) Has a moisture-proof covering.
(b) Plus or minus 1%.
(c) Alternate layers are wound in opposite directions.
(d) Plus or minus 2%.

No. 18 Type

Resistances of the No. 18 Type have a micanite core upon which a single winding is placed. The winding is protected by a covering of sheet mica. The ends of the winding are soldered to tinned terminal posts which are also used for mounting the unit. Each terminal post is provided with two fibre washers and a hexagonal nut. Will mount on 7/16 inch horizontal centers and 1¾ inch vertical.

The overall dimensions are: length 4 21/32 inches, width, 1 31/64 inches, thickness, 3/8 inch.

The resistance values do not vary more than plus or minus 5 per cent from those rated in the table below. In some cases as noted, the resistance is held to even closer limits. Each resistance will dissipate six watts continuously without injury from heating.

The mounting plates listed elsewhere under the heading of "Mounting Plates" provide for assembling these resistances in compact groups and when so mounted the terminals are conveniently located for making soldered connections.

Code No.	Resistance (Ohms)	Code No.	Resistance (Ohms)	Code No.	Resistance (Ohms)	Code No.	Resistance (Ohms)	Code No.	Resistance (Ohms)
18A	37	18T	50	(b) 18AP	500	18CJ	5	18EM	8600
18B	40	18U	100	18AR	380	18CN	800	18ES	4800
18C	83	18Y	90	18AT	1600	(b) 18CR	2000	(a) 18EU	500
18D	120	18Z	67	(d) 18AY	2.4	(d) 18CU	.8	18EW	5000
18E	140	18AA	95	18BA	2000	(d) 18CW	1.6	18FB	900
18F	150	18AB	45	(b) 18BE	20	(b) 18DA	1510	18FC	4000
18G	200	18AC	500	18BF	284	18DB	3000	18FG	8080
18H	210	18AD	240	(b) 18BG	400	(b) 18DG	426	18FP	6350
18J	30	18AE	600	18BH	1000	18DH	700	(b) 18FR	3200
18K	80	18AF	300	18BJ	1200	(b) 18DJ	15	(b) 18FS	4250
18L	170	18AG	226	(b) 18BK	1300	(a) 18DP	18.75	(c) 18GL	5545
18N	180	18AJ	400	18BL	750	(b) 18DS	1700	(b) 18GU	8
18P	130	18AK	60	(b) 18BM	1000	18EA	9000	(b) 18GW	5.4
18Q	110	18AL	4	(b) 18BT	200	18EC	6000	(c) 18HH	0.3
18R	10	18AM	250	(b) 18BU	300	(b) 18EE	128	(c) 18HJ	0.5
18S	20	18AN	350	(b) 18BW	100	18EF	2500	(g) 18JC	600
								18JG	220.4

(a) Resistance value does not vary more than plus or minus ½%.
(b) Resistance value does not vary more than plus or minus 1%.
(c) Resistance value does not vary more than plus or minus 2%.
(d) Resistance value does not vary more than plus or minus 3%.
(g) Resistance value does not vary more than plus or minus .1 of 1%.

TCI Library: www.telephonecollectors.info

RESISTANCES—*Continued*

No. 19 Type

These resistances are similar in construction to the No. 18 Type and may be mounted on 7/16 inch horizontal centers and 1 3/4 inch vertical centers. They differ from the No. 18 Type in that two windings are provided and the end of each winding soldered to a center terminal. The two outside terminals are used as mounting posts. The resistance values do not vary more than plus or minus 5 per cent from those rated below and in some cases, as noted, the variation is held to closer limits.

Code No.	Resistance (Ohms)	Code No.	Resistance (Ohms)	Code No.	Resistance (Ohms)	Code No.	Resistance (Ohms)
19A	37 and 37	19AN	260 and 260	(f) 19DN	100 and 100	19GJ	300 and 500
19B	40 and 40	19AP	180 and 180	19DP	.25 and .5	19GL	300 and 300
19C	40 and 83	19AW	2.5 and 2.5	19DR	1 and 2	19GM	400 and 1000
19D	83 and 83	19BA	900 and 900	19DT	150 and 300	(c) 19KG	160 and 2990
19H	40 and 120	19BB	300 and 2300	19DY	500 and 500	(c) 19KH	286 and 1325
19K	100 and 100	19BC	50 and 300	(b) 19EA	115 and 115	(c) 19KJ	467 and 512
19S	60 and 90	19BE	30 and 90	19EB	20 and 330	(c) 19KL	269 and 1490
19T	25 and 25	19BG	200 and 400	19EC	650 and 1600	19KM	84 and 6350
19Z	120 and 120	19BJ	350 and 350	19EW	800 and 800	(c) 19KN	146 and 651
19AD	150 and 150	19BL	1 and 1	(b) 19GA	400 and 600	(a) 19PC	102.6 and 3509
19AH	240 and 240	(b) 19CA	185 and 770	(b) 19GB	80 and 85	(b) 19SR	600 and 800
19AJ	200 and 200	19CN	100 and 200	(b) 19GC	75 and 110	19SS	2500 and 2500
19AM	50 and 50	(b) 19DG	133 and 770	(b) 19GH	425 and 425		

(a) Resistance value does not vary more than plus or minus 1/2%.
(b) Resistance value does not vary more than plus or minus 1%.
(c) Resistance value does not vary more than plus or minus 2%.
(f) The two parts are balanced for resistance within 1% of each other.

No. 21 Type

The No. 21 Type Resistances have a single winding. The core is of brass with fibre heads. Equipped with wood screw for mounting. Resistance value does not vary more than plus or minus 5 per cent. Overall dimensions: Diameter, 3/4", length 1 9/32".

Code No. 21A has an approximate resistance of 6000 ohms; No. 21B has approximate resistance of 5000 ohms.

No. 34 Type



No. 34A Resistance

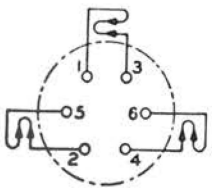
The No. 34 Type Resistances are non-inductive metal spool resistances provided with tap terminals to furnish resistance values as tabulated below. The resistance values do not vary more than plus or minus 5 per cent. The insulation will stand 500 volts A.C. between the winding and the core. A No. 10 Round Head Iron Wood Screw 3" long is furnished for mounting. Approximate dimensions: Diameter, 2 1/16"; length overall, 2 23/64".

Terminal No.		34A	34B	34C	34G	34H
Approximate resistance in steps (ohms)	1	200	100	4	2900	320
	2	400	200	8	2500	160
	3	800	400	16	2200	80
	4	1600	800	32	1700	40
	5	3200	1600	64	1300	20
	6	4600	....	500	900	10
	7	6400	....	1000	700	...
	8	12800	....	1500	.....	...
Approximate total resistance (ohms)		30000	3100	3124	12200	630

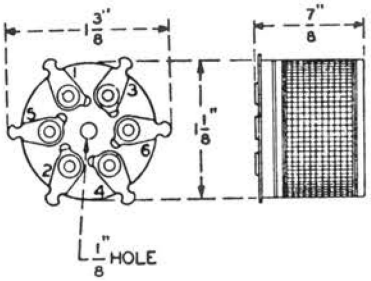
TCI Library: www.telephonecollectors.info

RESISTANCES—*Continued*

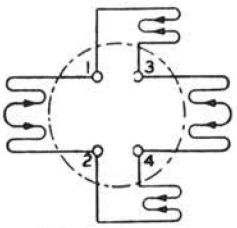
No. 36 Type



Wiring Diagram
No. 36BY Type Resistance



No. 36 Type Resistances



Wiring Diagram
Nos. 36F, G, J and CL

The No. 36 Type Resistances consist of one or more windings, non-inductively wound on a spool having a brass core and phenol fibre spool heads. They are arranged to mount by means of a screw which passes through the core. The mounting screw must be ordered separately. The closest recommended mounting centers for these coils are $1\frac{5}{8}$". The resistance values of the windings are held to within plus or minus 1 per cent unless otherwise noted.

The following No. 36 Type Resistances are intended for use at voice frequencies unless otherwise noted:

Code No.	Terminal Impedance at Which Attenuation Applies		Nominal Resistances Between Terminals as Indicated	
	db	Impedance (Ohms)	Terminals	Ohms
36F	5	300	1-4	581
36G	10	300	1-4	395
36J	20	300	1-4	554.5
(a) 36BY	1	600	1-3 2-5, 4-6	5516 ea. 36.6
(b) 36CL	3	600	1-4	1806

(a) Resistance values are held to within plus or minus 4 per cent.
(b) May be used with carrier frequencies up to 31 KC.

No. 38 Type

These resistances consist of a single carbon filament winding placed in a spiral groove on a cylindrical lavite core. Each end is fitted with a brass cap which serves both as a mounting lug and as a terminal. The lavite spool is covered, after winding, with insulating and moisture-proofing compound. The overall dimensions are: length, 3 inches; diameter, $\frac{23}{32}$ inch.



No. 38 Type

Code No.	Resistance (Ohms)	Code No.	Resistance (Ohms)	Code No.	Resistance (Ohms)	Code No.	Resistance (Ohms)
38A	48000	38H	10200	38T	70000	38AG	36500
38B	12000	38K	14200	38U	72500	38AH	25500
38C	15000	38L	17000	38W	100000	38AN	4580
38D	50000	38N	24000	38Y	4000	38AP	11060
38E	20000	38P	27240	38AA	10000	38AR	75000
38F	5330	38R	37500	38AB	30000	38BB	5000
38G	7300	38S	52500	38AC	7500		

TCI Library: www.telephonecollectors.info

RESISTANCE LAMPS

No. 12 Type



No. 12 Type Resistance Lamp

The No. 12 Type Resistance Lamps are intended for use as current limiting devices in telephone service. They have a single Tungsten filament and are equipped with a medium Edison screw base. The bulb is of clear tipless tubular glass, approximately $\frac{7}{8}$ inch in diameter. The maximum overall length is 3 inches.

The No. 12 Type Resistance Lamps entirely replace the No. 8 Type of corresponding code letter.

The average operating characteristics of these lamps are as follows:

Voltage across lamp measured at following specified currents through the lamp:

Code No.	.03 Amp.	.06 Amp.	.08 Amp.	.100 Amp.	.200 Amp.	.250 Amp.	.500 Amp.
12A	0.45 V. (Max.)	.....	.....	2.3 V. (Max.)	14.0 V. (Min.)	.....	.....
12B	20.0 V.	64.0 V.	110.0 V.	.....	.....	.....	.....
12C	12.5 V.	34.0 V.	.....	79.0 V.	.....	.....	.....
12D	7.0 V.	1.50 V.	.....	31.0 V.	.....	.....	.....
12E	6.0 V.	12.0 V.	.....	26.0 V.	.....	.....	.....
12F	.....	.....	.....	2.0 V.	.....	6.0 V.	18.0 V.
12G	.....	.....	.....	8.0 V.	.....	35.0 V.	110.0 V.
12H	.....	2.0 V.	.....	4.5 V.	.....	20.0 V.	.....
12J	.....	.....	.....	0.7 V.	.....	4.0 V.	24.0 V.

No. 13 Type



No. 13 Type Resistance Lamp

The No. 13 Type Resistance Lamps are the same as the No. 12 Type Resistance Lamps except that they are equipped with moulded bases and soldering terminals instead of the screw bases. Approximate overall length, $4\frac{1}{4}$". Diameter, approximately $\frac{15}{16}$". They are designed to mount on relay rack mounting plates on 1" centers and will also mount on mounting plates drilled or punched for E, R or U Type relays. A tapped hole in the base permits each lamp to be mounted by means of a .138"-32 screw which is furnished as a part of the lamp. Designed to be mounted in a horizontal position and with the soldering terminals in a horizontal plane.

The following table shows the current through the lamp when measured at the following specified voltages:

Code No.	1 V.	2 V.	5 V.	10 V.	24 V.	30 V.	40 V.	90 V.
13A	.070	.....	.135	.....	.....	.....	.300	.....
13B	.....	.....	.....	.020	.....	.039	.....	.075
13C	.....	.....	.....	.030	.....	.058	.....	.110
13D	.....	.....	.....	.046	.....	.093	.....	.176
13E	.....	.....	.....	.055	.....	.107	.....	.210
13F	.....	.150	.240	.....	.585	.....	.....	.....
13G	.....	.....	.....	.120	.....	.230	.....	.430
13H	.....	.066	.110	.....	.280	.....	.....	.....
13J	.145	.....	.270	.....	.....	.....	.650	.....
13L	.....	.....	.070	.100	.....	.....	.....	.205
13M	.....	.....	.....	.175	.....	.260	.....	.410
13N	.020	.....	.055	.....	.....	.....	.103	.....

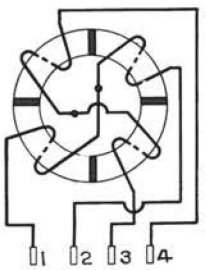
TCI Library: www.telephonecollectors.info

RETARDATION COILS

No. 5 Type



No. 5AA Retardation Coil



Wiring Diagram
No. 5AA Retardation Coil



No. 5AF Retardation Coil

The following No. 5 Type Retardation Coils are toroidal type coils enclosed in a cross-talk proof shell.

Code No.	No. of Windings	Resistance (Ohms)	Use	Size of Coil or Base (Inches)
5AA	2	74 (each)	In standard composite sets.	11 x 8 5/8
5AF	4	330 (total)	In phantoming magneto subscribers' circuits.	3 7/8 x 3 7/8

No. 12 Type



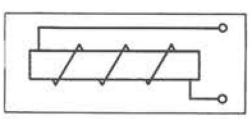
No. 12G
Retardation Coil



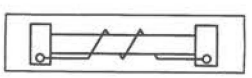
Nos. 12A, 12L and 12S
Retardation Coil



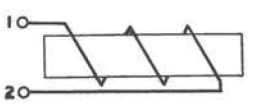
No. 12M
Retardation Coil



Wiring Diagram
Nos. 12A, -E, -F, -L and -S
Retardation Coils



Wiring Diagram
Nos. 12G and 12M
Retardation Coils



Wiring Diagram
Nos. 12AB, -AC, -AD and -AE
Retardation Coils

Code No.	No. of Windings	Resistance (Ohms)	Use	Size of Coil or Base (Inches)
12A 12E	1 1	165 230	Intended for use generally in operators' telephone circuits.	6 x 1 3/4
12F	1	140	Intended for use in supervisory telephone circuits.	6 x 1 3/4
12G	1	2.3	Intended for use in railway composite sets. Has movable core for varying impedance.	3 13/16 x 1 x 1 13/32 high

TCI Library: www.telephonecollectors.info

RETARDATION COILS

No. 12 Type—*Continued*

Code No.	No. of Windings	Resistance (Ohms)	Use	Size of Coil or Base (Inches)
12L	1	400	Operators' telephone circuit No. 4 P.B.X.	6 x 1¾
12M	1	2.3	Intended for use in portable railway composite sets.	3¼ x 1
12S	1	100	Intended for use in operators' telephone circuits, 550 P.B.X. Switchboards.	6 x 1¾
12AB	1	165	Battery supply leads, 24 volt operator's telephone set.	4¼ x 1⅜
12AC	1	24	For use in loud speaking installations for central offices.	4¼ x 1⅜
12AD	1	140	For use in attendant's battery supply circuit of No. 2 order receiving turret arranged for 18 volt operation.	4¼ x 1⅜
12AE	1	400	For use in attendant's battery supply circuit of No. 2 order receiving turret.	4¼ x 1⅜



No. 44 Type



No. 46 Type



No. 47 Type

No. 44 Type

Code No.	No. of Windings	Resistance (Ohms)	Use	Size of Base (Inches)
44D	2 on each coil	83 each winding	Toll cord circuits.	10¾ x 4
44F	4 on each coil	330 each coil—4 windings in series	A phantom circuit retardation coil.	11¾ x 4 3/16
44K	2 on each coil	145 each winding	Linemens' signaling circuits.	10¾ x 4

Nos. 46 and 47 Types

The Nos. 46 and 47 Types of Retardation Coils are designed for general use in switchboard circuits. The No. 46 Types are arranged for front connections and are equipped with mounting lugs at one end for mounting on 1 3/32 inch centers by means of two screws. The overall dimensions are 4 13/64 inches long by 1 inch in diameter. The terminals project out 41/64 of an inch.

The No. 47 Type differs from the No. 46 Type only in that they are arranged to mount on 7/32 inch mounting plates unless otherwise specified. The overall dimensions are 4½ inches long by 1 inch in diameter. The terminals project out 49/64 of an inch.

TCI Library: www.telephonecollectors.info

RETARDATION COILS

Nos. 46 and 47 Types—*Continued*

Code No.	or	Code No.	No. of Windings	Resistance (Ohms)	Code No.	or	Code No.	No. of Windings	Resistance (Ohms)
46A		47A	1	600	46M		47M	2	125 (each)
46B		47B	1	*150	46N		47N	2	100 (each)
46C		47C	1	200	46P		47P	2	500 (each)
46D		47D	1	250	46R		47R	1	1500
46E		47E	1	300	46S		47S	1	40
46F		47F	1	500	46W		....	2	200 (each)
46G		47G	1	750	....		47Y	2	1000 (each)
46H		47H	1	350	46AA		....	2	20 (each)
46J		....	1	900	....		47AC	1	2000
....		47K	1	1000	....		47AD	2	875 (each)
46L		47L	1	400					

(*) Maximum 160 ohms. Minimum 140 ohms.

No. 54 Type



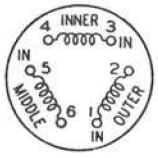
No. 54 Retardation Coil



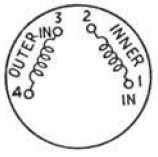
No. 60 Type Retardation Coil



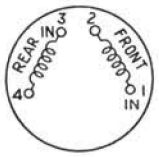
No. 54A



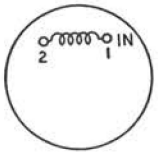
No. 54AA



No. 54B



No. 54D



Nos. 54R and 54AB

The No. 54 Type Retardation Coils are straight type coils enclosed in a metal shell and arranged to mount on a mounting plate. Closest mounting centers $1\frac{23}{32}$ inches. Mounting screws are provided with these coils.

Code No.	Windings	Rated Resistance (Ohms)	Use
54A	(3-4) (1-2) and (5-6)	1300 85 ea.	Battery feed and holding coil, P.B.X. switchboards.
54B	(1-2) (3-4)	400 40	Operators' telephone set, P.B.X. switchboard.
54D	(1-2) (3-4)	85 85	Battery feed coil, cordless and P.B.X. switchboards.
54R	(1-2)	165	Operators' telephone circuits.
54AA	(1-2) (3-4) (5-6)	(a) 48 375 (b) 17	Battery feed and bridged impedance coil, P.B.X. switchboards.
54AB	(1-2)	50	P.B.X. tie trunks.

(a) Plus 5%, minus 10%.
(b) Plus or minus 10%.

TCI Library: www.telephonecollectors.info

RETARDATION COILS—*Continued*

No. 60 Type

Code No.	No. of Windings	Resistance (Ohms) Max.	Min.	Use	
60A	2	.23 .39	.19 .31	Intended for use with the Nos. 84F and 84G Interrupters to limit the noise in the battery due to the operation of the interrupter.	10½ x 3¼
60B	2	5.8 10.2	4.8 8.4	Used with the Nos. 84F and 84G Interrupters to limit the inductive noise in the switchboard wiring and cable.	



No. 67A Retardation Coil

No. 67A Type

The No. 67A Retardation Coil is intended for use in eliminating high frequency interferences of motor generators in public address systems. It is a solenoidal type coil wound on a core of non-magnetic material. Overall dimensions: Diameter 1⅛ inches, depth 13/16 inches. It consists of one winding with an approximate D.C. resistance of 6.9 ohms.

No. 71 Type

Code No.	No. of Windings	Approx. Resistance each winding (Ohms)	Use
71A	2	186.0	Telephone Repeater Equipments.
71K	2	1.0	With 135 cycle ringing equipment.
71R	1	14.8	In the No. 156B Interrupter.
71S	2	1.5	Battery supply coils in telephone repeaters.

No. 77A Type

The No. 77A Retard Coil is the same as the No. 5AA except that it is not mounted on a wooden base. It is intended for use in composite sets mounted on relay racks. It is a toroidal type coil enclosed in a cross-talk proof case. Has two windings with approximately 74 ohms each.

No. 82G Type

This is a toroidal type coil enclosed in a sheet metal case arranged for relay rack mounting. Overall dimensions: Base, 3 x 1 7/16 inches, height 3 3/16 inches. The resistance of the winding is 3.5 ohms. Intended for use in telephone repeater equipments.

No. 110A Type

A toroidal type coil enclosed in a cross-talk proof case arranged for mounting on mounting plates. It has two windings the approximate resistance of each being 83 ohms. Equivalent electrically to ½ of No. 44D Coil.

Intended for use with telephone repeaters.

Overall dimensions: Base, 2 9/16 x 4 3/16 inches; height, 4 17/32 inches.



No. 116 Type Retard Coil

No. 116A Type

A solenoidal type coil wound on a non-magnetic core. Has one winding of approximately 2.6 ohms resistance. Is intended for use in eliminating high frequency interference produced by pole changers, interrupters, ringing machines, etc., in telephone offices.

Overall dimensions: Diameter, 2⅜ inches; height, 1 5/16 inches.

Nos. 148A and 148B Types

High impedance shell type coils enclosed in metal cases. Arranged to mount on mounting plates. Each coil has two windings. Recommended in place of the No. 75 Type Retardation Coils of corresponding code letter.

Code No.	Approx. Resistance of Each Winding (Ohms)
148A	3700
148B	2313

TCI Library: www.telephonecollectors.info

RETARDATION COILS—*Continued*

No. 149 Type

The No. 149 Type Retardation Coils are shell type coils enclosed in metal cases. Arranged to mount on mounting plates. Closest recommended mounting centers are $1\frac{3}{4}$ inches by $3\frac{3}{16}$ inches.

Code No.	Approx. D.C. Resistance of Windings (Ohms) (1-2)	(3-4)	Use
149A	44	44	In dialing circuit of the test cord in the No. 5 toll test board.
149B	101	101	In 20 cycle tuned circuit of terminal and intermediate ringers.

No. 167 Type

The No. 167 Type Retardation Coils are toroidal type coils enclosed in metal cases and arranged to mount on relay racks. The closest recommended mounting centers are $1\frac{3}{4}$ inches by $3\frac{1}{2}$ inches. Maximum overall dimensions: $3\frac{9}{32}$ inches by $1\frac{11}{16}$ inches by $4\frac{3}{16}$ inches high.

Code No.	No. of Windings	Approx. D.C. Resistance of Each Winding (Ohms)	Use	Replaces
167A	2	96	Phantom and side circuit composite balancing sets.	91AW
167B	2	212	Phantom and side circuit composite balancing sets.	(a) 91AY
167C	2	222	135 cycle composite ringer set.	91C
167D	2	19.5	Carrier systems.	91L

(a) When equipped with two No. 26A Brackets.

No. 184A Type



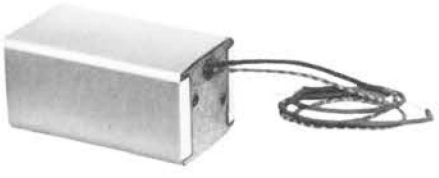
No. 184A Retardation Coil

The No. 184A Retardation Coil is a solenoidal type coil having a non-magnetic core and enclosed in a metal case. It is arranged for single side relay rack mounting. Closest recommended mounting centers are $1\frac{3}{4}$ inches by $1\frac{5}{8}$ inches. Consists of two windings, the average D.C. resistance of each being approximately 1 ohm.

The No. 184A Retardation Coil is intended for use in No. 750 P.B.X. switchboards and with ringing machines in small dial offices and dial P.B.X. systems, to prevent interference to radio reception.

No. 221F Type

The No. 221F Retardation Coil is a shell type coil having a silicon steel core, potted in a metal case. It is intended for use in the rectifier unit of the H1 Carrier Telephone Terminal. Approximate D.C. resistance is 950 ohms. Closest recommended mounting centers are $1\frac{7}{8}$ inches by $1\frac{7}{8}$ inches.



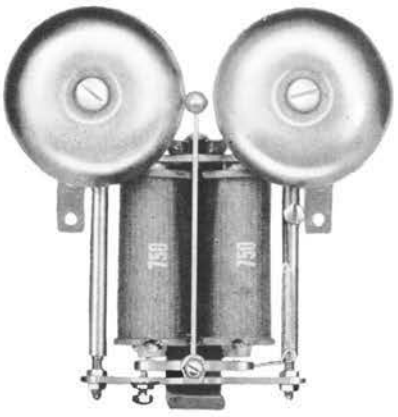
No. 221F Retardation Coil

TCI Library: www.telephonecollectors.info

RINGERS



No. 8 Type Ringer



No. 78A Ringer



Unbiased | Biased to Prevent Tapping | Biased for Pulsating Current

Western Electric Company ringers are wound with black enamel wire of Western Electric manufacture and are designed to give maximum ringing efficiency and at the same time offer high impedance to voice currents.

The gong posts are designed for engaging slotted gongs thereby assuring permanent gong adjustment.

Ringers (except harmonic ringers) are divided into two classes, namely: lock-nut adjustment and screw adjustment. In the screw type the position of the armature is adjusted with regard to the pole pieces, by means of a screw driver; and the position of the gongs is adjusted by means of an eccentric screw. These ringers are used in practically all the magneto telephones.

In the lock-nut type of adjustment a small wrench (for example: the No. 129 Tool) is used to alter the position of the armature with regard to the pole pieces and the eccentric screw form of gong adjustment is not employed. Ringers employing the lock-nut method of adjustment are used on central battery telephones.

All ringers employing the single screw form of adjustment are provided with screw terminals, whereas those employing the lock-nut adjustment have soldering terminals.

The ringers that are equipped with a biasing spring and armature stop screw or screws are intended primarily for use on pulsating (PC) or superimposed current (SC). However, such ringers are frequently operated on alternating current (AC) particularly in central battery systems.

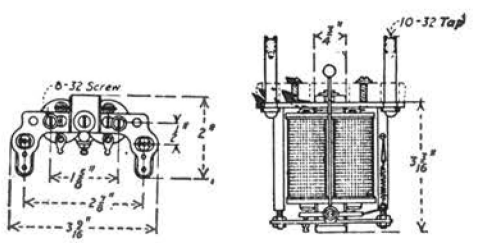
Ringers equipped with a bias spring but without armature stop screws are intended for use on alternating current where it is desired to render the ringer less sensitive so that it will not tap, due to inductive disturbances, also to prevent operation on pulsating current.

Ringers which are not equipped with biasing springs are suitable for use only on alternating current.

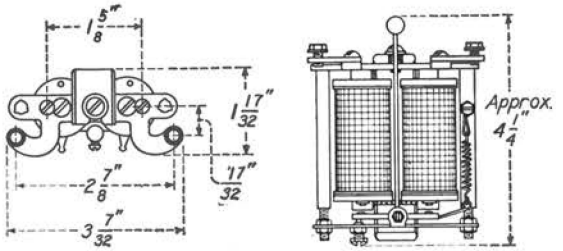
TCI Library: www.telephonecollectors.info

RINGERS—*Continued*

Nos. 8, 42, 52, 68 and 72 Types



No. 8 Type Ringer
Also No. 52 Type



No. 68 Type Ringer

Code No.	Consists of: Ringer Code No.	Consists of: Resistance (Ohms)	Consists of: Gong Code No. and Finish	Consists of: Diameter (Inches)	Current Adjusted For	Biasing Feature	Type of Armature Air Gap Adjustment	Gong Posts Woodwork: Length	Gong Posts Woodwork: Thickness
8AG	8A	*1400	29A black	2½	AC	Spring and Screw	Lock Nut	1 5/16	3/8
52AG	52A	**1000 and 3000	29A black	2½	PC or SC	Spring and Screw	Lock Nut	1 31/64	9/16
‡68A	....	1500	.....	...	AC	Spring and Screw	Lock Nut	...	..
††68JA	....	4300	.....	...	AC	Spring and Screw	Lock Nut	...	..

* The No. 8A Ringer was formerly wound to 1000 ohms resistance instead of 1400 ohms. The 1000 ohm and 1400 ohm ringers have the same impedance and may be used interchangeably in service.

** One spool of the No. 52 Type Ringer has a 3000 ohm supplementary non-inductive winding over the regular winding. The two windings are connected in series and the junction brought out to an extra terminal on the spool head for use in connection with an extension bell. These are the equivalent of using a 3000 ohm non-inductive resistance coil in series with a 1000 ohm, No. 8 Type Ringer.

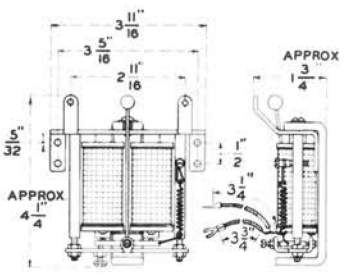
† Offers high impedance to noise frequencies. Recommended in place of No. 8J.

‡ The No. 68 Type is similar to the No. 8 Type of corresponding code letter, except arranged to mount 2½ inch gongs having eccentric holes, in an inverted position, such as No. 29C.

No. 78 Type

The No. 78 Type Ringers are similar to the No. 68 Type except arranged for use in Nos. 584 and 684 Type Subscriber Sets with Nos. 36, 37 and similar type gongs. They are intended for use on non-polarized ringing lines and are biased to prevent tapping.

Code No.	Approx. Resistance (Ohms)	Approx. Inductance at 900 Cycles (Henries)	Approx. Overall Dimensions
78A	1500	4	4¼ x 3 11/16 x 1¾
78JA	4300	30	4¼ x 3 11/16 x 1¾



Nos. 78A and JA Type Ringers

TCI Library: www.telephonecollectors.info

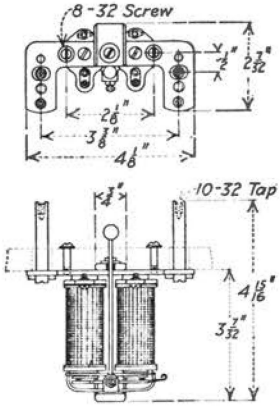
RINGERS—*Continued*



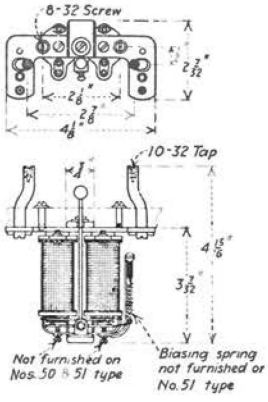
No. 38 Type



No. 51 Type



Nos. 38 and 45 Type Ringers Also General Dimensions of No. 47 Type (with Biasing Spring)



Nos. 49 and 51 Type Ringers

Nos. 38, 45, 47, 49, 51 and 53 Types

Code No.	Ringer Code No.	Type of Armature Air Gap Adjustment	Resistance (Ohms)	Biasing Feature	Current Adjusted For	Gong Posts — Length	Gong Posts — Woodwork Thickness	Gongs — Code No. and Finish	Gongs — Diameter Inches
38AG	38A	Single Screw	1000	None	AC	1 37/64	5/8	26A black	3
38BG	38B	Single Screw	2500	None	AC	1 37/64	5/8	26A black	3
38FG	38F	Single Screw	1600	None	AC	1 37/64	5/8	26A black	3
45F	...	Single Screw	1600	None	AC	1 43/64	..	(a)	...
47BG	47B	Single Screw	2500	Spring	AC	1 43/64	5/8	26A black	3
49BG	**49B	Single Screw	2500	Spring and Screw	PC	1 43/64	5/8	29A black	2 1/2
51AG	**51A	Single Screw	1020	None	AC	1 43/64	5/8	29A black	2 1/2
51BG	**51B	Single Screw	2500	None	AC	1 43/64	5/8	29A black	2 1/2
51FG	**51F	Single Screw	1600	None	AC	1 43/64	5/8	29A black	2 1/2
53AG	53A	Single Screw	1020	None	AC	1 9/16	5/8	29A black	2 1/2
53BG	53B	Single Screw	2500	None	AC	1 9/16	5/8	29A black	2 1/2
53FG	53F	Single Screw	1620	None	AC	1 9/16	5/8	29A black	2 1/2

* Treated to resist the action of moisture and fumes. Used in mine telephones.

** The Nos. 49 and 51 Type Ringers have bent gong posts which permit of their use in woodwork drilled for ringers having three inch gongs; for example drilled for the No. 38 Type Ringer.

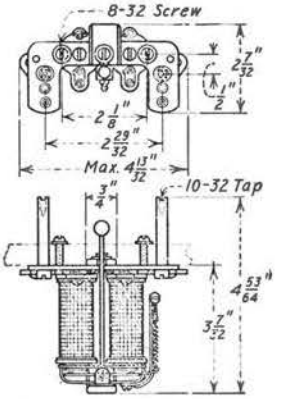
(a) Arranged for No. 20 Gongs. Diameter 3 inches.

TCI Library: www.telephonecollectors.info

RINGERS—*Continued*



No. 54 Type



No. 55 Type Ringers also General Dimensions of Nos. 53 and 54 Types



No. 41SG Ringer

Nos. 54 and 55 Types

Code No.	Ringer Code No.	Armature Adjustment	Resistance (Ohms)	Biasing Feature	For Current	Length	Gong Posts (Ins.) Drilling	Gongs and Finish	Diameter (Ins.)
54BG	54B	Single Screw	2500	Spring and Screw	PC	1 9/16	5/8	29A black	2 1/2
55BG	55B	Single Screw	2500	Spring	AC	1 9/16	5/8	29A black	2 1/2

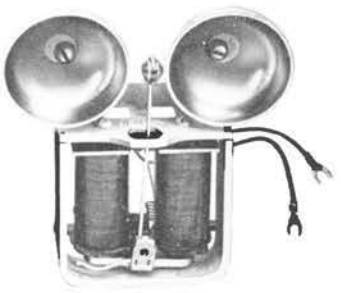
Harmonic Ringers

Code No.	Ringer Code No.	Armature Adjustment	Resistance (Ohms)	Biasing Feature	For Current	Length	Gong Posts (Ins.) Drilling	Gongs and Finish	Diameter (Ins.)
41RG	41R	None	1800	None	16 2/3 cycles	1 9/16	5/8	29A black	2 1/2
41SG	41S	None	460	None	33 1/3 cycles	1 9/16	5/8	29A black	2 1/2
41TG	41T	None	285	None	50 cycles	1 9/16	5/8	29A black	2 1/2
41UG	41U	None	200	None	66 2/3 cycles	1 9/16	5/8	29A black	2 1/2
41YG	41Y	None	285	None	60 cycles	1 9/16	5/8	29A black	2 1/2

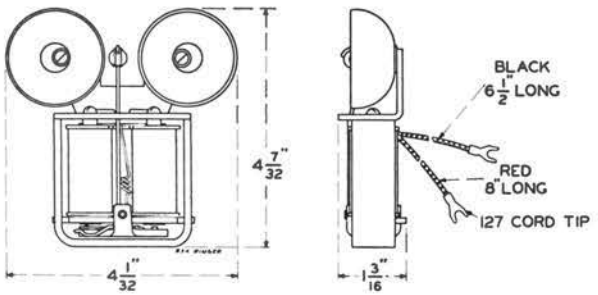
TCI Library: www.telephonecollectors.info

RINGERS—*Continued*

B1A Ringer



No. B1A Ringer



No. B1A Ringer Dimensional Drawing

The No. B1A Ringer is a unit type biased ringer intended for use in H1 Type telephone set mountings. It has a cantilever type biasing spring arranged for three settings and a stroke adjusting stop for adjusting the sound output.

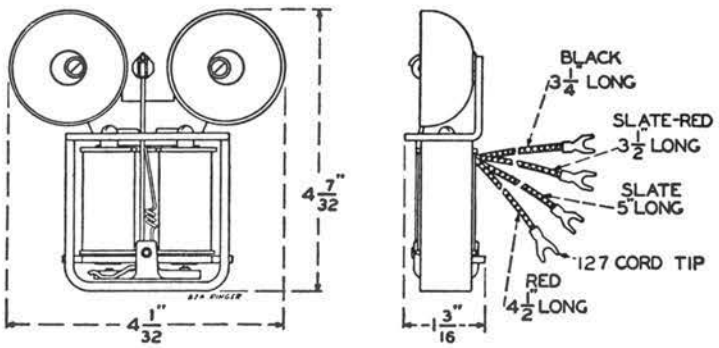
The Ringer is equipped with one No. 40A and one No. 40B Gong. They can also be obtained equipped with two No. 40C or one No. 40D and one No. 40E Gong when specified in the order. These ringers can also be obtained with a wooden clapper (P-465312) instead of a metal clapper, when specified in the order.

The No. B1A Ringer has two coils having a total D.C. resistance of 4600 ohms ± 10%. The 900 cycle inductance is minimum 20 henries.

B2A Ringer



No. B2A Ringer



No. B2A Ringer Dimensional Drawing

The No. B2A Ringer is a unit type biased ringer intended for use in H3 Type telephone set mountings. It has a cantilever type biasing spring arranged for three settings and a stroke adjusting stop for adjusting the sound output the same as the B1A Ringer.

The Ringer is equipped with one No. 40A and one No. 40B Gong. It can also be obtained equipped with two No. 40C or one No. 40D and one No. 40E Gong instead of the Nos. 40A and 40B Gongs, when specified in the order.

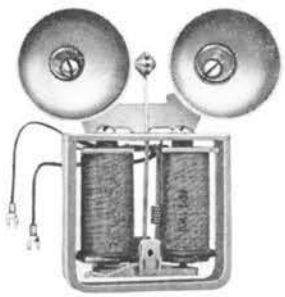
The D.C. resistance between slate and black leads is 960 ohms ± 10%, between red and slate-red leads is 3640 ohms ± 10% and between red and black leads, with slate and slate-red connected together, is 4600 ohms ± 10%.

The 900 cycle inductance between slate and black leads is minimum 2.5 henries and between red and black leads with slate and slate-red connected together, is minimum 20 henries.

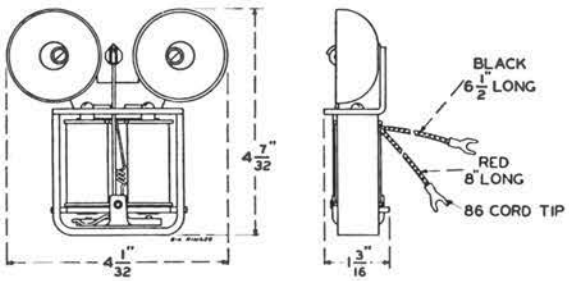
TCI Library: www.telephonecollectors.info

RINGERS—*Continued*

B3A Ringer



No. B3A Ringer



No. B3A Ringer Dimensional Drawing

The No. B3A Ringer is intended for use with 333A or similar type vacuum tubes on 4-party selective or 8-party semi-selective ringing lines. It is a unit type biased ringer having the gongs included as part of the apparatus. It has a shaft armature suspension, a fixed air-gap and a cantilever type biasing spring intended for adjustment during manufacture, but provided with three settings for field use.

Two levels of sound output are provided through the use of interchangeable clappers made of brass and wood. Ordinarily furnished with a brass clapper. However, can also be obtained with a wooden clapper when specified in the order.

Two tones can also be obtained through the use of aluminum and brass gongs. Brass gongs are regularly furnished but aluminum gongs can be obtained when specified in the order.

TCI Library: www.telephonecollectors.info

RINGERS—*Continued*

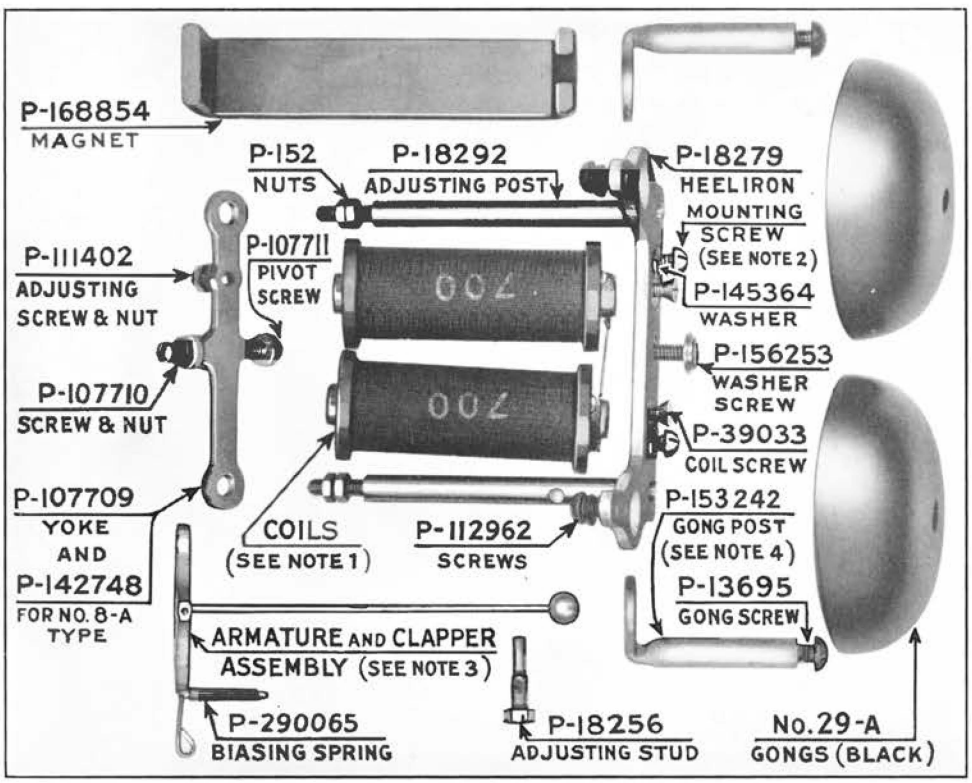
General Notes on Ringers

In all cases the length of the gong post is measured from the top of the heel iron to the surface on which the gong rests. This surface is $\frac{3}{64}$ inch lower than the lugs which project through the slots in the gong.

Spacers to adapt the ringers to $\frac{3}{8}$ or $\frac{1}{2}$ inch woodwork will be furnished if specified in order.

In ordering, specify whether ringer is to be mounted in a wooden or metal type of set.

Replacement Parts of Ringers



Nos. 8AG, 42AG and 52AG

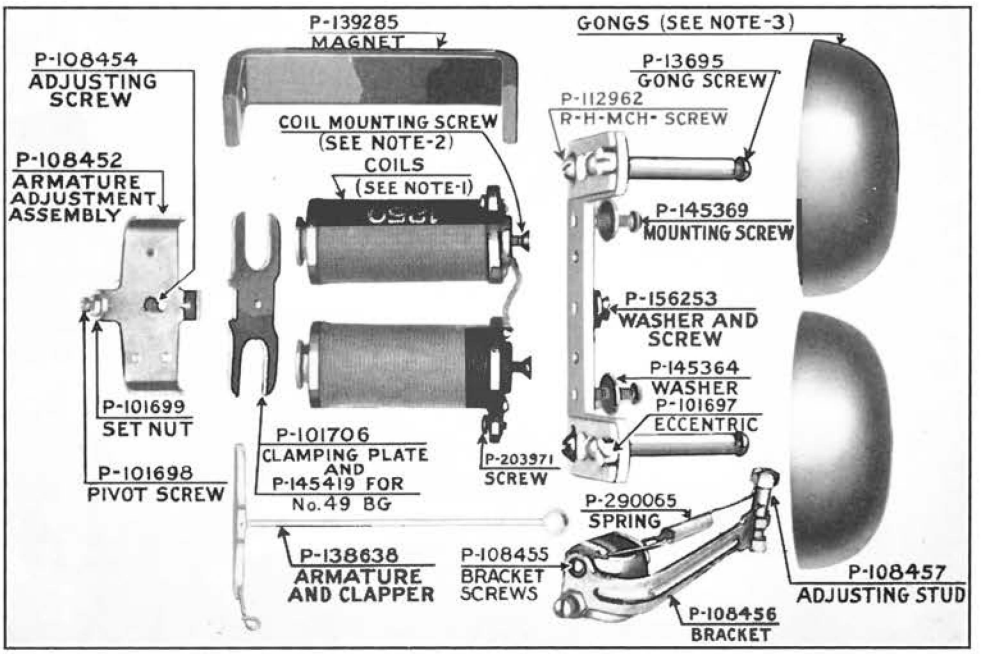
	Ringer Nos. 8AG	42AG	52AG
Note 1) Coils	P-295704 (700 ohms)	P-218234 (500 ohms) P-214153 (500-3000 ohms)	P-127418 (500 ohms) P-214154 (500-3000 ohms)
(Note 2) Mounting Screw	P-145367	P-145366	P-145369
(Note 3) Armature and Clapper Assembly	P-146329	P-146329	P-146328
(Note 4) Gong Post	P-153242	P-153242	P-156829

Gongs for various type ringers are listed with the code numbers.

TCI Library: www.telephonecollectors.info

RINGERS

Replacement Parts—*Continued*



Repair parts for the Nos. 38, 47, 49, 50, 51, 53, 54 and 55 Type Ringers are the same as shown above with the following exceptions:

Description	Ringer		Ringer	
Coils (Note 1)	38AG 47AG 51AG 53AG	P-295143 (500 ohms ea.)	38BG 47BG 49BG 50BG 51BG 53BG 54BG	P-295144 (1250 ohms)
	38FG 47FG 51FG 53FG 55FG	P-295146 (800 ohms)	55BG	P-295152 (1250 ohms)
			51JG	P-127280 (25 ohms)
Coil Mounting Screw (Note 2)				
35 Type P-109804	38 Type 51 Type 53 Type	P-40837	47, 49 Types 50, 54 Types 55 Type	P-38973

Gongs (Note 3) for various type ringers are listed with the code numbers.

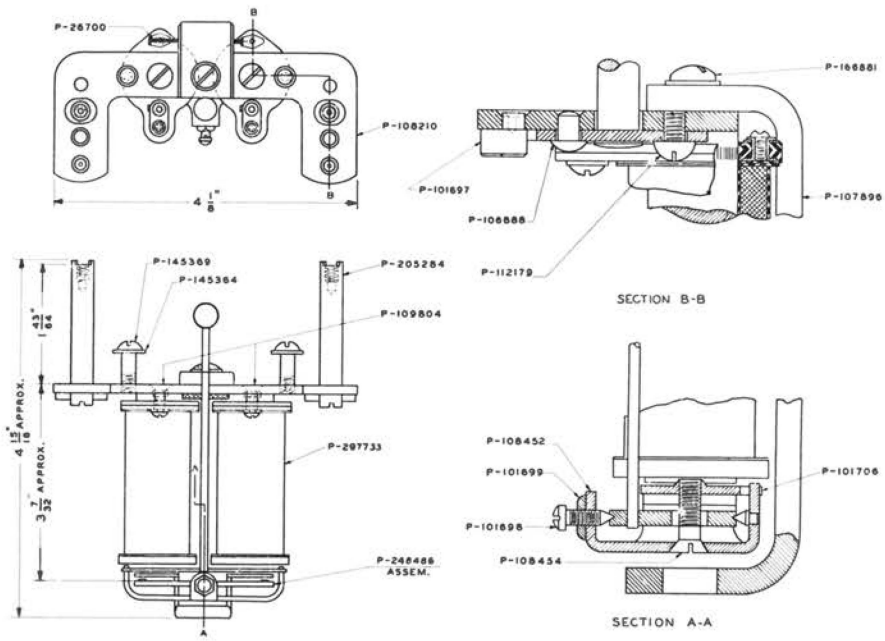
Gong Post Assembly—38BG Ringer—P-205284.

TCI Library: www.telephonecollectors.info

RINGERS

Replacement Parts—*Continued*

No. 45F Ringer



Piece Part	No. Required	Material	Name
P-108452	1	.....	Armature Adj. Assembly
P-248486	1	.....	Clapper and Armature Assembly
P-205284	2	....	Gong Post Assembly
P-297733	2	....	Coil Assembly
P-26700	1	.....	Conductor, 1½″ long
P-101697	2	Brass	Eccentric
P-101698	1	Brass	Pivot Screw
P-101699	1	Brass	Hex. Nut
P-101706	1	Brass	Clamping Plate
P-106888	2	Iron	Rivet
P-166881	1	Iron	Washer H. M. Screw
P-108210	1	Steel	Heel Iron
P-108454	1	Brass	F. H. Machine Screw
P-109804	2	Iron	F. H. Machine Screw
P-112179	2	Brass	R. H. Machine Screw
P-107896	1	.....	Magnet

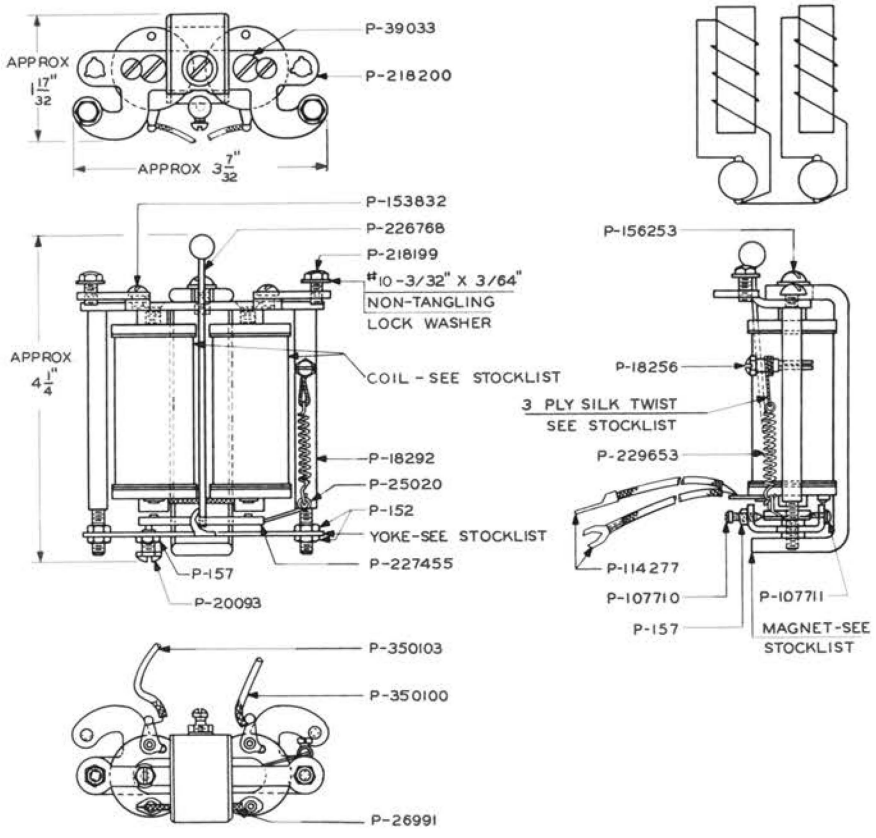
Gongs for various type ringers are listed with the code numbers.

TCI Library: www.telephonecollectors.info

RINGERS

Replacement Parts—*Continued*

No. 68JA Ringer



Piece Part	No. Required	Name
P-39033	2	F. H. M. Screw
P-218200	1	Heel Iron
P-350103	1	Cord Conductor 6½″ long
P-350100	1	Cord Conductor 6½″ long
P-114277	2	72 Cord Tips
P-18292	2	Adjusting Post
P-152	4	Hex. Nut
P-157	2	Hex. Nut
P-20093	1	Adjusting Screw
P-156253	1	Washer H. M. Screw
P-26991	1	Sleeve Conductor 1⅜″ long
P-18256	1	Adjusting Stud
P-107710	1	Pivot Screw
P-107711	1	Pivot Screw
	1	3-Ply Spun Brown Twist 3½″ long
P-229653	1	Biasing Spring
P-238288	1	Magnet
P-107709	1	Yoke
P-25020	1	Hook
P-227455	1	Armature Assembly
P-238287	2	Coil
P-226768	1	Clapper Assembly

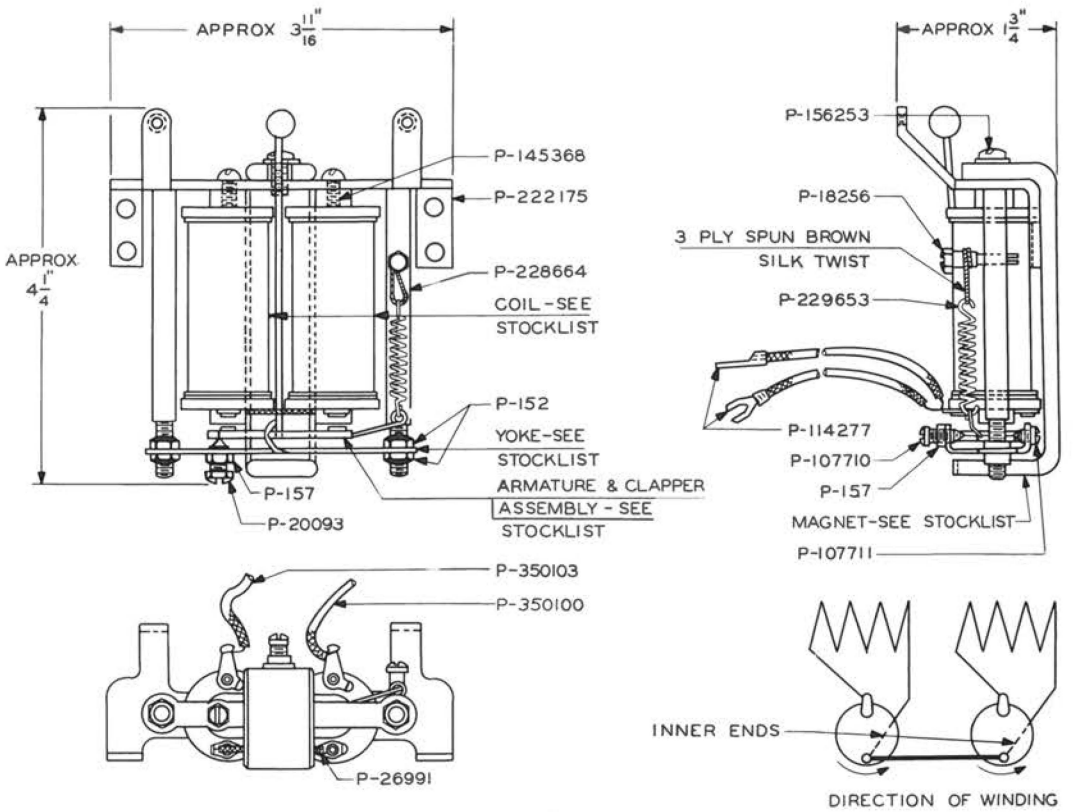
Gongs for various type ringers are listed with the code numbers.

TCI Library: www.telephonecollectors.info

RINGERS

Replacement Parts—*Continued*

Nos. 78A and 78JA Ringers



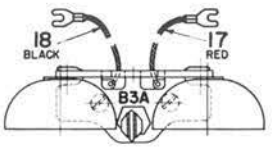
78JA Piece Part	78A Piece Part	No. Required	Name
P-145368	P-145368	2	R. H. M. Screw
P-222175	P-222175	1	Heel Iron Gong Mounting
P-350100	P-350100	1	Cord Conductor Black 4¾″ long
P-350103	P-350103	1	Cord Conductor Red 5¼″ long
P-114277	P-114277	2	72 Cord Tip
P-228664	P-228664	2	Adjusting Post
P-152	P-152	4	Hex. Nut
P-157	P-157	2	Hex. Nut
P-20093	P-20093	1	Adjusting Screw
P-156253	P-156253	1	Washer H. M. Screw
P-26991	P-26991	1	Sleeve Conductor 1⅜″ long
P-18256	P-18256	1	Adjusting Stud
P-107710	P-107710	1	Pivot Screw
P-107711	P-107711	1	Pivot Screw
		1	3-Ply Spun Brown Twist 3½″ long
P-229653	P-229653	1	Biasing Spring
P-238288	P-238288	1	Magnet
P-107709	P-227770	1	Yoke
P-238287	P-295704	2	Coil
P-227456	P-227456	1	Armature and Clapper Assembly

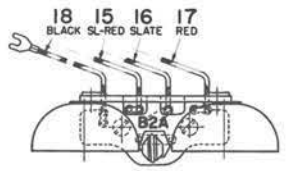
Gongs for various type ringers are listed with the code numbers.

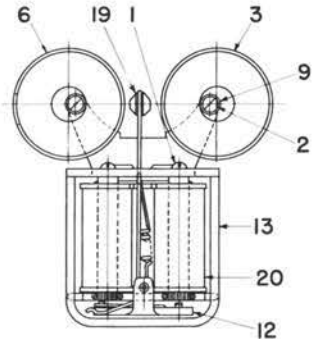
TCI Library: www.telephonecollectors.info

RINGERS

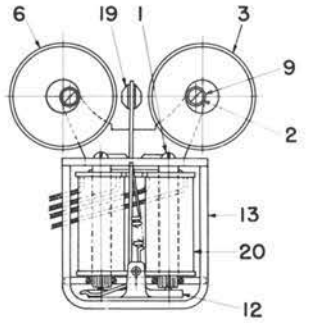
Replacement Parts—*Continued*







Nos. B1A and B3A Ringer



No. B2A Ringer

Number	Description	Number Required	B1A Ringer Piece Part	B2A Ringer Piece Part	B3A Ringer Piece Part
1	R.H.M. Screw	2	P-111869	P-111869	P-111869
2	Special Head Machine Screw	2	P-470297	P-470297	P-470297
3	Gong	1	*40A	*40A	*41A
6	Gong	1	**40B	**40B	**41B
9	Lock Washer	2	RM-616220	RM-616220	RM-616220
12	(a) Armature and Clapper Assembly	1	P-456839	P-456839	P-457896
13	Magnet Assembly	1	P-471100	P-471100	P-471100
15	Lead (slate-red)	1	.....	P-298026	.....
16	Lead (slate)	1	.....	P-298028	.....
17	Lead (red)	1	P-298035	P-298027	P-298035
18	Lead (black)	1	P-298034	P-298032	P-298034
19	(a) Clapper Assembly	1	P-465312	P-465312	.....
20	Coil Assembly	1	P-456837	P-457019	P-457895

*No. 40C or 40E Gong furnished when specified.

**No. 40C or 40D Gong furnished when specified.

(a) When specified in the order wooden clapper assembly P-465312 shall be furnished instead of the metal clapper which forms a part of armature and clapper assembly per P-456839.

Ringer Indicator

Code No. 1A—A manually restored indicator, consisting of a metal frame with a slide which is arranged to engage the clapper rod of a ringer.

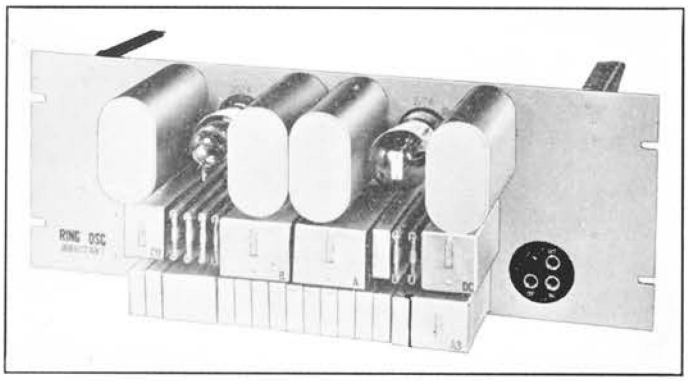
Operation of ringer exposes a white surface on the frame.

Standard method of wording orders: 1—1A Ringer Indicator.

TCI Library: www.telephonecollectors.info

RINGER-OSCILLATOR

1000 Cycle Terminal Ringer-Oscillator



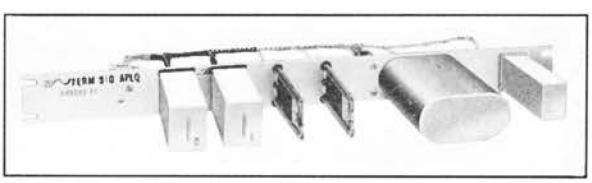
1000 Cycle Ringer-Oscillator Panel—Front View

The Western Electric 1000 Cycle Terminal Ringer-Oscillator was developed to meet a demand in small installations for a means of sending and receiving voice frequency signals on long telephone circuits. It is particularly applicable for use by telephone, railroad, power, oil and pipe line companies.

The use of voice frequency signaling has the advantage over signaling at other frequencies (for example, 20 cycle and 135 cycle) in that equipment is not required at intermediate repeater points for relaying the signals. This is because the signals, being approximately in the middle of the voice frequency band, are amplified by repeaters the same as voice currents. In addition, the signaling frequency must be within the voice frequency range for signaling on individual voice channels of multi-channel carrier systems.

The voice frequency signal used is a basic 1000 cycle current interrupted approximately 20 times per second. The signal receiving circuit is therefore designed to be selective to both the 1000 cycle frequency and to the frequency of interruption. A signal must be maintained for a minimum predetermined length of time to operate the ringer. This use of a signal involving two frequencies with a minimum signal time requirement practically eliminates the possibility of false operation from voice or other currents.

The Ringer-Oscillator used alone is arranged only for D.C. terminal signaling. However, it is universally wired so that it may be used with a 20-cycle terminal signaling applique unit for installations where 20-cycle terminal signaling is employed. It includes directional selection and cut-off relay features.

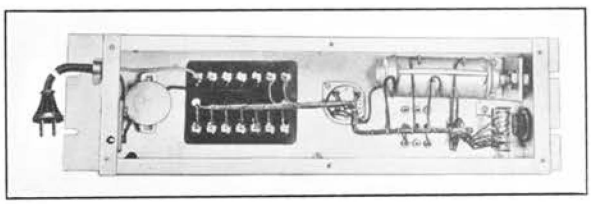


1000 Cycle Ringer-Oscillator, 20 Cycle, Terminal Signaling Applique Unit

TCI Library: www.telephonecollectors.info

RINGER-OSCILLATOR

1000 Cycle Terminal Ringer-Oscillator—*Continued*



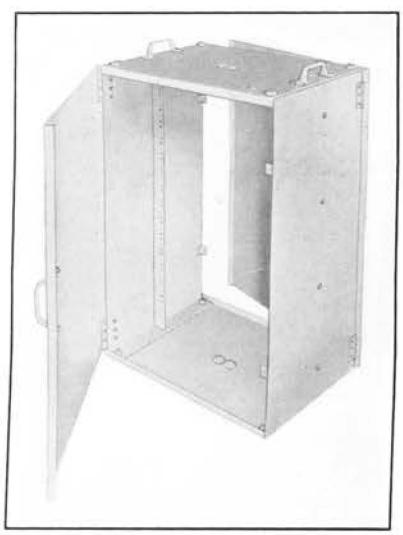
Signaling Power Supply Panel—Rear View, Cover Removed

The Western Electric 1000 Cycle Ringer-Oscillator requires 24-volt filament and signal battery and 130-volt plate battery for operation. Where this battery is not available the power for operating the ringer-oscillator may be obtained from a signaling power supply panel which operates from 50 or 60 cycles, 100 to 122.5 volt commercial A.C. supply or other suitable source. Power equipment furnishing equivalent potentials to those furnished by the signaling power supply may also be used to operate the ringer-oscillator.

Emergency power transfer equipment is also available. This provides a means of automatically transferring the load on a signaling power supply panel to batteries in the event of A.C. power failure or failure of the power supply panel.

The ringer-oscillator is arranged for 19″ relay rack mounting. It is $6\frac{21}{32}$″ high and weighs approximately 37 pounds.

A cabinet may be employed in locations where relay rack mounting of the equipment is not desired. This cabinet is made of 14 gauge sheet steel with hinged doors at front and rear. Knockout holes are provided in both top and bottom of the cabinet so that connections may be made to associated line and switchboard equipment and to power supply as required. The outside dimensions of the cabinet are $21\frac{3}{16}$″ wide by $15\frac{13}{16}$″ deep by $30\frac{5}{8}$″ high, exclusive of the $1\frac{1}{2}$″ handles, and weighs approximately 75 pounds.



Portable Apparatus Cabinet

For complete information regarding the 1000 Cycle Terminal Ringer-Oscillator and associated equipment, you are invited to address any Western Electric distributor whose name is listed on the last page of this catalog.

TCI Library: www.telephonecollectors.info

SIGNALS



No. 4E, No. 2 Mounting



No. 34A shown in the operated position



No. 32A



No. 42A Signal on No. 79 Mounting

No. 4 TYPE

The No. 4 Type Signal has two coils. When operated, an aluminum signal is lifted into a visible position, it being covered by the mounting when unoperated. The aluminum signal target is supplied numbered in black as per order but will be supplied unnumbered unless otherwise specified. The No. 4A and No. 4E have a local contact which is closed when the signal is operated. The No. 4J is not provided with a local contact; the armature of the No. 4J is provided with a counterweight to balance the target.

This type is used principally as a line signal in private branch exchanges employing magnetic signals and operating on a central battery basis. Mounts on 1 3/8 inch centers.

Code No.	Resistance (Ohms)	Used with Signal Mounting
4A	98	Nos. 2, 3, 94A, 95A
4E	500	
4J	400	

No. 32 TYPE

The face of the No. 32 Type Signal is entirely black in the unoperated positions. When operated, a target is lifted into position so as to register white in the slots in the signal face, thus giving visible indication of operation. These signals have no local contacts. Mounts on 1 1/16 inch centers.

The No. 32B has a single winding; the No. 32A has two windings, one inner inductive winding of 50 ohms and an outer non-inductive winding of 100 ohms. The resistance value given in the table below is for both windings in parallel.

Code No.	Resistance (Ohms)
32A	33
32B	50

No. 34 TYPE

The No. 34 Type Signal has one coil with a single winding. When operated, an aluminum target is displayed as shown in the illustration. In the unoperated position, the opening in the signal face is not filled by the target. The signals will be furnished unnumbered unless otherwise specified, but, if so ordered, they will be supplied with black numbers on the aluminum target. When so desired, No. 129 Type Number Plates may be used with these signals and the number on the target omitted.

Each No. 34 Type Signal has a single local contact which is closed in the operated position.

These signals are used as line signals in the No. 9 Switchboard and in the trunk circuits of the old No. 105 Magneto Switchboard. They will mount on 1 1/8 inch horizontal and 1 3/8 inch vertical centers.

Code No.	Resistance (Ohms)	Used with Signal Mounting
34A	86	Nos. 34, 60, 61, 62, 96, 97
34B	300	
34C	900	
34D	525	

No. 41 TYPE

The No. 41 Type Signal is similar in general construction to the No. 34 Type. The coil has two parallel windings; the resistance given below is the value of each individual winding. These signals will mount on 1 1/16 inch horizontal and 1 3/8 inch vertical centers. Numbered in black on the aluminum target when so specified in order but otherwise furnished unnumbered.

The No. 41 Type Signal is provided with a cross-talk proof shell.

This type signal has a local contact, both sides of which are brought out to terminals. The No. 41A Signal has this contact normally open; the No. 41B is arranged so that the contact is closed when the signal is in the unoperated position.

These signals are used in the cord circuits of the No. 9 Switchboards.

Code No.	Resistance (Ohms)	Used with Signal Mounting
41B	100 (each)	No. 60

TCI Library: www.telephonecollectors.info

SIGNALS—*Continued*

No. 42A TYPE

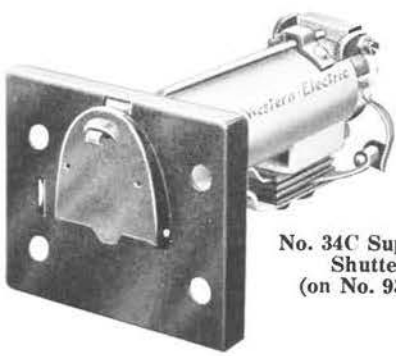
The No. 42 Type Signal has one coil with a single winding. There are no local contacts. The illustration shows all but three of the signals in the No. 79 Mounting in their unoperated position. The aluminum target is lifted into place when the signal is operated as shown in the cut. A designation strip on the mounting is used for numbering the signals.

The mounting centers are: horizontal, 7/16 inch; vertical, 7/8 inch.

The No. 42 Type is used as a busy signal with multiple toll line jacks; they mount in the same centers as the jacks.

Code No.	Resistance (Ohms)	Used with Signal Mounting
42A	100	Nos. 75, 77, 78, 79, 82, 83, 105

SUPERVISORY SIGNALS AND SIGNAL MOUNTINGS



No. 34C Supervisory Signal Shutter Restored (on No. 93A Mounting)



No. 34C Supervisory Signal Shutter Operated

Supervisory Signals

Code No.	Approximate Resistance (Ohms)	Description	Mountings No.
34C	330	A manually restored, electrically operated shutter type magneto supervisory signal, to be used in connection with No. 22 Type Combined Jack and Signal or as a line signal.	90A, B, C, 93A, 99A

Note. For replacement parts, refer to No. 22 Type "Combined Jack and Signal" shown elsewhere.

Signal Mountings

The following Mountings are those commonly used with the various classes of signals as listed. They are metal Mountings with black finish faces.

Code No.	For Signals	No. of Signals per Strip	Size of Plate, Face, (Inches)
61	34 and 35 Types	20	24 9/16 x 1 3/8
95A	(Mounts 3 No. 56 Drops and 7 No. 4 Type Signals)		13 3/16 x 1 3/8
97	34 Type	15	21 3/4 x 1 3/8
	FOR COMBINED JACKS AND SIGNALS		
Code No.	**For Signals**	**No. of Signals per Strip**	**Size of Plate, Face, (Inches)**
80B	2, 3, 6, 7, 8, 9, 12	1	1 1/8 x 2 1/4
80C	4, 5, 11	1	1 1/8 x 2 1/4
80E	9D	1	1 1/8 x 2 1/4
81E	2, 3, 6, 7, 8, 9, 12	5	6 23/32 x 1 3/4
92B	22, 23, 26, 27	1	1 1/8 x 2 1/4
92C	24, 31	1	1 1/8 x 2 1/4
101C	24, 31	10	1 7/8 x 11 7/32
	FOR SUPERVISORY SIGNALS		
80D	10, 13	1	1 1/8 x 2 1/4
90C	34C	5	6 23/32 x 1 3/4

TCI Library: www.telephonecollectors.info

Signal Plugs



Nos. 1, 2, 3 and 4 Type Signal Plug

The Nos. 1, 2, 3 and 4 Types are metal plugs which are inserted in a jack to designate a change of number, line temporarily disconnected, line arranged for calling only, or similar purposes.

Heads are covered with pigment lacquer finishes.

The white heads of the Nos. 1A and 3A may be written upon.

Nos. 5 and 6 Type Signal Plug

FOR No. 49 AND No. 193 JACKS

Code No.	Color of Head	Dimensions (Inches) Diameter of Head	Dimensions (Inches) Overall Length
1A	White	27/64	
2B	Red	23/64	
2D	Black	23/64	35/64
2E	Yellow	23/64	
2H	Light Green	23/64	

FOR No. 92 JACKS

Code No.	Color of Head	Dimensions (Inches) Diameter of Head	Dimensions (Inches) Overall Length
3A	White	23/64	
4B	Red	5/16	
4D	Black	5/16	33/64
4E	Yellow	5/16	
4H	Light Green	5/16	

The Nos. 5 and 6 Type Signal Plugs are used as line markers for indicating lines in trouble, spare jacks, etc. The metal shank is slotted in two directions and the head has a white celluloid face which may be written upon. The sides of the plug head are colored as indicated in the table.

The No. 7A Signal Plug has black finish face and is engraved with one or two letters, 5/32 inch high, or three letters, 1/8 inch high as per order. Engraving is filled white.

The No. 8A Signal Plug is similar to the No. 7A except it is engraved with one or two letters 1/8 inch high or three letters 7/64 inch high.

The No. 9A Signal Plug has a flat head with a white lacquer finish which may be written upon if desired.

FOR No. 49 AND No. 193 JACKS

Code No.	Color of Face	Color of Side Head	Length of Side Head (Inches)	Overall Length (Inches)	Diameter (Inches)
5A	White	Red	1/2	1 3/32	11/32
5B	White	White	1/2	1 3/32	11/32
5C	White	Blue	1/2	1 3/32	11/32
7A	Black	.....	..	21/32	13/32

FOR No. 92 JACKS

6A	White	Red	1/2	1 3/32	11/32
6B	White	White	1/2	1 3/32	11/32
6C	White	Blue	1/2	1 3/32	11/32
8A	Black	.....	..	21/32	5/16
9A	White	.....	..	33/64	21/64

The No. 10 Type Signal Plug has a metal body and handle of colored material. It is intended for use on hotel P.B.X.'s for designation purposes.

The No. 10 Type is arranged to fit in sleeve of No. 49 or similar type jacks.

The No. 11 Type is similar to the No. 10 Type except it is arranged to fit in the sleeve of No. 92 or similar type jacks.

FOR No. 49 TYPE JACKS

Code No.	Color	Length of Side Head (Inches)	Overall Length (Inches)	Diameter (Inches)
10A	Red	11/32	27/32	11/32
10B	White	11/32	27/32	11/32
10C	Blue	11/32	27/32	11/32
10D	Green	11/32	27/32	11/32
10E	Yellow	11/32	27/32	11/32
11A	Red	11/32	13/16	11/32
11B	White	11/32	13/16	11/32
11C	Blue	11/32	13/16	11/32
11D	Green	11/32	13/16	11/32
11E	Yellow	11/32	13/16	11/32

TCI Library: www.telephonecollectors.info

SUBSCRIBER SETS

Extension Bells



No. 127 Type Extension Bells

FOR ALTERNATING, PULSATING AND HARMONIC CURRENT

These Subscriber Sets are intended for auxiliary use as Extension Bells in connection with wall, desk and transmitter arm telephones or for use instead of regular ringers furnished in the telephone. The resistance of the extension bells should be the same as that of the ringers used on the same line.

No. 127 TYPE

These Subscriber Sets consist of a ringer mounted on the cover of a box. Approximate overall dimensions 6½" wide x 5⅞" high x 4⅞" deep. The standard finish is golden oak.

Code No.	Ringer	Approx. Resistance (Ohms)	Gongs	Condensers	Operating Current
127A	6A	*1400	29A	149A	AC biased to prevent tapping.
127E	38A	1020	26A	.....	AC not biased.
127F	38B	2500	26A	.....	AC not biased.
127G	38F	1620	26A	.....	AC not biased.

* The No. 6A Ringer (D.C. resistance 1400 ohms) has the same impedance as the older types of 1000 ohm ringers and is therefore interchangeable in service.

Note. Each set is equipped with No. 2A Binding Posts for making line connections.

No. 342 TYPE—LOUD RINGING

These Subscriber Sets (Extension Bells) consist of the No. 392 Type set, described below, mounted on a Backboard, which protects the bell from the weather and other substances. For illustration see "Backboards."

Code No.	Subscriber Set Used	Backboard
342G	392G	149A
342H	392H	149A
342J	392A	159AW
342K	392B	159AW



No. 392 Type

No. 392 TYPE—LOUD RINGING

The No. 392 Loud Ringing Subscriber Set is used extensively in factories, mines, and warehouses in connection with police telephones and other places where the ordinary telephone ringer is inadequate either due to excessive local noises or to the fact that the service conditions are such that the bells must be capable of being heard at a considerable distance.

In addition to their use in connection with telephones, these loud ringing subscriber sets are used in school, factory, police, mine, etc. signaling systems. For this service they have the advantage over direct current bells in that no battery is required. See Hand Generator Boxes.

TCI Library: www.telephonecollectors.info

SUBSCRIBER SETS

Extension Bells

No. 392 TYPE—LOUD RINGING—Continued

The windings of the No. 392 Type Bells are moisture-proofed and all metal parts are given a protective finish. These bells may be used on magneto telephone lines and in signalling systems as normally furnished, that is, without a condenser, but if they are to be bridged across a central battery telephone line a condenser as specified below, must be connected in series with the ringer.

The base is arranged for mounting a condenser and the wiring is so arranged that a condenser may be easily connected in series with the ringer.

If a condenser is desired it should be so specified on the order.

The Nos. 392A, B, E, G and H Subscriber Sets will be equipped with a biasing arrangement if specified in the order.

Code No.	Approx. Resistance (Ohms)	Diam. of Gongs (Inches)	Operating Current	Condensers Used	Replaces
392B	2500	6 (28A)	AC not biased	149D	292U, 292AC and 392A
392E	1600	6 (28A)	AC not biased	147A	
392G	1000	8 (23A)	AC not biased	147A	292AB
392H	2500	8 (23A)	AC not biased	149D	
392K	4500	6 (28A)	Pulsating biased	None	392D
*392L	2500	6 (28A)	AC biased	149D	392C and 392J
392M	1550	6 (28A)	(a)	None	

* Equipped with condenser.
(a) For use with a cold cathode discharge tube in selective line ringing service.

Nos. 392 AND 342 TYPE SUBSCRIBER SETS—BIASING ATTACHMENTS

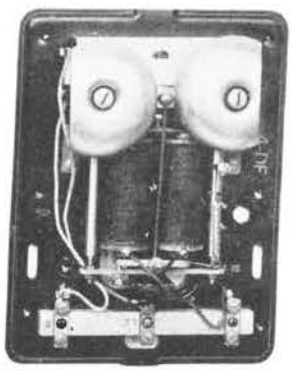
The Nos. 392 and 342 Type Subscriber Sets which are furnished unbiased may be equipped with the biasing attachment listed below thereby making them suitable for use on pulsating current. A screw driver and pliers are the only tools required for installing this attachment.

Code No.	
D76014	Biasing attachment for Nos. 392 and 342 Type Subscriber Sets.

No. 584 DE AND DF

The following No. 584 Type Subscriber Sets are intended for use on non-polarized ringing lines and are biased to prevent tapping.

Code No.	Use
584DE	Intended for use as an Extension Ringer where a high impedance ringer is required.
584DF	Intended for use as an Extension Ringer where a low impedance ringer is required.



No. 584 DE—Open



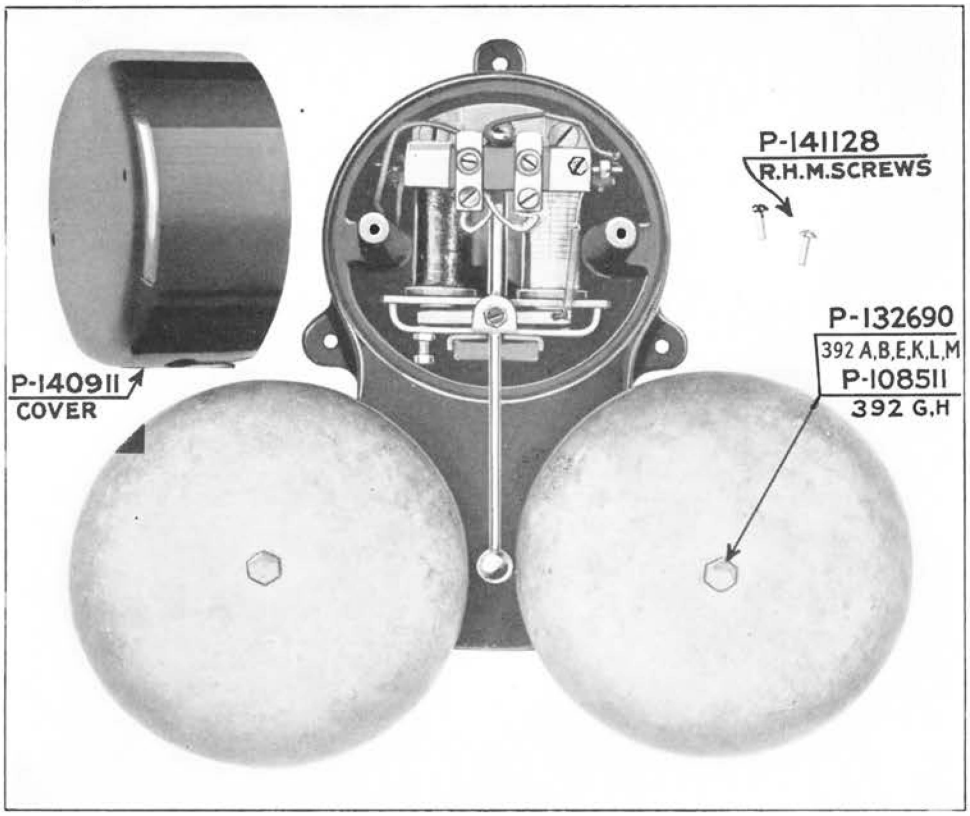
No. 584 DE—Closed

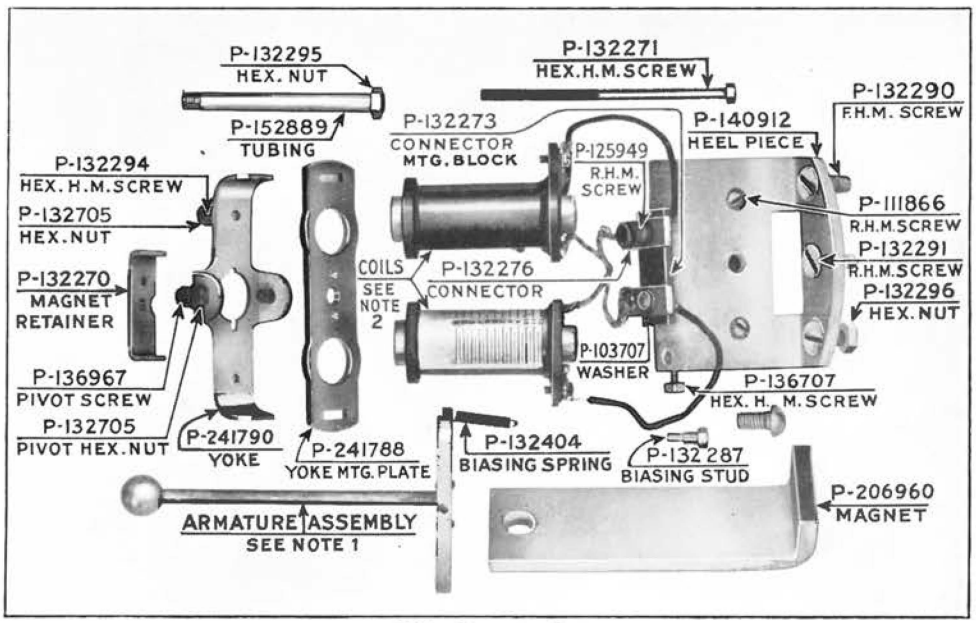
Code No.	Ringer	Approx. Resistance (Ohms)	Gongs	*Condensers Used	Replaces
584DE	78JA	4300	36A and 37A	1149B	534DE and 584DD
584DF	78A	1500	36A and 37A	1149A	534D, DC, DF and 584S

* Condensers furnished only when specified on the order.

TCI Library: www.telephonecollectors.info

SUBSCRIBER SETS
Extension Bells—*Continued*
Replacement Parts for No. 392 Subscriber Sets





Coil and Armature Parts

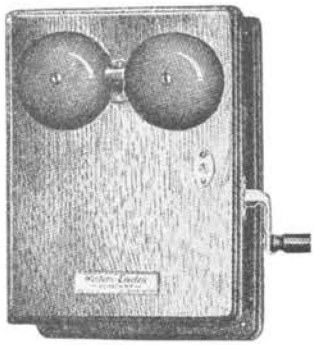
Note 1. Armature assembly:	**392A** P-238204	**392B** P-238204	**392E** P-238204	**392G** P-140917	**392H** P-140917	**392K** P-238204	**392L** P-238204	**392M** P-238204
Note 2. Ringer Coils:	P-295100	P-295101	P-295102	P-295100	P-295101	P-295101 / P-295103	P-295101	P-298409

TCI Library: www.telephonecollectors.info

SUBSCRIBER SETS—*Continued*

Desk Set Boxes

MAGNETO



Nos. 300 and 315 Type Desk Set Boxes

The following desk set boxes, with the exception of the No. 315J, are equipped with ringers to operate on alternating current for code ringing service between the central office and the telephones and for code ringing between the telephones. The No. 315J is equipped with a pulsating current type ringer for four-party selective signalling from the central office and is also arranged for signalling the central office only.

The Nos. 300 and 315 Type Desk Set Boxes may be used with the following apparatus or its equivalent:

1040AL Desk Stand
1020CC Transmitter Arm
1048 Type Transmitter Arms
1001C and H hand Sets
1002AC Hand Set

These desk set boxes form a part of the Nos. 6003 and 6004 Type Telephone Sets.

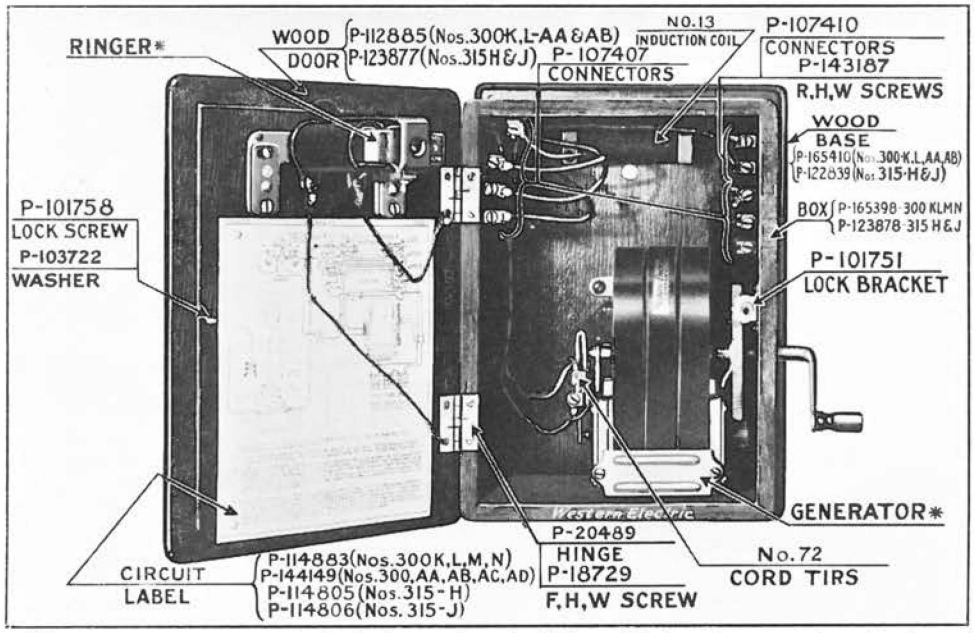
No. 300 and No. 315 Type Desk Set Boxes

No. 300 TYPE WITH No. 48 TYPE GENERATORS

Code No.	Generator No.	Composed of Ringer No.	Resistance	Condenser No.	For Ringing Service	Used on Lines as Regards Load
300K	48A	*51BG	2500	....	Code	Heavily
300L	48A	38FG	1600	....	Code	Medium
300M	48A	38FG	1600	149A	Code	Medium
300N	48A	38BG	2500	149A	Code	Heavily
No. 300 TYPE WITH No. 50 TYPE GENERATORS						
300AA	50A	38BG	2500	....	Code	Heavily
300AB	50A	38FG	1600	....	Code	Medium
No. 315 TYPE WITH No. 22 TYPE GENERATORS						
315E	22E	52AG	1000–3000	....	Code	Lightly
315H	22A	38AG	1020	....	Code	Lightly
315J	22E	49BG	2500	....	Four Party Selective	Lightly

Note. In addition to the above apparatus all of these sets are equipped with No. 13 Induction Coils and No. 29A Ringer Gongs.
* No. 38BG Ringer can be furnished when specified.

REPLACEMENT PARTS FOR Nos. 300 AND 315 TYPE DESK SET BOXES



* **Note.** The ringer, generator, etc., are given in the above code number listings and their repair parts are shown elsewhere under their respective headings.

TCI Library: www.telephonecollectors.info

SUBSCRIBER SETS

Anti-Sidetone

The Common Battery Subscriber Sets shown below are of the anti-sidetone type and have been developed by the Western Electric Company to improve transmission. The essential feature of this apparatus consists in the use of an anti-sidetone circuit whereby the sidetone is reduced by means of a third winding on the induction coil which winding includes a balancing resistance. On the average loop the transmitting improvement due to increase in talking volume obtained by this circuit and by using handset instruments averages about 3 db. The improvement in reception afforded by this circuit due to the reduction of the room noise in the telephone receiver results in an effective receiving gain which varies from 1 to 3 db., depending on the circuit conditions, battery supply and the amount of room noise present. The overall transmission improvement obtained by the use of these anti-sidetone sets at both ends of the connection is equivalent to that resulting from a reduction of trunk loss of from 3 to 10 db., depending on the instruments, circuit and room noise conditions. Inasmuch as the best results are obtained from a high battery supply, this new apparatus is most effective in short loops. Short loops being more or less common to congested areas in which the room noise level is liable to be very high, it is expected that the new sets will be of greater service in these areas.

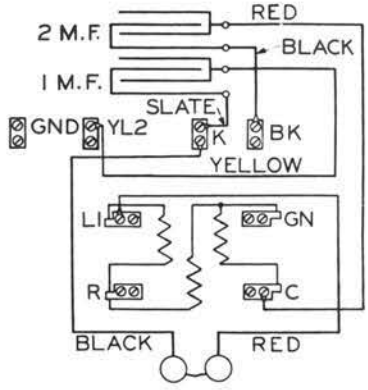
New station equipments employing the anti-sidetone features have not been developed for all classes of service. For information on Subscriber Sets for classes of service other than shown herein, write our nearest distributor.

It should be noted that the code numbers of these sets correspond with those of the old sidetone type for various classes of service, except that 100 has been added; i.e., No. 584C Subscriber Set (Sidetone) is No. 684C Subscriber Set (Anti-sidetone).

No. 634 TYPE



No. 634 Type Subscriber Set



Wiring diagram for No. 634 E, F, G, H

The following No. 634 Subscriber Sets are of the anti-sidetone type and are intended for use in existing two-party or four-party harmonic ringing systems. These sets are contained in metal boxes finished in black. Consist of apparatus as shown below.

Code No.	Ringer	Gongs	Condenser	Induction Coil	Remarks
634E	41S (33⅓ cycles)	(*)	194A	101A	Replaces No. 534E
634F	41T (50 cycles)	(*)	194A	101A	Replaces No. 534F
634G	41U (66⅔ cycles)	(*)	194A	101A	Replaces No. 534G
634H	41R (16⅔ cycles)	(*)	194A	101A	Replaces No. 534H

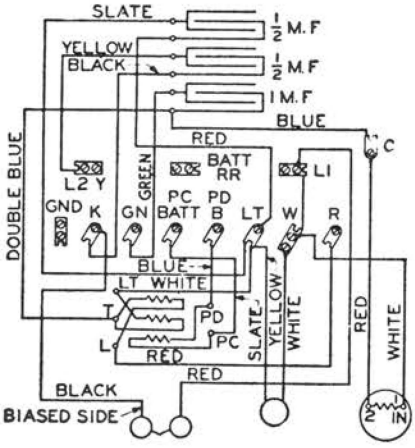
(*) Two No. 29A or 29B Gongs. Two No. 31A, 32A, or 33A Gongs will be furnished when specified.

TCI Library: www.telephonecollectors.info

SUBSCRIBER SETS

Anti-Sidetone—*Continued*

FOR USE IN COMMON BATTERY CENTRAL OFFICE AREAS



Wiring Diagram No. 634BB Subscriber Set

There has been made available a local battery anti-sidetone station equipment which is suitable for use in long central office loops, long P.B.X. extensions, foreign exchange lines, etc., where better transmission is desired than is afforded by the old type equipment. The new Subscriber Sets described below provide appreciable effective gains compared with sets using both the No. 13 and 46 Coils and proposed common battery anti-sidetone sets. These improvements are due to the use of the No. 62 induction coil, local batteries and special receivers which are further described in this catalog.

No. 634BB SUBSCRIBER SET

The No. 634BB Subscriber Set is an anti-sidetone common battery set with enclosed gongs, metal case finished in black. Intended for use in long subscriber loops, and P.B.X. extensions in either manual or dial systems. Consists of apparatus as shown below.

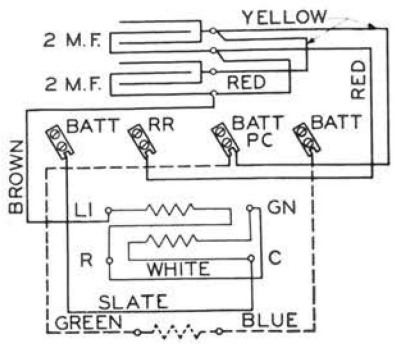
Code No.	Ringer	Gongs	Condenser	Induction Coil	Resistance	Retardation Coil
634BB	68JA	*2–29C	1–149A 2–149B	62	63H	54S

* Can be obtained equipped with two Nos. 31C, 32C or 33C Gongs instead of two No. 29C, when specified in the order.

No. 634BD SUBSCRIBER SET

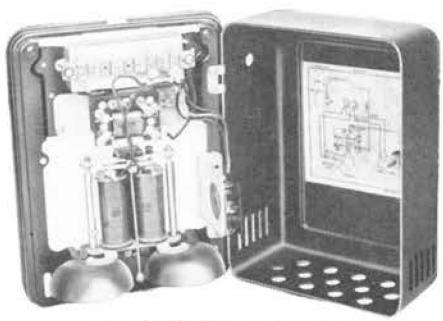
The No. 634BD Subscriber Set is an anti-sidetone common battery desk set with enclosed gongs, metal case finished in black. Intended for use with No. 653BB Subscriber Sets, in long subscriber loops and P.B.X. extensions in either manual or dial systems. Consists of apparatus as shown below.

Code No.	Condenser	Induction Coil
634BD	2–147A	46B



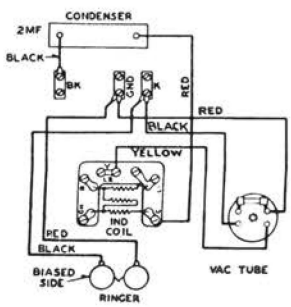
Wiring Diagram No. 634BD Subscriber Set

No. 634CA SUBSCRIBER SET



No. 634CA Subscriber Set

The No. 634CA Anti-Sidetone Subscriber Sets are intended for use at main stations in 4-party selective service where extension sets may be employed. May also be used on 8-party semi-selective service but in this case extension sets cannot be employed.



Wiring Diagram No. 634CA Subscriber Set

TCI Library: www.telephonecollectors.info

SUBSCRIBER SETS

No. 634CA SUBSCRIBER SET—Continued

The No. 634CA Anti-Sidetone Subscriber Set consists of the apparatus as shown below:

Code No.	Ringer	Gongs	Condenser	Induction Coil	Vacuum Tube	Replaces
634CA	68AE	*2–29C	147A	101A	333A	634AR

* Two No. 31C, 32C or 33C Gongs, instead of two No. 29C Gongs, will be furnished when specified.

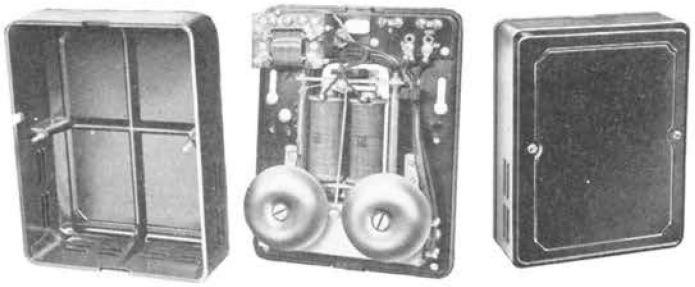
No. 653Y SUBSCRIBER SET

The No. 653Y Subscriber Set is an anti-sidetone wall type subscriber set with enclosed gongs. Intended for common battery signaling, local battery talking stations, long subscriber loops and P.B.X. extensions. It has a metal case finished in black.

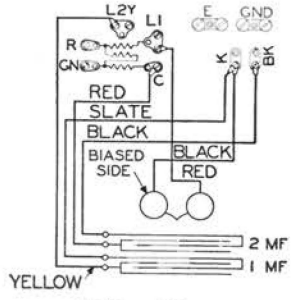
Code No.	Ringer	Gongs	Condensers	Switch-hook	Trans-mitter Bracket	Induction Coil	Cords	Trans-mitter	Receiver
653Y	68JA	*2–29C	149B 149D	140S	7A	113D	2–T1A 8″ long	†635A	†706A

* Two No. 31C, 32C or 33C Gongs may be furnished when specified.
† Not furnished with equipment. Must be ordered separately.

No. 684A SUBSCRIBER SET



No. 684A Subscriber Set
Open and Closed View



Wiring Diagram

The No. 684A Subscriber Set is a small anti-sidetone common battery desk type set with a metal base for mounting apparatus and a removable moulded cover. It is intended for use at dial and manual individual line, P.B.X., four party semi-selective and extension stations on four-party selective lines; also dial two-party selective flat rate, manual two-party selective flat rate or message rate and non-selective code ringing party lines.

The No. 684A Subscriber Set is normally finished in black (–3) but is also available in colors listed below. To obtain sets in these colors the dash number (–3) for black finish should be changed as indicated.

Code No.	Ringer	Gongs	Condenser	Induction Coil	Finish	Remarks
684A-3	78A	*36A and 37A	194A	101A	Black	Replaces 584A-3

* Two No. 36B, two No. 36D or one No. 39A Gong will be furnished when specified.

Note: The No. 684A Subscriber Sets are also available in the following colors:

–4	Ivory	–8	Oxidized Silver	–18	Dark Blue
–6	Old Brass	–12	Dark Gold	–19	Gray Green
–7	Statuary Bronze	–16	Old Rose	–20	Pekin Red

TCI Library: www.telephonecollectors.info

SUBSCRIBER SETS

Anti-Sidetone Type—*Continued*

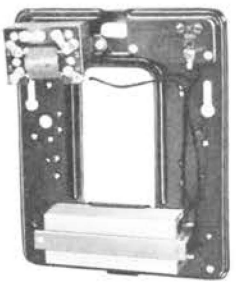
No. 684C SUBSCRIBER SET



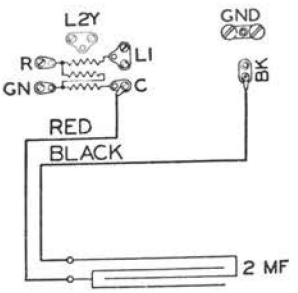
Front View, Closed



Rear View of Cover



Cover Removed

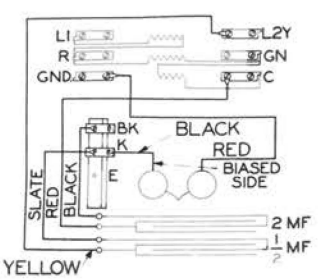


Wiring Diagram
No. 684C Subscriber Set

The No. 684C Subscriber Set is an anti-sidetone common battery desk type set without a ringer. The cover and base are finished in black. Intended for use in either manual or dial systems as an extension subscriber set. Overall dimensions, approximately 7¼ inches x 5 5/16 inches x 2 5/32 inches.

Code No.	Condenser	Induction Coil	Remarks
684C	147A	101A	Replaces No. 584C

No. 684BA SUBSCRIBER SET



Wiring Diagram No. 684BA

The No. 684BA Subscriber Set is a small black finished anti-sidetone common battery desk type set with a metal base for mounting apparatus, and a removable molded cover. Intended for use in two-party selective or four-party semi-selective flat rate service in dial areas subject to inductive interference. Consists of apparatus as shown below.

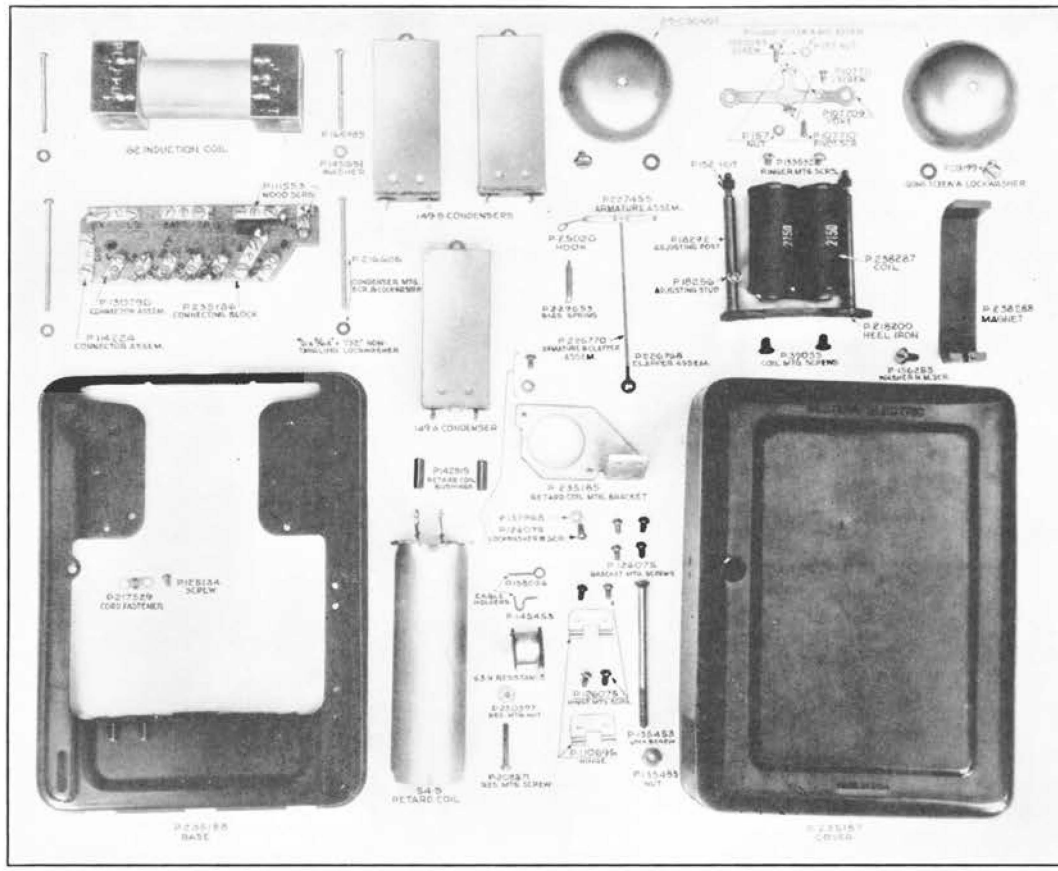
Code No.	Ringer	Gongs	Condenser	Induction Coil	Remarks
684BA	78JA	{*1–36A 1–37A	194B	101A	Replaces No. 534BA

* Two No. 36B, 36D, or one 39A Gongs will be furnished when specified.

TCI Library: www.telephonecollectors.info

SUBSCRIBER SETS—*Continued*

REPLACEMENT PARTS FOR Nos. 634E, F, G, H, BB, BD AND CA SUBSCRIBER SETS



(Illustration shows parts for the No. 634BB Subset)

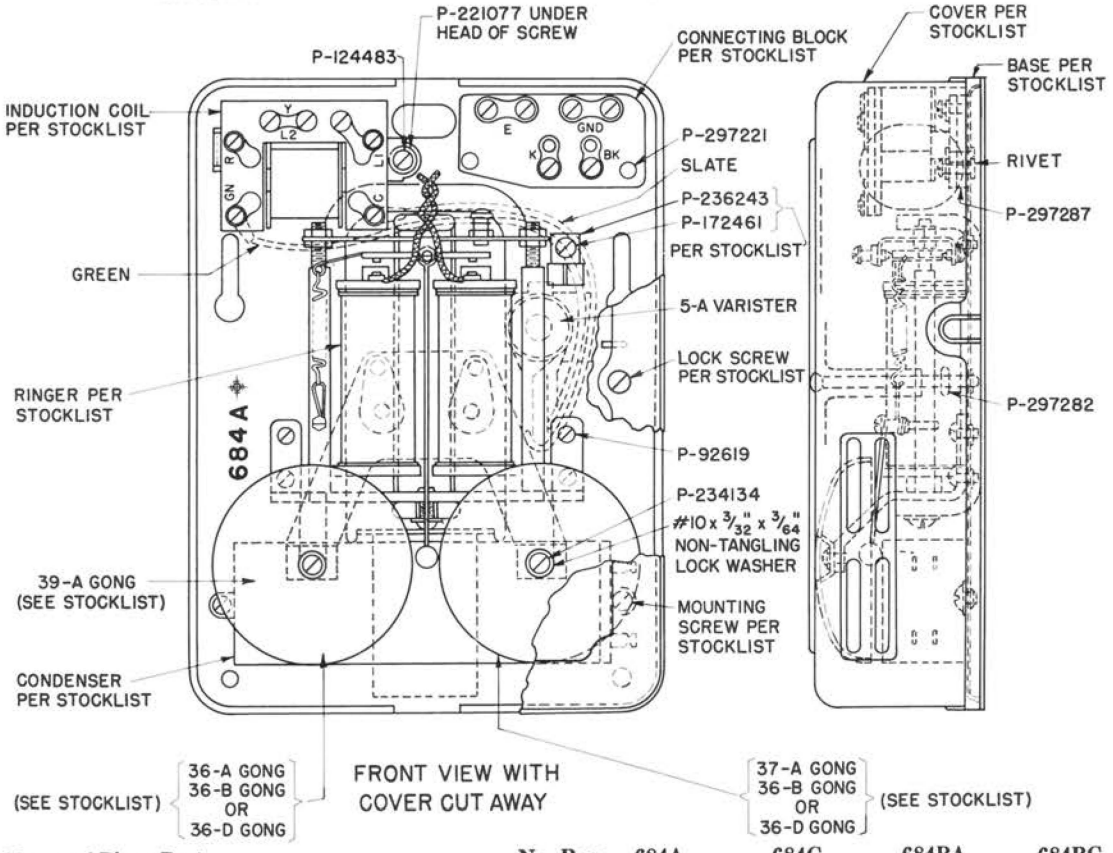
Code No.	Piece Part or Apparatus
Note 1—Mounting screw for connector assemblies for:	
634E, F, G, H, CA	P-238802
634BD	P-111553
Note 2—Condenser mounting screw for:	
634E, F, G, H	P-135550
634BD	P-204906
634CA	P-136734
Note 3—Connecting Block for:	
634E, F, G, H	P-236669
634BD	P-235704
634CA	P-249937
Note 4—The No. 29C Gong is regularly furnished for the 634BB and 634CA subsets and 29A Gong for the 634E, F, G, and H subsets. If different tone gongs are required, the numbers 31C, 32C and 33C gongs may be used for the 634BB and 634CA subsets, and 31A, 32A and 33A Gongs for the 634E, F, G and H subsets.	
*Spacer for:	
634E, F, G, H, CA	P-168123
*Circuit label for:	
634BB	P-244517
634E, F, G, H	P-245017
634BD	P-244447
634CA	P-468339
Note 5—Ringer for:	
634E	41S Ringer
634F	41T Ringer
634G	41U Ringer
634H	41R Ringer
634CA	68AE Ringer
Note 6—Condenser for:	
634E, F, G, H, CA	194A Condenser
634BD	147A Condenser
634CA	147A Condenser
Note 7—Hinge:	
*634CA	P-110696
Note 8—Induction Coil mounting screw for:	
634E, F, G, H, CA	P-124483
634BD	P-136734
Note 9—Cover for:	
634E, F, G, H, BD, CA	P-166338
Note 10—Base for:	
634E, F, G, H	P-153830
634BD	P-230431
634CA	P-235188
Note 11—Terminals for:	
634E, F, G, H, CA	P-218870
634BD	P-114224
Note 12—Induction Coil for:	
634E, F, G, H, CA	101A Induction Coil
634BD	46B Induction Coil
*Mounting Bracket for:	
634BD	P-235705
*Mounting Bracket Screws for:	
634BD	P-351132

* Parts not shown in illustration.

TCI Library: www.telephonecollectors.info

SUBSCRIBER SETS—*Continued*

REPLACEMENT PARTS FOR Nos. 684A, 684C, 684BA AND 684BC



Name of Piece Part	No. Req.	684A	684C	684BA	684BC
Tubular Rivet	2	P-297271	P-297271	P-297271	P-297271
Spacer	1	P-297287	P-297287	P-297287	P-297287
Connecting Block	1	P-297207	P-297209	P-297207	P-297205
Gongs	2	*	*	*	*
Circuit Label	1	P-244776	P-244778	P-244779	P-244479
Base	1	P-297216	P-297216	P-297216	P-297216
Condenser Strap	1	.....	P-225255	.....	.....
Screw (Condenser Mtg.)	2	.....	P-166781	.....	.....
Ringer	1	.....	.....	78JA	78AA
Lock Screw	2	P-225254	P-225254	P-225254	P-225254
Cover	1	P-224818	P-224818	P-224818	P-224818
Cord Conductor					
(Slate 5¼″)	1	P-465782	.....	.....	.....
(Slate 5½″)	1	.....	.....	P-465782	.....
(Brown-red red 5½″)	1	.....	.....	.....	P-465788
(Red 12½″)	1	P-465779	.....	.....	P-465779
(Red 5¼″)	1	.....	P-465779	.....	.....
(Red 11¾″)	1	.....	.....	P-465779	.....
(Yellow 9¾″)	1	P-465778	.....	P-465778	P-465778
(Black 9¾″)	1	P-465781	.....	P-465781	.....
(Black 8″)	1	.....	P-465781	.....	.....
(Black 10″)	1	.....	.....	.....	P-465781
R.H.M. Screw	**3	P-172461	.....	P-172461	P-172461
No. 72 Cord Tips		P-114277	P-114277	P-114277	P-114277
Retainer	2	P-297282	P-297282	P-297282	P-297282
Card Holder	1	P-236243	.....	P-236243	P-236243
Lock Washer	1	P-221077	P-221077	P-221077	P-221077
Button Head Machine Screw	2	P-234134	.....	P-234134	P-234134
Condenser	1	194A	.....	.....	194A
Induction Coil	1	101A	101A	101A	101A
R.H.M. Screw	4	P-92619	.....	P-92619	P-92619
R.H.M. Screw	1	P-124483	P-124483	P-124483	.....
Condenser	1	.....	147A	.....	.....
Condenser	1	.....	.....	194B	.....

* One No. 36A and one 37A Gong furnished unless otherwise specified. Two No. 36B, two No. 36D or one No. 39A Gong will be furnished when specified.

** Two required when varistor is furnished.

TCI Library: www.telephonecollectors.info

SWITCHBOARDS

Telephone Switchboards and Systems

Western Electric telephone switchboards represent the result of over fifty years experience in the manufacture and design of telephone central office equipment. By virtue of its position as the largest as well as the oldest manufacturer of telephone equipment, the Western Electric Company has been an important factor in the development of the telephone art to its present degree of perfection. As a result their switchboard equipment incorporates material, apparatus, circuits and design features which have been found essential for the successful operation of modern telephone systems.

These switchboards are the result of continuous efforts by this organization to build equipment which is simple in operation, durable in construction, economical in maintenance, and highest in efficiency, incorporating such new features, as experience suggests and modern telephone practice demands.

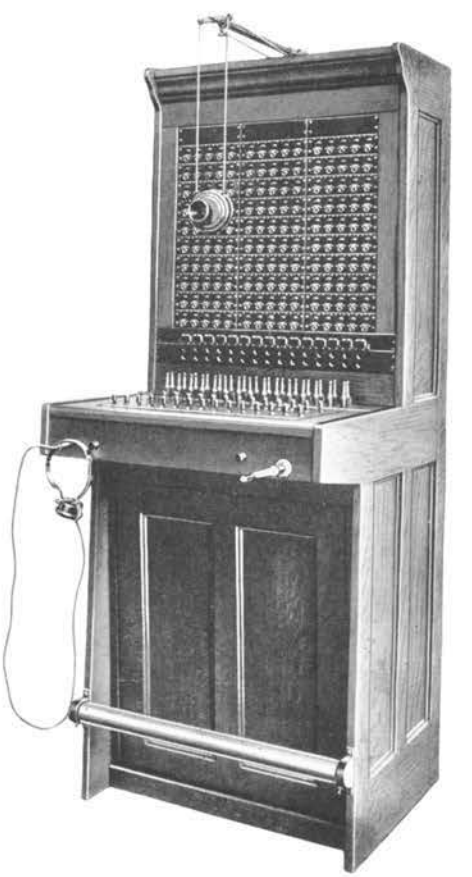
The smaller switchboards will be found adequate to meet the requirement of every non-multiple central office. The larger central offices must of necessity be designed to care for the individual requirements of each exchange area. Western Electric engineers are equipped to make studies and recommend correct central office equipments for any part of the world.

Magneto Non-Multiple No. 1240D

The Western Electric No. 1240D Switchboard is a magneto non-multiple board with a capacity of 165 line circuits and 15 cord circuits. It is so constructed that when more than 165 lines are necessary, additional sections may be added. It is possible for one operator to attend two boards which are lined up side by side. In installations of more than two sections, a transfer circuit may be used. This enables the operator of any one section to transfer calls to other sections in the group. While this method increases the operating activity at each position, it is used in many exchanges because it is less expensive than a multiple system.

With each No. 1240D Switchboard an operator's telephone circuit, a ringing circuit and a night alarm circuit are provided.

The jacks and drops are grouped in multiples of five. In case the full capacity of the No. 1240D board is not required, the unused groups may be fitted with apparatus blanks. The unequipped drillings for the jacks and lamps of the transfer circuit can also be fitted with apparatus blanks.



No. 1240D Switchboard

TCI Library: www.telephonecollectors.info

SWITCHBOARDS

Magneto Non-Multiple

No. 1240D—*Continued*

The cabinet of the No. 1240D board is made of quarter-sawed oak, thoroughly seasoned and dried as a protection against deterioration and cracking. The finish is dull, golden oak. All inside surfaces are shellac-treated to protect them from moisture.

CORD AND RINGING CIRCUITS

The ringing circuit is equipped with a powerful five bar hand-generator. The generator crank is located conveniently on the keyshelf rail. The switchboard is wired so that any of the following cord or ringing combinations may be provided as required:

CORD CIRCUITS

(a) Single supervision, without repeating coil.

(b) Single supervision, with repeating coil and cut-out key (cords 1 to 5).

(c) Double supervision, practically "non-ring through," "non-hang-up," without repeating coil.

(d) Double supervision, practically "non-ring through," "non-hang-up," with repeating coil (cords 1 to 5).

RINGING COMBINATIONS

Single party, one way
Single party, two way

RINGING COMBINATIONS—Continued

Two party, one way, selective individual
Two party, one way, selective master
Two party, two way, selective individual
Two party, two way, master
Four party, one way, pulsating individual
Four party, one way, pulsating master
Four party, two way, pulsating master
Four party, one way, harmonic individual
Four party, one way, harmonic master
Four party, two way, harmonic individual
Four party, two way, harmonic master
Eight party, one way, harmonic individual
Eight party, one way, harmonic master
Eight party, two way, harmonic master

ADDITIONAL CIRCUIT FEATURES

Any or all of the following features may be included without difficulty either before or after the switchboard is placed in service:

(a) Audible code ringing on subscriber's lines.

(b) Through toll lines.

(c) Monitoring or transmitter cut-out.

(d) Duplicate set of operator telephone jacks for student operator.

(e) Jack ended interposition trunks with lamp signals.

(f) Buzzer equipment in positional ringing circuit (single or two party).

(g) Telephone Switching Key for connecting two positions together.

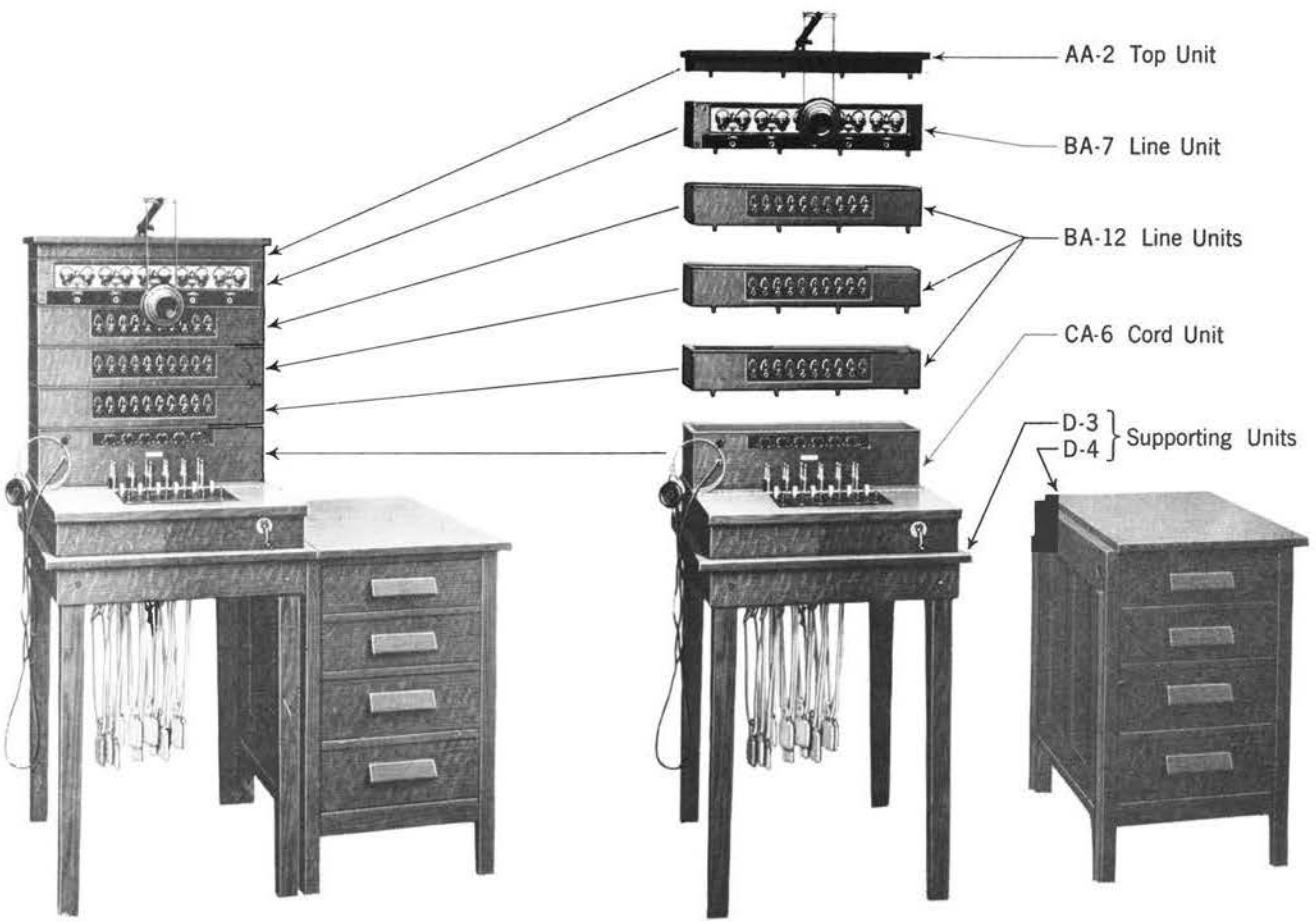
For further information regarding the No. 1240D Magneto Switchboard, you are invited to address any Western Electric distributor whose name is listed on the last page of this catalog.

TCI Library: www.telephonecollectors.info

SWITCHBOARDS

Magneto Non-Multiple

No. 1800 Sectional Unit Type



Method of Assembling No. 1800 Switchboard to 35 Line Capacity

The No. 1800 Sectional Unit Type Magneto Switchboard was designed by Western Electric to meet the demand for a small switchboard that would meet traffic requirements and eliminate the necessity of buying an "oversize switchboard."

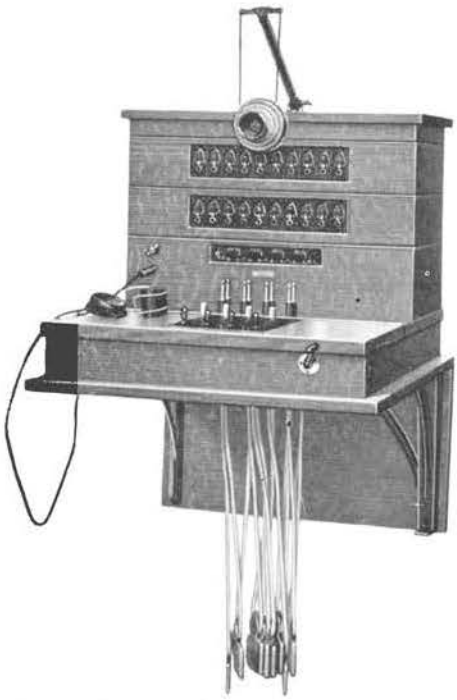
The capacity of the No. 1800 Switchboard is from 10 to 50 lines, and while 50 lines is an arbitrary maximum, as many as 70 or 80 lines can be handled conveniently where the normal calling rate is low.

TCI Library: www.telephonecollectors.info

SWITCHBOARDS

Magneto Non-Multiple

No. 1800 Sectional Unit Type—*Continued*



No. 1800 Sectional Switchboard Line Units Equipped With Combined Jacks and Signals

To meet various requirements, there are different types of base or supporting units, cord units, line units and top units. To assemble a switchboard of 10-line capacity, it is only necessary to select units as follows:

1 Supporting Unit	1 Line Unit
1 Cord Unit	1 Top Unit

These units are easily assembled into a complete switchboard, which presents a neat, compact and serviceable appearance and can be arranged to meet any service conditions. Line units can be added at any time.

This switchboard is especially recommended for small rapidly growing telephone exchanges where the ultimate capacity cannot be definitely determined.

The switchboard is arranged for either desk or wall mounting.

Each unit of the No. 1800 Switchboard is constructed so that the entire equipment, including the wiring, is accessible through doors in the back. The circuits are comparatively simple. The cabinet is made of red oak which has been thoroughly kiln dried and seasoned to eliminate warping. The exterior surfaces are a dark, rubbed finish. The interior surfaces are treated to preserve the wood and prevent warping and cracking.

For complete information regarding the No. 1800 Switchboard, you are invited to address any Western Electric distributor whose name is listed on the last page of this catalog.

WALL TYPE

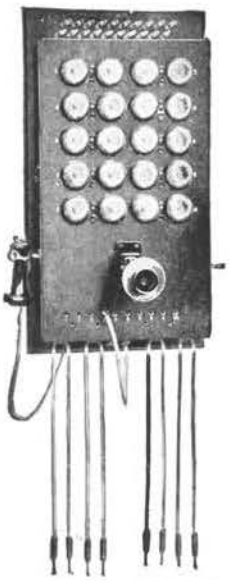
No. 1012 "Ringer Type"

This switchboard is intended for use on exchanges having 10 lines or less, and where the number of calls does not warrant having a regular telephone operator in attendance. It has been installed by numerous rural companies who desire a switching station established in the country in which case it is installed in a farmer's home and the calls are answered by members of the family. Being equipped with ringers, constant attendance at the switchboard is not necessary as the bells can be heard at some distance from the board. In addition to this ringer indicators are supplied with each ringer which gives a visible signal showing which bell has been ringing.

The cabinet is well constructed of thoroughly seasoned, quarter sawed oak, which is given a durable light finish. The front is hinged and the apparatus and wiring is within easy reach for inspection or maintenance.

Equipment. Each line is provided with a jack and a 1000 ohm ringer, although 1600 or 2500 ohm ringers can be furnished if required. Four-cord circuits, with a listening in jack bridged across the tip and ring, and a listening cord are provided for handling the calls, no supervisory or ring off signals being provided. A powerful five-bar hand generator is furnished for ringing purposes. The operator's telephone set consists of the regular long distance transmitter and receiver.

Operation. Subscribers are called by ringing with the hand generator over the listening cord with which the operator answers calls and listens in for supervisory purposes. Connections are made with the other cords, without the use of keys.



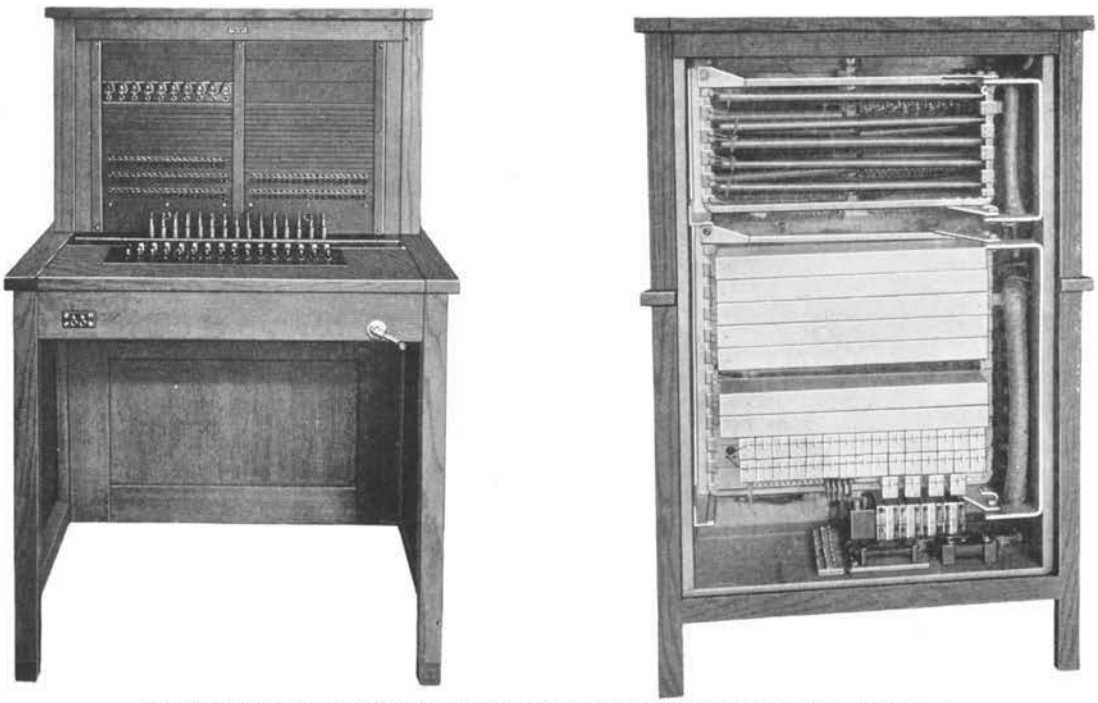
No. 1012 Switchboard

TCI Library: www.telephonecollectors.info

SWITCHBOARDS

Central Battery Non-Multiple

No. 1948 "Sanitary Type"



No. 1948 Switchboard Equipped With 100 Central Battery and 10 Magneto Lines
Front and Rear (Open) Views

The No. 1948 Switchboard is designed to provide telephone companies who desire central battery service with modern, efficient and reliable equipment. While this switchboard has been in service for many years, constant improvements have kept it up to date and capable of rendering completely satisfactory service.

The No. 1948 Switchboard is a central battery, lamp supervision, single position board, with the following capacity:

240 Central Battery Subscriber Line Circuits
40 Magneto Toll or Rural Lines
15 Cord Circuits
20 Transfer Trunks

The board also is equipped with an operator's telephone and transfer circuit, a night alarm circuit and a ringing circuit.

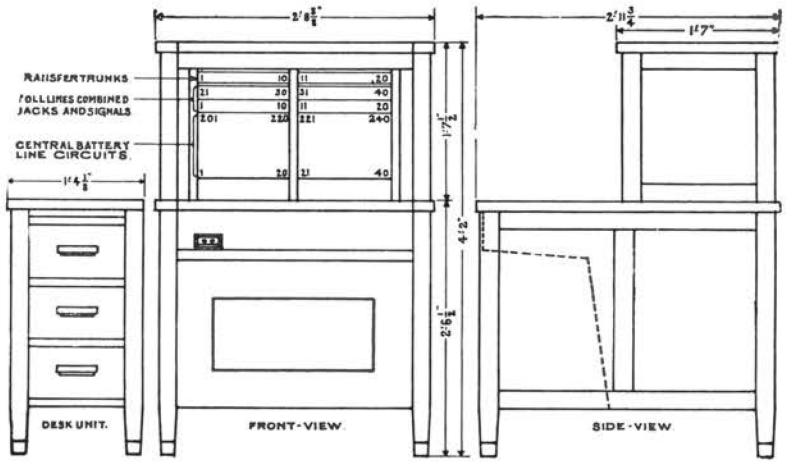
When capacity greater than that of a single board is desired, several sections may be lined up together. For this purpose the end panels are removable. For more than two sections, a strip of transfer trunk jacks is used. By means of these jacks, one operator may transfer calls on her section to another section.

TCI Library: www.telephonecollectors.info

SWITCHBOARDS

Central Battery Non-Multiple

No. 1948 "Sanitary Type"—*Continued*



No. 1948 Switchboard Showing Dimensions

The switchboard is built along the lines of the modern office desk, having square lines generally, square legs (metal capped at bottom) and a clearance underneath for cleaning purposes; hence the term "Sanitary Type."

The cabinet is constructed of durable red oak lumber, which has been kiln dried and thoroughly seasoned to prevent warping and cracking and provided with a dull rubbed dark finish.

The equipment, relays, resistances, retard coils, etc., associated with the various circuits are mounted on a swinging relay gate presenting a neat, compact appearance when closed and bringing the apparatus and wiring within easy reach for maintenance when open.

The switchboard is arranged so that all of the cord circuits may be either straight central battery or rural universal with the following ringing combinations. The rural universal cords may be equipped with repeating coils and cut-out keys if so desired, the usual practice, however, being to furnish them without the coils.

Single party, two-way.
Two party, two-way, master key.
Four party, two-way, master key (pulsating).
Four party, two-way, master key (harmonic).
Eight party, two-way, master key (harmonic).

Storage batteries are used for power supply for this switchboard. The size of the power plant will depend upon the requirements of each particular installation and will be engineered accordingly.

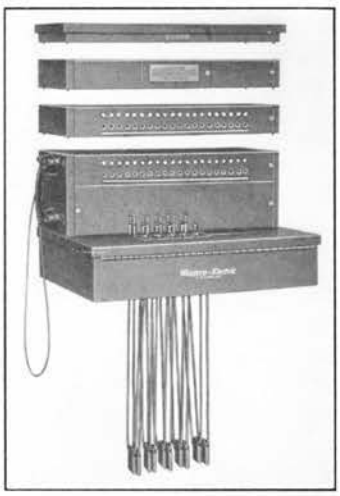
For complete information regarding the No. 1948 Switchboard, you are invited to address any Western Electric distributor whose name is listed on the last page of this catalog.

TCI Library: www.telephonecollectors.info

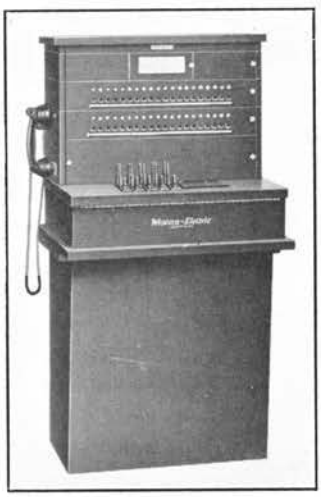
SWITCHBOARDS

Private Branch Exchange

Sectional Unit Type No. 1801



No. 1801 Switchboard Showing Method of Enlarging



No. 1801 P.B.X. Switchboard System B Wall Mounted With Cord Casing



No. 1801 P.B.X. Switchboard System D Desk Mounted

The Western Electric No. 1801 P.B.X. is a manual, central battery system utilizing a small single position, non-multiple switchboard of the sectional unit type. It is especially suitable for use in:

Medium Size Industrial Plants	Hospitals and Sanitariums
Department Stores	Hotels
Apartment Buildings	Prisons
Schools	Public Buildings

The No. 1801 P.B.X. may be used with either a dial or a manual central battery central office. It is flexible and economical in operation, particularly suited to locations where the final capacity cannot be determined initially and is readily adaptable to the diversified line and traffic conditions encountered on private branch exchanges.

GENERAL DESCRIPTION

The units which comprise the No. 1801 P.B.X. can be assembled in the same way as those of a sectional bookcase.

The names of these units and their usual positions in the switchboard assembly are as follows:

Top Unit	Line Units
Incoming Call Transfer Key Unit	Cord Unit
Simultaneous Talking and Ringing Unit	Supporting Unit
Line Relay Unit	

With the exception of the top, cord and supporting units, the units may be mounted interchangeably. The number and kind to be used will depend upon the requirements of each installation. Additions may be made at any time without the necessity of extensive wiring changes. This simplifies building up the board.

TCI Library: www.telephonecollectors.info

SWITCHBOARDS

Private Branch Exchange

Sectional Unit Type

No. 1801—*Continued*

The equipment units are compact and strongly constructed. The wood may be either oak in full red oak finish, or birch in mahogany finish. When assembled, the units are fastened to each other with a single screw at each end. The face panels are hinged, providing ready access to the apparatus and wiring and when closed are held securely in place by means of thumb screw locks. The rear of each unit is permanently closed. This arrangement permits the switchboard to be mounted on the wall in a stationary position. A desk mounting is available, however, if this is desired.

Screw terminals are used for terminating the incoming station lines and the central office trunk circuit leads and for the necessary wiring between units.

Station line and trunk pairs may be brought into the units by means of switchboard or lead-covered cable or ordinary twisted pair station wiring.

The circuits of the No. 1801 Switchboard are so designed as to reduce operating procedure and maintenance to a minimum.

Cord Circuits. The cord circuits are of the repeating coil type and are arranged for station line lamp supervision. A relay in the cord circuit functions as the repeating coil.

Trunk Circuits. The trunks which connect the P.B.X. to a central office are cord ended. This makes it unnecessary to use a cord circuit for connecting a trunk to a station line. A lamp is associated with each trunk cord to indicate incoming trunk calls.

Line Relay Circuit. A Line Relay Unit is available for use when stations are located at a considerable distance from the switchboard.

Dial Service. A dial may be used by the attendant in originating and completing outgoing trunk calls when trunks are connected to a dial central office.

Group Ringing and Talking. Means are provided whereby the attendant may ring simultaneously a group of forty station lines and then talk simultaneously to this same group of lines. Cord circuits are not required for this simultaneous ringing and talking service but connections are made directly between the attendant's telephone set and the station lines through the wiring of the buzzer and line circuits. The lines to be equipped for this service should be specified by the customer.

Incoming Call Transfer. An incoming call transfer key is provided and so wired that when operated all incoming calls from all station lines will be answered by a predetermined station line. This service is usually provided when the switchboard is unattended and avoids the necessity of going to the P.B.X. to answer the call. No intercommunication between station lines is possible with this arrangement. The incoming call transfer unit is provided for this purpose and is similar in construction to the simultaneous ringing and talking unit.

Facilities for Night Service. Incoming central office calls for night service are directly connected through the trunk cord to the station lines other than the line connected to the incoming call transfer unit.

EQUIPMENT ARRANGEMENTS

The following four equipment arrangements are available:

System A—Communication between attendant and stations.

System B—Communication between attendant and stations.
Intercommunication between stations.

System C—Communication between attendant and stations.
Intercommunication between stations.
Trunk lines to a Central Battery Central Office.
Direct current ringing.

System D—Similar to System C except that station bells are rung with alternating current and the trunks of System D may be connected into either a Dial or a Manual Central Battery Central Office.

TCI Library: www.telephonecollectors.info

SWITCHBOARDS

Private Branch Exchange

Sectional Unit Type

No. 1801—*Continued*

POWER REQUIREMENTS

Since the quality of service obtained from a P.B.X. is affected materially by the efficiency of the power supply, power equipment designed particularly for this kind of service should be selected.

For talking, signaling and direct current ringing, the No. 1801 P.B.X. requires a 20-28 volt, single battery supply. The 20-cycle alternating current ringing current required for System D may be obtained from a source outside the P.B.X. or at the P.B.X. by the use of a hand generator.

For further information regarding the No. 1801 P.B.X. Switchboard, you are invited to address any Western Electric distributor whose name is listed on the last page of this catalog.

No. 551 Type P.B.X. Switchboard



No. 551A

No. 551A P.B.X.

General

The No. 551A P.B.X. Switchboard is of the single position, non-multiple type and is arranged for operation with either a manual or a dial central office and may be operated on battery obtained over cable pairs from a central office. Ringing current is usually obtained from the central office.

This switchboard may be obtained in either oak-natural finish or in mahogany with a mahogany-walnut finish. The lumber is kiln dried and thoroughly seasoned to prevent warping and cracking.

Capacity

The capacity of the No. 551A P.B.X. is as follows:

Station Line Circuits	40
Trunk Circuits	10
Cord Circuits	10

Provision is made so that ten of the station line circuits may be equipped with line relays when the conductor resistance of certain of the station lines is high.

Any desired number of station lines, trunks and cord circuits within the capacity of the board can be equipped as specified.

Although this switchboard is usually furnished as a single unit, two switchboards may be lined up together by placing them end to end without removing the end panels.

Framework

The framework for the switchboard is arranged with a hinged gate upon which all of the relay equipment is mounted. The gate extends only to the height of the cord shelf so that the cords may be tested, and if necessary changed, without opening the gate.

The terminal strips on which the station line and trunk circuits are terminated are so located that they are fully exposed for maintenance purposes when the rear door is removed from the switchboard.

The keyshelf, lockrail and front panel are covered with black phenol fibre. The plug rail is covered with black semi-hard rubber.

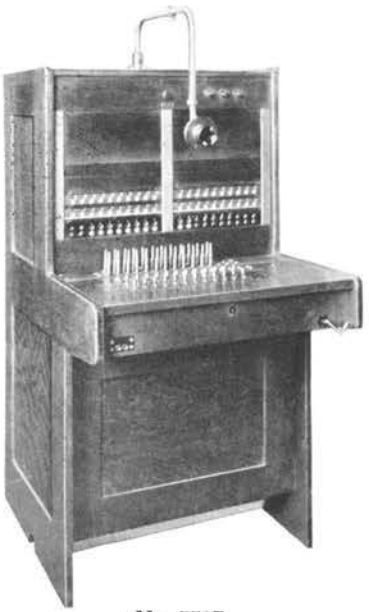
For further information regarding the No. 551A P.B.X. you are invited to address any Western Electric distributor whose name is listed on the last page of this catalog.

TCI Library: www.telephonecollectors.info

SWITCHBOARDS

Private Branch Exchange

No. 551B P.B.X.



No. 551B

The No. 551B P.B.X. is similar to the No. 551A except in regard to the capacity. The No. 551B has a larger capacity as shown below:

Station Line Circuits	320
Trunk Circuits	15
Cord Circuits	15

Provision is made so that 20 of the station line circuits may be equipped with line relays when the conductor resistance of certain of the station lines is high.

This switchboard has a maximum capacity of 320 lines but may be had with a capacity of 80 lines, the different capacities being arranged for by the use of different local cables.

Should there be a need for a capacity greater than the maximum of one section it is possible to line up two or more sections and bolt them together without removing the sides.

For further information regarding the No. 551B P.B.X. you are invited to address any Western Electric distributor whose name is listed on the last page of this catalog.

No. 506 Type Cordless P.B.X. Switchboard

General



No. 506A

The No. 506 Type Switchboards are single position turrets of the cordless type, all connections being made by the operation of keys.

The circuits are arranged for local manual service and for operation into either manual or machine switching central offices. The wiring and equipment are the same for all systems.

Through dialing to a central office from stations may be provided for by equipping the station telephone set with a dial. The through dial connection is established to the central office by operating a station key and a trunk key in the same connecting circuit. When the P.B.X. is unattended a through connection to the central office (either manual or dial) may be left set up for a certain station line.

A desk stand is provided for the use of the attendant and, when required, a dial is furnished with the desk stand so that connections may be made to a dial central office.

Ordinarily the ringing supply is obtained from the central office. Where the ringing current is not obtained from this source, a hand generator is used for ringing the stations. It also serves as an emergency ringing supply in case of a central office ringing supply failure.

The talking battery is obtained over cable pairs from the central office for local connections and over the trunk conductors on trunk connections. One cable pair is provided in each P.B.X. for battery supply.

Capacity

	Code No. 506A	Code No. 506B
Positions	1	1
Trunk Circuits	3	5
Connecting Circuits	5	5
Station Line Circuits	7	12
Attendants Telephone Circuit	1	1
Ringing and Buzzer Circuit	1	1

TCI Library: www.telephonecollectors.info

SWITCHBOARD—PRIVATE BRANCH EXCHANGE

No. 506 Type Cordless P.B.X.—*Continued*

Framework and Finish

The framework consists of a wooden base upon which is mounted a wooden key front and all of the relay equipment associated with the switchboard. The key front is mounted in a vertical position near the forward edge of the base and is hinged at the bottom so that it may be dropped down in order to facilitate maintenance. Two triangular shaped gusset plates are mounted on the base and serve as a support for the apparatus mounting plates. A removable wooden cover which slides on metal runners fastened to the base is provided to protect the apparatus and wiring and to facilitate maintenance.

The Nos. 506A and B Boards may be obtained in oak-natural finish or in mahogany with a mahogany-walnut finish.

MAGNETO CORDLESS SWITCHBOARD—10 LINE

The 10 line cordless magneto switchboard is intended for use in an area where the Telephone Company's central office is a magneto exchange or where the conditions are such that power cannot be supplied over cable pairs from central office. This type of switchboard is simple and economical in operation and will provide for the needs of an isolated factory or institution desiring intra-department communication.

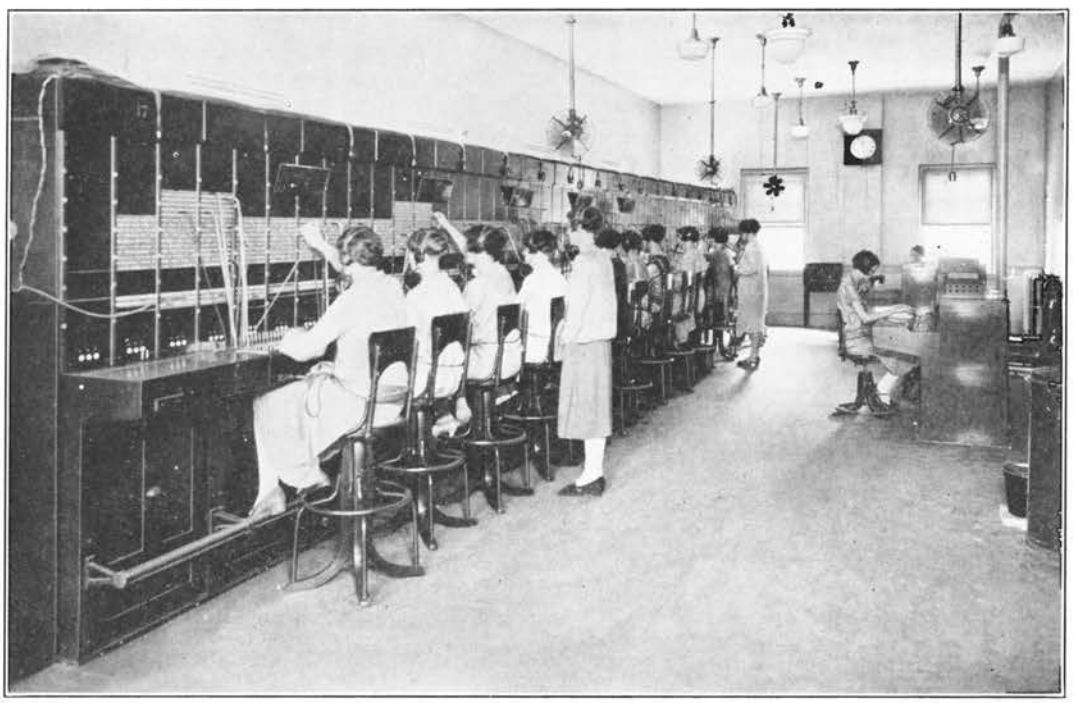
This cordless magneto board is equipped with 10 magneto station lines, any of which may be connected to the magneto office for trunking purposes. Five simultaneous connections are provided between lines by keys. There is one operator's telephone circuit, one ringing circuit and a night alarm circuit. The trunks from the central office terminate on drops. This enables central to recall the P.B.X. operator at any time.

The cabinet is furnished in quarter-sawed white oak with a light finish, unless otherwise specified. This board is similar in appearance to the No. 506 Type, an illustration of which is shown on page 248.

TCI Library: www.telephonecollectors.info

SWITCHBOARDS—CENTRAL BATTERY MULTIPLE

No. 11 Type



No. 11 Multiple Switchboard in Operation

The No. 11 Multiple Switchboard is built up of separate sections, each section consisting of an upper unit and a lower unit. The design of this board facilitates making additions and rearrangements, making it possible to meet changing conditions with a minimum outlay of time and expense.

The upper framework is arranged in either one-position or three-position lengths, consisting of either three or nine 8½″ panels respectively. The vertical jack opening for face equipment is 2′ 7 1/16″ for the single-position unit and 2′ 11 3/16″ for the three-position unit. The single-position upper unit has a removable door. The three-position upper unit has rear roller curtains which operate easily and allow free access to the back section. These units are provided with a multiple shelf which is equipped with a fire protection panel in the front only. They are arranged for knockdown shipment.

The lower unit can be removed from one position and placed in another part of the board at any time. These units are a single-position section in all cases and of a width to correspond with the three panel upper unit. They are shipped equipped and wired. Space is provided in the rear of the lower unit for fuse panels, terminal strips, cord circuit relays and repeating coils, and cable brackets for the incoming trunks and miscellaneous cable. The location of the switchboard cable in this position does not interfere with the removal of the lower unit. Front and rear panels which conceal the cords are removable.

The relays, resistances, retardation coils, condensers, etc., associated with the cord, operator's telephone, supervisor's and night alarm circuits, are mounted in the rear of the lower unit. The line relays and the line auxiliary signal circuit are mounted on a separate relay rack. Provision is made for fusing all positional circuits in the rear of the sections. The line, trunk and other miscellaneous circuits are fused on a fuse board mounted on the relay rack.

Each line-up of switchboard requires a cable turning section at one end to enclose the cables entering the switchboard.

TCI Library: www.telephonecollectors.info

SWITCHBOARDS

Central Battery Multiple

No. 11 Type—*Continued*

CAPACITY

The capacity of this switchboard is variable depending upon the requirements of a specific installation. Each job is engineered according to the conditions which prevail wherein the board is to be installed. These boards are suitable for offices having from 300 to 10,400 subscribers' lines. Where it is expected that the switchboard will reach a maximum of 4000 lines or more, the subscribers' line multiple is installed on an eight (8) panel basis and the toll and rural line multiple arranged on a six (6) panel basis. Boards installed in offices that will not exceed a capacity of 3000 lines have all multiple arranged on a six panel basis.

The 4000 line capacity board is provided with either 360 toll lines or 720 outgoing trunks.

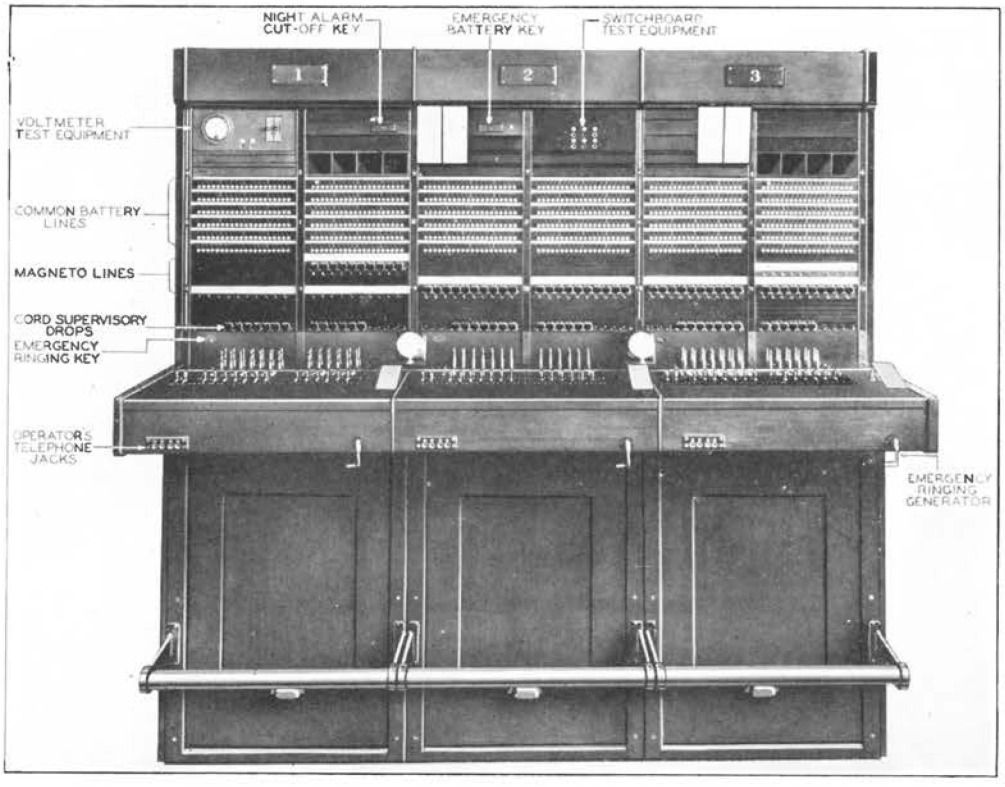
The cord circuit capacities of the lower units are as follows:

Local Positions	17
Inward Toll Position	16
Outward Toll Position	10

Separate trunk, trouble and end positions can be provided to meet the requirements at the time of installation.

For further information concerning the No. 11 Multiple Switchboard, you are invited to address any Western Electric distributor whose name is listed on the last page of this catalog.

No. 12 Switchboard



Front of Switchboard—640 Lines

TCI Library: www.telephonecollectors.info

SWITCHBOARDS

Central Battery Multiple

No. 12 Type—*Continued*

GENERAL

The Western Electric No. 12 Switchboard was developed to meet an increasing demand for a small central battery switchboard which could be installed at a low initial cost in exchanges which are now operating on a magneto or a non-multiple basis. It is adaptable particularly where the original installation consists of only a few positions and the estimated growth will be slow.

In the No. 12 Switchboard the engineers have specified the use of manual cord circuits. The reasons for this are that feature cord circuits are expensive in their first cost and are difficult to maintain due to the multiplicity of apparatus required.

With switchboards of this size, experience has proved that there is not sufficient gain in efficiency from a traffic standpoint to warrant the expense required for the inclusion of complicated feature cord circuits.

CAPACITY

The capacity of the No. 12 Switchboard is as follows:

	640 Line Switchboard	1440 Line Switchboard
Common Battery Subscriber Line Circuits with Designation Strips (4 Panel Multiple)	640	0
Common Battery Subscriber Line Circuits without Designation Strips (4 Panel Multiple)	0	1440
* Toll Lines, Rural Lines and Ringdown Trunks with Drop Line Signals	120	120
* Toll Lines, Rural Lines and Ringdown Trunks with Lamp Line Signals	0	240
Cord Circuits (Per Position)	15	15

* Outgoing trunk space of 7 1/16" is available in this switchboard. This may be used for any combination of equipment for rural lines, toll lines or trunk circuits, as desired.

Note: The above line capacities are based on a 4-panel multiple layout. Switchboards equipped on a 3-panel basis will be furnished, if desired.

DESCRIPTION OF SWITCHBOARDS

The No. 12 may serve entirely as a local board in full tributary offices, or as a combined local and toll board in partial tributaries or small toll centers. Where used as a local board in full tributary offices, all positions are equipped alike. Where used as a combined local and toll board in partial tributaries or in a small toll center, toll sections may be equipped as required.

Provision is made for single, two-party and four-party selective one or two-way ringing, employing either an individual cord circuit or a master ringing key.

The simplified arrangement and the small number of units which make up the equipment result in a low initial installation cost as well as minimum maintenance expense.

FEATURES

The principal features of the No. 12 Switchboard are:

1. Specially designed central battery subscribers' lines, eliminating the use of line and cut-off relays.

2. A fixed floor plan layout, of which a compact arrangement of the equipment is a part. By following this layout, the necessity for special technical treatment which is normally required for each installation, will be avoided. In addition, the plan permits the installation of as many as five positions in a room approximately 16′ x 16′. This makes the equipment adaptable particularly in central offices located in a private residence.

3. Relatively few operating units to require adjustment. This feature results in more simple maintenance facilities.

TCI Library: www.telephonecollectors.info

SWITCHBOARDS

Central Battery Multiple

No. 12 Type—*Continued*

SWITCHBOARD CONSTRUCTION

Each section is an independent unit and consists of one operator's position. The framework is rigidly constructed of steel with all joints welded. This framework is coated with aluminum, rust-proof paint. Selected mahogany, thoroughly seasoned and kiln dried to prevent warping or cracking is used. The cabinet work is finished in walnut.

The end panels and the front panels that conceal the cords are removable. Removable rear doors allow free access to the back of the section.

The plug shelf is covered with durable, non-glare, semi-hard rubber. The piling rail and lamp rail are covered with black phenol fibre.

POSITIONAL EQUIPMENT

The No. 12 Switchboard is available in two types of positions; namely, toll, and combination local and rural.

The toll position is wired for and equipped with 13 universal two-way ringing cord circuits, employing a master key where party line ringing is desired; and is arranged to accommodate a calculagraph at the left of the section.

The combined local and rural position is wired for 15 universal cord circuits using individual single party ringing keys or either individual party line ringing keys or a master key for party line ringing. Provision is made for coin collect keys although this feature is not ordinarily furnished. Normally thirteen pairs in each position are equipped. The first and fifteenth pairs are unequipped, in order to provide two cord circuits for future expansion.

CENTRAL BATTERY LINES

The central battery subscriber lines in this board differ from those used in a number of other boards. This is due to the development of a new lamp, adaptable to a large voltage range, which will not burn out on a zero loop and which will give satisfactory illumination on a line having a resistance up to 800 ohms. Because of this lamp, it is possible to connect the line lamp in series with the line. The use of this lamp eliminates the usual line and cut-off relays.

MAGNETO LINE

The magneto lines, which may be used interchangeably for toll, rural or ringdown trunks, are of the ringdown type; employing manually restored drops and cut-off jacks. These lines are arranged to be multipled throughout the switchboard.

CORD CIRCUITS

The cord circuits are of the bridged-impedance, universal type which adapt themselves automatically to permit connections between two central battery, two magneto, or a magneto and a central battery line. They are of the manual ringing and listening type, and are arranged for full lamp supervision. Supervision on central battery connections is provided by the regular supervisory lamp associated with the answering and calling cord. Supervision on magneto connections is provided by a third lamp common to both cords. The cords are arranged for 48 volt transmission.

A complete power plant is included with the No. 12 Switchboard which consists of storage batteries, charging equipment, ringing equipment and associated control equipment. The size of the power plant will depend upon the requirements of each particular installation and will be engineered accordingly.

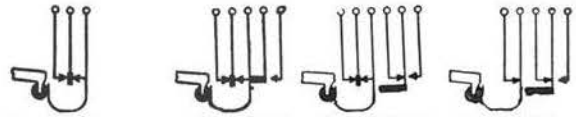
For further information concerning the No. 12 Switchboard, you are invited to address any Western Electric distributor whose name is listed on the last page of this catalog.

TCI Library: www.telephonecollectors.info

SWITCH HOOKS



No. 143Y Switch Hook



No. 140S
Nos. 143J, Y and AE

No. 140W
No. 143AB

No. 140AG

No. 143AA

Nos. 140 and 143 Types

The Nos. 140 and 143 Type Switch Hooks are simple, compact and self-contained. The switch hook lever is made of brass with black finish and is designed to withstand rough usage. The bracket is made of steel and is extremely rigid. The springs are of nickel silver and are backed up with brass stop springs. The movement of the lever is limited by stops, making it impossible for the springs to be damaged. The switch lever pivots on a fulcrum pin which is normally locked in position by means of a retaining spring. This pin may be readily removed with the fingers, when desired.

All iron and steel parts have an electro-galvanized finish to thoroughly protect them against rusting.

Mechanical contact is made between the lever and the tension spring through a hard rubber roller to minimize friction. All current carrying parts are insulated from the bracket.

Except for the No. 143AE these switch hooks are designed for use with standard hand receivers (Nos. 143, 144 and 706).

The No. 140 Type Switch Hooks are intended for use in metal telephones (No. 1653 Type) and, therefore, no escutcheons are provided.

The No. 143 Type Switch Hooks mount by means of four machine screws which pass through clearance holes in the escutcheon and thread into tapped holes in the switch hook bracket. Screws of suitable length for mounting in ½ inch woodwork are furnished unless otherwise specified.

†Code Nos.	140S	140W	140AG	143J*	143Y	143AA	143AB	143AE‡

* No. 143J is treated to resist action of moisture and fumes.
† Refer to spring contact arrangements above.
‡ No. 143AE is equipped with special lever for use with head band receiver only.

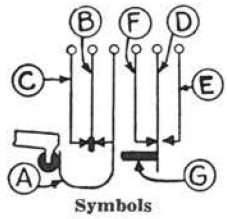


No. 141A Switch Hook

Code No.	Use and Description
141A	A nickel plated brass hook having a wood screw thread at one end and provided with a stop escutcheon. Overall length, 2⅞ inches. Intended for use with No. 1002 and No. 1003 Type Hand Sets.

TCI Library: www.telephonecollectors.info

SWITCH HOOKS—*Continued*



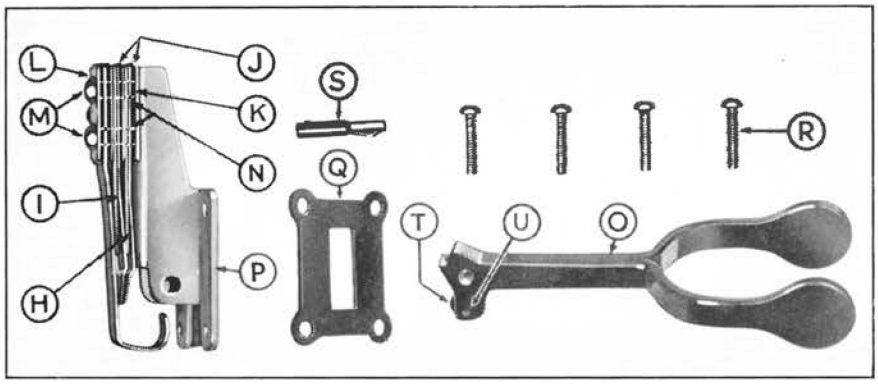
Symbols

Switch Hook Replacement Parts

CONTACT SPRING PARTS

Switch Hook Code Numbers

Symbol	140S	140W	140AG	143J	143Y	143AA	143AB	143AE
A	P-121484	P-121484	P-121484	P-121484	P-145644	P-145644	P-145644	P-162207
B	P-145633	P-145633	P-145633	P-145633	P-145633	P-114095	P-145633	P-145633
C	P-114097	P-114097	P-114097	P-114097	P-114097	.....	P-114097	P-114097
D	.....	P-114098	P-145831	.....	.....	P-145827	P-145825	.....
E	.....	P-114097	P-114095	.....	.....	P-114095	P-114097	.....
F	.....	.....	P-114095	.....	.....	P-114095	.....	.....



Symbol		140S	140W	140AG	143J	143Y	143AA	143AB	143AE
G	Spring Separator	.....	P- 44454	P-106219	.....	.....	P-106219	P- 44454	.....
H	Stop Spring	P-112938	P-112938	P-112938	P-112938	P-112937	P-112692	P-112937	P-112937
I	Stop Spring	P-112693	P-112693 (2)	P-112693 (3)	P-112693	P-112692	P-112694 (2)	P-112692 (2)	P-112692
J	Insulators	P- 44448 (4)	P- 44448 (5)	P- 44448 (7)	P- 44448 (4)	P- 44448 (4)	P- 44448 (6)	P- 44448 (5)	P- 44448 (4)
K	Steel Spacers	P-157542 (4)	P-157542 (5)	P-157542 (7)	P-157542 (4)	P-157542 (4)	P-157542 (9)	P-157542 (5)	P-157542 (4)
L	Steel Spacer	P-157541	P-157541	P-157541	P-157541	P-157541	P-157541	P-157541	P-157541
M	R.H.M. Screw	P-147761 (2)	P-157544 (2)	P-114035 (2)	P-147761 (2)	P-147761 (2)	P-114035 (2)	P-157544 (2)	P-147761 (2)
N	Bushings	P-139186 (2)	P-129907 (2)	P-111760 (2)	P-139186 (2)	P-139186 (2)	P-157547 (2)	P-129907 (2)	P-139186 (2)
O	Switchhook Assembly	P-123514	P-123514	P-123514	P-123514	P-123514	P-123514	P-123514	P-139256
P	Bracket and Springs, Complete	P-145648	P-145812	P-161134	P-145802	P-145646	P-145806	P-145807	P-158821
Q	Escutcheon	.....	.....	.....	P-139277	P-136748	P-136748	P-136748	P-136748
R	Mtg. Screws	P- 38335 (4)	P- 38335 (4)	P- 38335 (4)	P-107892 (4)	P- 40830 (4)	P- 40830 (4)	P- 40830 (4)	P- 40830 (4)
S	Fulcrum Pin	P-218066	P-218066	P-218066	P-218066	P-218066	P-218066	P-218066	P-218066
T	Roller and Rivet	P-128282	P-128282	P-128282	P-128282	P-128282	P-128282	P-128282	P-128282
U-1	Roller and Sleeve	P-128283	P-128283	P-128283	P-128283	P-128283	P-128283	P-128283	P-128283
U-2	Roller and Sleeve	P-111165	P-111165	P-111165	P-111165	P-111165	P-111165	P-111165	P-111165

Note. Numbers in parentheses indicate total number of parts required.

TCI Library: www.telephonecollectors.info

TELEPHONES—MAGNETO

No. 1417 Type Magneto Telephones

GENERAL DESCRIPTION



No. 1417 Type Telephone Set (3-Cell, Closed View)

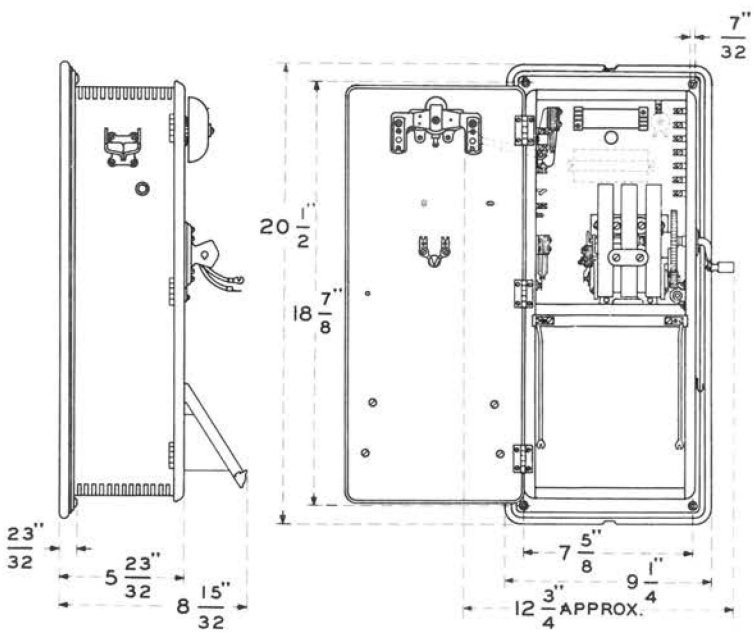
The No. 1417 Type Telephone represents the latest development attained in magneto telephone design and construction. It is a local battery magneto wall set arranged for anti-sidetone rural service. It is equipped with the new high efficiency No. 635A Transmitter and No. 706A Receiver, which represent a distinct improvement over the instruments used on the No. 1317 Type which this set replaces. The No. 1417 Type Telephone Sets are equipped with a shelf for writing as shown in illustration.

2- AND 3-CELL TYPES

The standard No. 1417 Type Telephone Set operates on 3 dry cells and is equipped with a No. 48 Type (5 bar) Generator. This set is designed to meet the exacting requirements of heavily loaded lines.

A smaller set of the same type using the same circuits and equipment except the generator and operating on 2 dry cells is available for medium loaded lines. The No. 50 Type (3 bar) Generator is used in this set.

Although both sets are almost identical, the additional power of the 3-cell type gives greater transmission advantages and the 2-cell type should only be considered when circuit conditions are favorable.



Dimensional Drawing No. 1417 Type Telephone Set—3-Cell

TCI Library: www.telephonecollectors.info

TELEPHONES—MAGNETO

No. 1417 Type—*Continued*

Woodwork and Finish. The cabinet is made of quarter sawed oak and given three coats of high-grade varnish rubbed down by hand. Unexposed surfaces of the telephone are also given a protective finish so as to prevent warping.

Wiring. All terminals including those for the transmitter, receiver, cord, line wires, etc., are plainly marked so that there can be no possible mistake when making connections. The various cords, such as those of the transmitter and receiver and the flexible leads running to the condenser are all furnished with cord tips.

A complete and explanatory circuit label is pasted on the inside of the door of each telephone in addition to which a booklet is furnished giving complete instructions for installation and maintenance.

Metal Finish. The transmitter bracket, gongs, switch hook, generator, crank and lock escutcheon are given an extremely durable and pleasing black finish.

Adjustment. These telephones are carefully adjusted in the factory, and should, therefore, be satisfactory for service as received by the customer unless unusual service conditions should be encountered, in which case only the ringer will require readjustment. The adjustment of the ringer is a very simple matter and instructions furnished in the booklet are so clear that no difficulty will be encountered.

No. 1417 THREE-CELL TYPE

	Ringer				Class of Signal Service		
Code No.	Code No.	Resistance (Ohms)	Generator Code No.	Condenser Code No.	Telephone to Central Office	Central Office to Telephone	Line Conditions as Regards Load
1417AH	38AG	1000	22A	(a) (b)	Code	Code	Medium
1417N	38FG	1600	48A	(b)	Code	Code	Medium
1417P	38BG	2500	48A	(b)	Code	Code	Heavily
1417R	38FG	1600	48A	149E (b)	Code	Code	Medium
1417S	38BG	2500	48A	149E (b)	Code	Code	Heavily

No. 1417C TWO-CELL TYPE

	Ringer				Class of Signal Service		
Code No.	Code No.	Resistance (Ohms)	Generator Code No.	Condenser Code No.	Telephone to Central Office	Central Office to Telephone	Line Conditions as Regards Load
1417CH	53AG	1020	22BA	(a) (c)	Code	Code	Lightly
1417CN	53FG	1620	50F	(c)	Code	Code	Medium
1417CP	53BG	2500	50F	(c)	Code	Code	Heavily
1417CR	53FG	1620	50F	149E (c)	Code	Code	Medium
1417CS	53BG	2500	50F	149E (c)	Code	Code	Heavily

Two or three dry batteries are required but must be ordered separately. In addition to the above-mentioned apparatus, these No. 1417 Type Telephones are equipped with the following:

	Code No.		Code No.
(d) Transmitter	635A	Induction Coil	113D
(d) Receiver	706A	Transmitter Bracket	8A
Receiver Cord	R2DW	Switch-hook	143Y
Transmitter Cord	T1A (6 ins.)		

(a) This telephone is arranged for a No. 149E Condenser which may be wired in the ringer or receiver circuit if desired.

(b) This set can be furnished equipped with a No. 63FD Resistance or a No. 149F Condenser. The resistance is used where it is required to match the impedance of the set to long iron wire loops. The condenser is used for matching the impedance of the set to long non-loaded cable loops. In other situations the sets are used without this condenser or resistance.

(c) Same as note (b) except that a No. 149D Condenser will be furnished instead of the No. 149F.

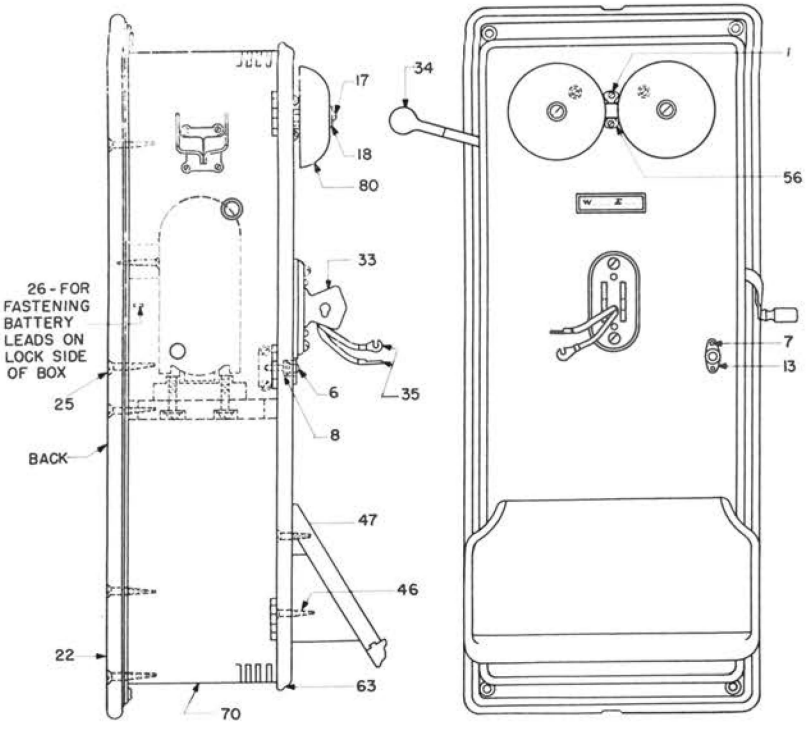
(d) The No. 323 Transmitter and 144 Receiver may be used in place of the No. 635A Transmitter and 706A Receiver.

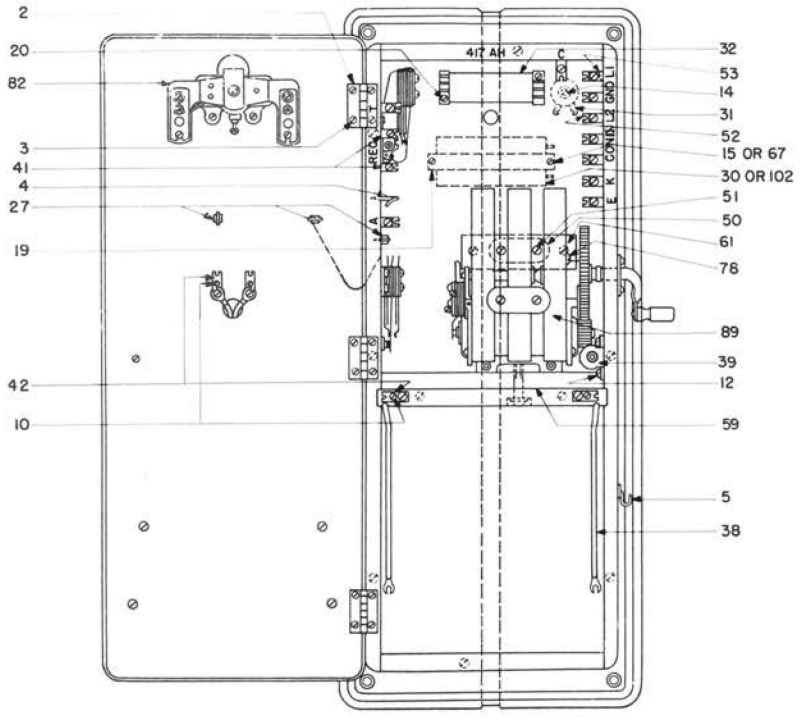
TCI Library: www.telephonecollectors.info

TELEPHONES — MAGNETO

No. 1417 Type—*Continued*

No. 1417 Type Magneto Telephone—Replacement Parts





TCI Library: www.telephonecollectors.info

TELEPHONES—MAGNETO

No. 1417 Type—*Continued*

REPLACEMENT PARTS FOR Nos. 1417N, P, R, S, AH, CH, CN, CP, CR AND CS

Sym-bol	Name of Piece Part	1417N	1417P	1417R	1417S	1417AH	1417CH	1417CN	1417CP	1417CR	1417CS
1	R. H. W. Screw	P- 23217	P- 23217	P- 23217	P- 23217	P- 23217	P- 23217	P- 23217	P- 23217	P- 23217	P- 23217
2	Hinge	P- 24704	P- 24704	P- 24704	P- 24704	P- 24704	P- 24704	P- 24704	P- 24704	P- 24704	P- 24704
3	F.H.W. Screw	P- 40354	P- 40354	P- 40354	P- 40354	P- 40354	P- 40354	P- 40354	P- 40354	P- 40354	P- 40354
4	Screw Hook	P- 48959	P- 48959	P- 48959	P- 48959	P- 48959	P- 48959	P- 48959	P- 48959	P- 48959	P- 48959
5	Directory Hook	P-101440	P-101440	P-101440	P-101440	P-101440	P-101440	P-101440	P-101440	P-101440	P-101440
6	Lock Screw	P-101758	P-101758	P-101758	P-101758	P-101758	P-101758	P-101758	P-101758	P-101758	P-101758
7	Escutcheon Pin	P-101794	P-101794	P-101794	P-101794	P-101794	P-101794	P-101794	P-101794	P-101794	P-101794
8	Washer	P-103722	P-103722	P-103722	P-103722	P-103722	P-103722	P-103722	P-103722	P-103722	P-103722
10	R.H.W. Screw	P-111553	P-111553	P-111553	P-111553	P-111553	P-238802	P-238802	P-238802	P-238802	P-238802
12	R.H.W. Screw	P-113637	P-113637	P-113637	P-113637	P-113637	P-113637	P-113637	P-113637	P-113637	P-113637
13	Lock Escutcheon	P-131372	P-131372	P-131372	P-131372	P-131372	P-131372	P-131372	P-131372	P-131372	P-131372
14	R.H.W. Screw	P-123635	P-123635	P-123635	P-123635	P-123635	P-123635	P-123635	P-123635	P-123635	P-123635
15	R.H.W. Screw	P-160630	P-160630	P-160630	P-160630	P-160630	P-160630	P-160630	P-160630	P-160630	P-160630
17	R.H.M. Screw	P-218674	P-218674	P-218674	P-218674	P-218674	P-218674	P-218674	P-218674	P-218674	P-218674
18	Lock Washer	P-218799	P-218799	P-218799	P-218799	P-218799	P-218799	P-218799	P-218799	P-218799	P-218799
19	Condenser Strap	P-225255	P-225255	P-225255	P-225255	P-225255	P-225255	P-225255	P-225255	P-225255	P-225255
20	R.H.W. Screw	P-239183	P-239183	P-239183	P-239183	P-239183	P-239183	P-239183	P-239183	P-239183	P-239183
22	Backboard	P-371138	P-371138	P-371138	P-371138	P-371138	LP-371398	LP-371398	LP-371398	LP-371398	LP-371398
25	F.H.I.W. Screw No. 7 x 1½	RM-614360	RM-614360	RM-614360	RM-614360	RM-614360	RM-614360	RM-614360	RM-614360	RM-614360	RM-614360
26	¼ Wire Staple	RM-615407	RM-615407	RM-615407	RM-615407	RM-615407					
27	No. 1 Insulated Staple	RM-615423	RM-615423	RM-615423	RM-615423	RM-615423	P-122983	P-122983	P-122983	P-122983	P-122983
30	(a) Condenser	149F	149F	149F	149F	149F	149D	149D	149D	149D	149D
31	(a) Resistance	63FD	63FD	63FD	63FD	63FD	63FD	63FD	63FD	63FD	63FD
32	Induction Coil	113D	113D	113D	113D	113D	113D	113D	113D	113D	113D
33	Transmitter Bracket	8A	8A	8A	8A	8A	8A	8A	8A	8A	8A
34	Switch Hook	143Y	143Y	143Y	143Y	143Y	143Y	143Y	143Y	143Y	143Y
35	Cord 6′ long	T1A	T1A	T1A	T1A	T1A	T1C	T1C	T1C	T1C	T1C
38	Transposition Lead (BK)	P-101402	P-101402	P-101402	P-101402	P-101402	P-101402	P-101402	P-101402	P-101402	P-101402
39	Lock Bracket Assembly	P-101751	P-101751	P-101751	P-101751	P-101751	P-101751	P-101751	P-101751	P-101751	P-101751
41	Connector Assembly	P-107407	P-107407	P-107407	P-107407	P-107407	P-107407	P-107407	P-107407	P-107407	P-107407
42	Connector Assembly	P-121382	P-121382	P-121382	P-121382	P-121382					
46	F.H.I.W. Screw No. 6 x 1	RM-614322	RM-614322	RM-614322	RM-614322	RM-614322	RM-614322	RM-614322	RM-614322	RM-614322	RM-614322
47	Shelf	P-201846	P-201846	P-201846	P-201846	P-201846	P-201847	P-201847	P-201847	P-201847	P-201847
49	Cord (Bat.)	540	540	540	540	540	540	540	540	540	540
50	Magnet Clamp Plate	.....	.....	.....	.....	P- 5863	.....	.....	.....	.....	.....
51	R.H.W. Screw	.....	.....	.....	.....	P- 33491	.....	.....	.....	.....	.....
52	Connector Assembly	P-107410	P-107410	P-107410	P-107410	P-107410	P-107410	P-107410	P-107410	P-107410	P-107410
53	R.H.W. Screw	P-113636	P-113636	P-113636	P-113636	P-113636					
56	Clapper Guard	P-161282	P-161282	P-161282	P-161282	(b) P-124708	P-124708	P-124708	P-124708	P-124708	P-124708
59	Block	.....	.....	.....	.....	(c) P-201848	.....	.....	.....	.....	.....
61	Block					(d) P-201849					
63	Cover	P-201824	P-201824	P-201824	P-201824	P-201824	P-201829	P-201829	P-201829	P-201829	P-201829
67	R.H.W. Screw			P-210161	P-210161	P-210161					
70	Box	P-371136	P-371136	P-371136	P-371136	P-371136	LP-371397	LP-371397	LP-371397	LP-371397	LP-371397
78	F.H.I.W. Screw No. 10 x 1½	.....	.....	.....	.....	RM-614453	.....	.....	.....	.....	.....
80	Gong	26A	26A	26A	26A	(e) 26A	29A	29A	29A	29A	29A
82	Ringer	38F	38B	38F	38B	(f) 38A	53A	53F	53B	53F	53B
89	Generator	48A	48A	48A	48A	22A	22BA	50F	50F	50F	50F
102	Condenser	.....	.....	149E	149E	(a) 149E	(a) 149E			149E	149E
	Circuit Label	LP-457034	LP-457034	LP-457034	LP-457034	LP-457034	LP-457033	LP-457033	LP-457033	LP-457033	LP-457033

Notes (a) Furnished only when specified in order.
(b) Used with No. 29A Gong when specified in order.
(c) P-107308 furnished when specified in order.
(d) P-107326 furnished when specified in order.
(e) No. 29A Gong for use on No. 51A Ringer in No. 1417AH Telephone Set will be furnished when specified in order.
(f) No. 51A Ringer furnished only when specified in order.

TCI Library: www.telephonecollectors.info

TELEPHONES—MAGNETO

Mine Telephones

General

Since the workings of a mine necessarily are remotely located from the management, mine telephones are essential to successful operation. Reports of conditions may be obtained and orders given promptly by telephone with definite assurance that these messages have been received and understood. The time and money which the telephone saves daily under ordinary conditions are indeed large but in emergencies the saving of lives and property which the telephone may effect is of inestimable value.

Mine Laws

That the Legislatures of many of the States have made the installation of mine telephones and signals a requirement for mine operation is in itself sufficient endorsement of their usefulness. Those farsighted operators who so quickly and wisely responded to these demands are realizing the benefits of the increased operating efficiency that they effect in their mines along with the insurance against loss of life which was the primary object of the legislative acts.

Mine Telephone Systems

In the Superintendent's office, engine house and other dry and protected parts of the Plant which should have communication with each other and the mine, the use of standard wall and desk type magneto telephones is recommended.

For use in mines where explosive gas is present the Western Electric Company has developed a telephone set which in the words of the United States Bureau of Mines "is permissible for use in mines or other locations where methane or other explosive gases or coal dust are or are likely to be present in dangerous proportions." This is the No. 1536E Telephone Set, hereinafter described in detail.

For use at exposed stations above ground and at stations below ground where there is no danger of explosive gases, the No. 1336 Type Telephone Set is recommended.

In cases where all the telephones of the system are connected to a single line (party line) the telephone used should be designed for use on heavily loaded lines—for example.

No. 1536E Telephones for service below ground where there is danger from explosive gases.

No. 1336J Telephones for service below ground where there is no danger from explosive gases and in exposed locations above ground.

No. 1417S Telephone (wall type) (5 bar generator) for service above ground in unexposed locations.

In cases where it is warranted by the size of the plant, the preferable arrangement is to employ a number of lines and a switchboard, instead of a party line. These lines may each have a number of telephones connected to them but the most satisfactory arrangement is to have the most important telephones of the system, for example the engine room telephone and the Superintendent's telephone, connected to individual lines. In addition to greater facility in handling calls the use of a switchboard has a number of advantages, an important one being that in case one of the lines should become broken or crossed, it will not tie up the rest of the system until the trouble is cleared.

In cases where a switchboard is employed, the telephones below ground should be of the No. 1336 or 1536 Type as required but the lines above ground may be equipped with telephones having three bar generators if there are only a very few stations on each line. Sets recommended for such conditions are the No. 1417AH (wall type) and a No. 315H Subscriber Set with a hand telephone set for desk use.

TCI Library: www.telephonecollectors.info

TELEPHONES—MAGNETO

Mine Telephones—*Continued*

No. 1336 Type



No. 1336
Type Mine Telephone

Briefly, these are metal case magneto telephones having all apparatus and parts treated to resist the action of moisture. They are primarily designed for use on heavily loaded lines where code ringing is employed and, while they are intended chiefly for mine service where danger from explosive gases is not present, they are also recommended for outdoor use.

Moisture-proofing. Experience has shown that moisture will condense on the inside surfaces of mine telephones regardless of whether or not they are of so called "Air Tight" construction. In view of this, the practice of employing gaskets, stuffing boxes, etc., was abandoned a number of years ago in favor of the design illustrated by the No. 1336 Type. In this design small openings are provided which permit air to circulate through the telephone without exposing it to the chance of trouble due to the entrance of foreign material. An opening is also provided so that water may drain off instead of remaining in the telephone. All apparatus and parts are specially treated so that they will not be injured by moisture or fumes, and in addition the telephone is so made that the presence of moisture will not interfere with signalling or transmission. The terminals of the apparatus are imbedded in insulating compound so that they cannot be short circuited even though the apparatus is wet. The telephone is wired with heavy stranded copper wire having rubber insulation and a braiding.

Dry Cells. Two standard size dry cells are required for each telephone to furnish current for talking.

Two special cartons, impregnated with moisture-proofing compound, are furnished with each No. 1336 Type Telephone. These are to be substituted for the standard cartons furnished on the dry cells. These cartons resist the action of any moisture that may form on the inside of the case and prevent current leakage and rapid deterioration.

Case. The box, outer door, inner door and gong hood are of cast iron heavily coated with a rust resisting finish. When the outer door is closed only the metal transmitter mouthpiece, receiver, receiver cord and the generator handle are exposed. When the outer door is closed these parts are protected from mechanical injury. When using this telephone it is, of course, evident that only the outer door need be opened.

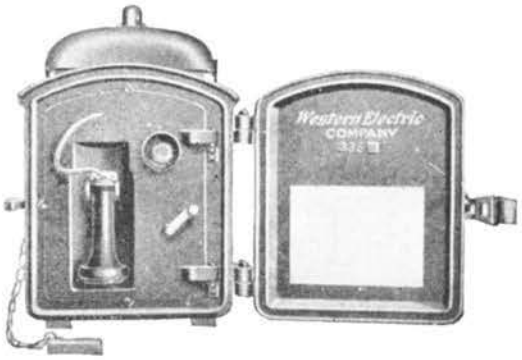
Entrance for Line Wires. The line wires may be brought in either at the top or the bottom of the case. A short length of pipe is screwed into the top of the case and is covered with a pipe cap. This cap prevents water running into the set by following the line wires. In case the line wire is to be run to the telephone in pipe (conduit) no difficulty will be encountered in joining the conduit to the telephone as the wire entrance hole at the bottom as well as the top of the case is tapped.

TCI Library: www.telephonecollectors.info

TELEPHONES—MAGNETO

Mine Telephones

No. 1336 Type—Continued



No. 1336 Mine Telephone (Outer Door Open)



No. 1336 Mine Telephone (Outer and Inner Doors Open)

Mounting. Wrought iron mounting bars are secured to the back of the case. The upper end of these have "pear" shaped holes, and with this arrangement the telephone can be readily mounted by one man and without any danger of damaging it. This is accomplished by driving two lag screws into the mounting surface until their heads project about ½ inch. The telephone may then be hung upon these mounting screws (the heads of the lag screws will pass through the large end of the "pear" shaped holes) after which the lower mounting screws may be driven into place through the holes in the lower end of the mounting bars. Wrought iron mounting bars are employed as they are less subject to breakage than if lugs were cast on the case.

The No. 1336A Telephone is not equipped with a ringer as it is intended for use where an extension bell is preferred to the regular telephone ringer, also for service where all the calls will be outgoing.

The Nos. 1336E and K differ from the No. 1336A in that they are equipped with a ringer and an iron hood for protecting the gongs.

The No. 1336J differs from the No. 1336E only in that a condenser is provided to permit the ringers of this telephone as well as others on the same line, being rung even though its receiver may have been left off the switchhook.

Code No.	Transmitter	Receiver	Receiver Cord	Condenser	Ringer		Generator	Signalling Service	For Line Load
					Code No.	Resistance			
1336A	312	144	384	None	None		48C	Code Ringing	Heavily Loaded
1336E				None	45BG	2500			
1336J			10½ in.	149A	45BG	2500			
1336K				149A	(Spl.) 45BG	1600			Medium Loaded

In addition to the apparatus listed above the No. 1336 Type Telephones are equipped with a No. 143J Switchhook and a No. 31 Induction Coil.

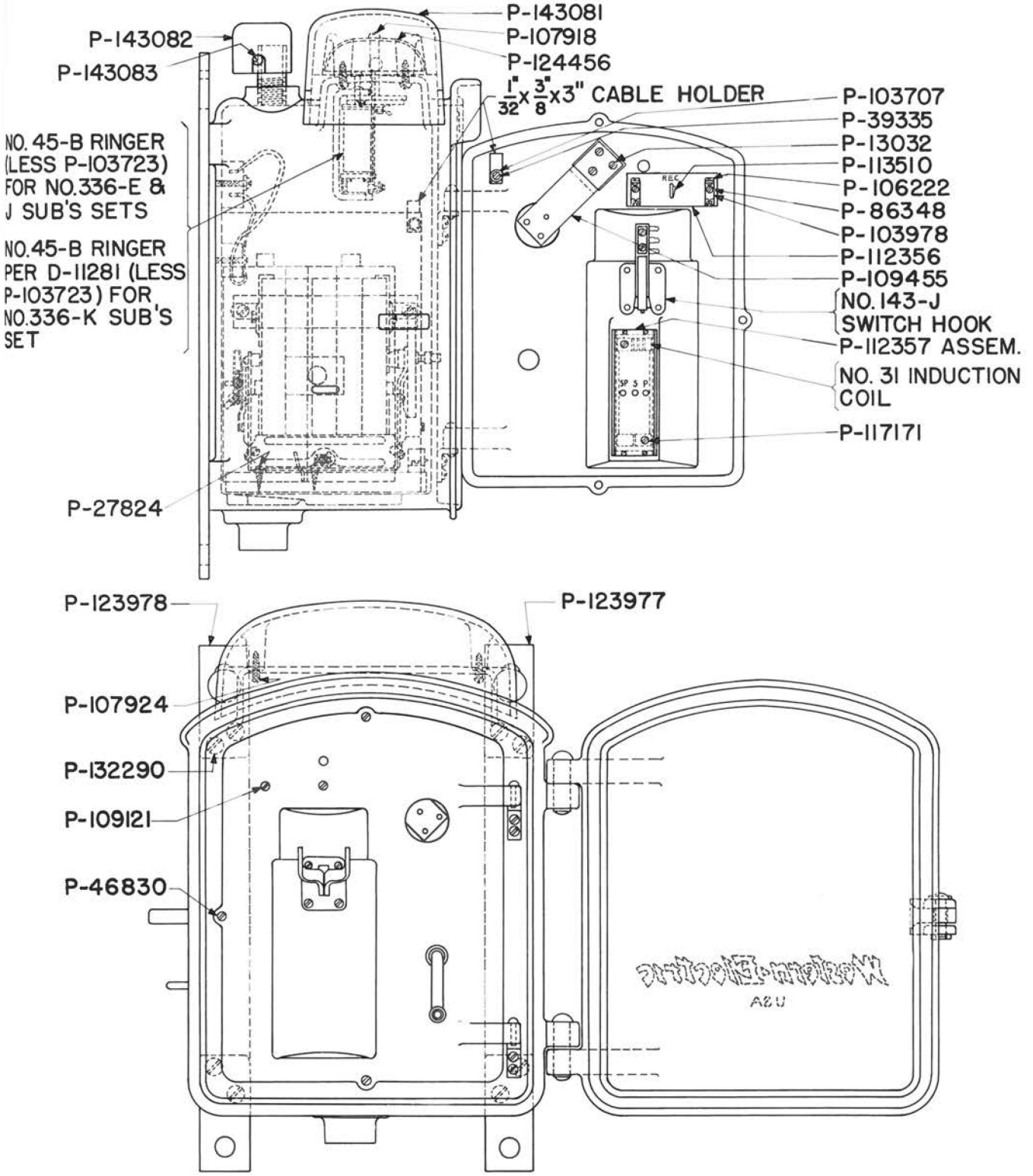
Special No. 1336 Type Telephones equipped with a heavy brass padlock with two keys are obtainable. The padlock is attached to the chain in place of the latch pin. Orders for these telephones must state that padlocks are desired.

TCI Library: www.telephonecollectors.info

TELEPHONES—MAGNETO

Mine Telephones—*Continued*

REPLACEMENT PARTS FOR Nos. 1336A, E, J AND K

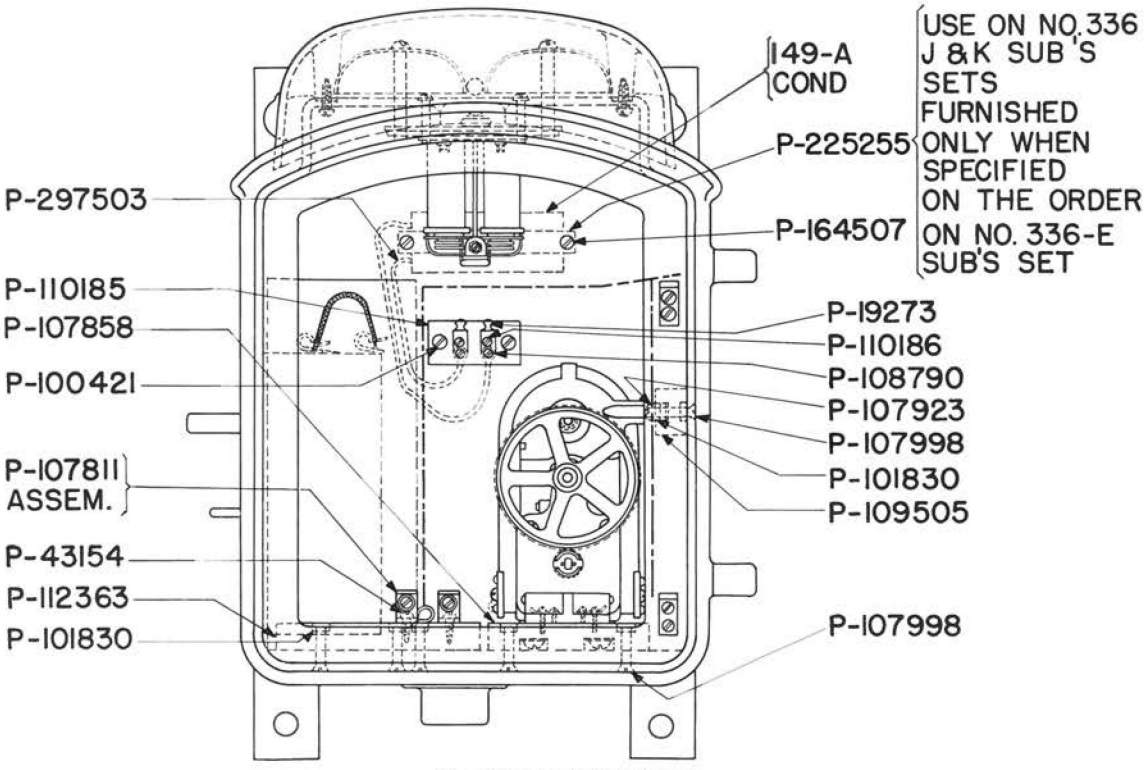


TCI Library: www.telephonecollectors.info

TELEPHONES—MAGNETO

Mine Telephones

REPLACEMENT PARTS FOR Nos. 1336A, E, J AND K—Continued



No. 1336 Type Telephones
Open View—Cover Removed

Name of Piece Part	No. 1336A	No. 1336E, J and K
R.H.M. Screw		P-107918
R.H.M. Screw		P-107924
No. 26A Gong		P-124456
Gong Cope		P-143081
R.H.M. Screw	P- 13032	P- 13032
R.H.M. Screw	P- 39335	P- 39335
R.H.M. Screw	P- 86348	P- 86348
R.H.M. Screw	P-100421	P-100421
R.H.M. Screw	P-107923	P-107923
R.H.M. Screw	P-109121	P-109121
R.H.M. Screw	P-143083	P-143083
R.H.W. Screw	P- 27824	P- 27824
R.H.W. Screw	P- 43154	P- 43154
F.H.M. Screw	P-107998	P-107998
F.H.M. Screw	P-117171	P-117171
F.H.W. Screw	P-110186	P-110186
Connector	P- 19273	P- 19273
Connector	P-103978	P-103978
Hex. Nut	P-101830	P-101830
Washer	P-103707	P-103707
Trans. Bracket	P-109455	P-109455
But. Head Mach. Screw	P-106222	P-106222
But. Head Mach. Screw	P-108790	P-108790
Gen. Mtg. Block	P-107858	P-107858
Gen. Mtg. Block (side)	P-109505	P-109505

Name of Piece Part	No. 1336A	No. 1336E, J and K
Connecting Block	P-110185	P-110185
Battery Mtg. Block	P-112363	P-112363
Screw Eye	P-113510	P-113510
F.H.M. Screw	P-132290	P-132290
Pipe Cap	P-143082	P-143082
Mtg. Bar (R.H.)	P-123977	P-123977
Mtg. Bar (L.H.)	P-123978	P-123978
Term. Block	P-112356	P-112356
Generator	48C	48C
Switch Hook	143J	143J
Induction Coil	31	31
Ringer		*45B
Condenser	(a) 149A	(a) 149A
Condenser Strap	(a) 225255	(a) 225255
R.H.M. Screw	(a) 164507	(a) 164507
Lead (black)	P-297503	P-297503
Induction Coil Case	P-112357	P-112357
Box Assem.	P-163562	P-163562
Terminal	P-107811	P-107811
Conn. Cord Assem.	P-113482	P-113482
R.H.M. Screw	P- 46830	P- 46830
R.H.M. Screw (Trans.)	(b) P- 39335	(b) P- 39335
Cable	P-211216	P-211216
Circuit Label	P-244222	P-244223

(a) Furnished only when specified in order for the No. 1336A and 1336E Sets. Furnished regularly for No. 1336J and K Sets.
* No. 1336K Telephone Set has special No. 45B Ringer (1600 ohms).
(b) Shipped loose.

TCI Library: www.telephonecollectors.info

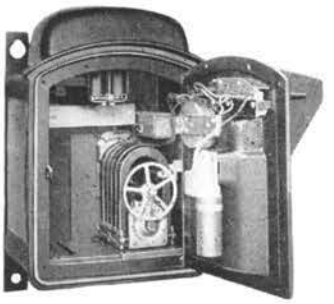
TELEPHONES—MAGNETO

Mine Telephones—*Continued*

No. 1536 TYPE TELEPHONES



Closed View



Open View

No. 1536E Mine Telephone Set
(U. S. Bureau of Mines Permissible Type)

This type is for use in mines where explosive gas is present. In the words of the United States Bureau of Mines the Western Electric Mine Telephone, Type No. 1536E "is permissible for use in mines or other locations where methane or other explosive gases or coal dust are or are likely to be present in dangerous proportions."

This telephone set is enclosed in a cast iron housing 8 7/16" x 11 1/4" x 17 5/32" having a sloping roof and a hood extending out from the top of the door. These two features protect the working parts of the set from damage by falling debris and facilitate the shedding of water. This construction permits mounting the transmitter, receiver and generator-handle entirely exposed on the door but under the protection of the hood. The set is therefore under all conditions immediately recognizable as a telephone.

Safeguards Against Sparking

The design of this set safeguards against explosions which might result from the sparking of the switchhook and generator shunt spring contacts. Safeguards against explosions due to sparking caused by poor or loose connections also have been incorporated and every precaution has been used to guard against mechanical injuries to coils and other parts which might later develop into sparking points.

The possibility of loose connections is reduced to a minimum by the use of closed eye cord tips and screw-and-nut binding posts for all connections.

A special cord is used to connect the receiver to the set. This cord will withstand unusual twisting and pulling without injury to the insulation. This protection is provided to eliminate any possibility of bare wires coming in contact with the telephone housing when the ringing current is on the line and thus cause sparking. Special clamps are provided on both ends of the cord to prevent undue strain on the conductor wire.

Protection Against Dampness

Complete protection is given to all parts in the set against the usual moist or damp conditions prevailing in mines. Line wires may be brought in at either the top or bottom of the set. When the wires are brought in at the top, an 180-degree angle fixture is used to keep out the moisture. Holes in the bottom of the housing provide for the drainage of any moisture which might accumulate.

The internal mechanism, batteries, line connections, etc., are carefully housed. Access cannot be had without opening the lock and removing the cap screws around the sides of the door. Separate units, such as the switchhook, generator and ringer are individually removable for repair.

A dry battery meeting requirements of the American Standards Association for telephone batteries is required.

Impregnated cartons give the batteries further protection. Impregnated cartons need not be replaced when new batteries are required.

TCI Library: www.telephonecollectors.info

TELEPHONES—MAGNETO

Mine Telephones

No. 1536 TYPE—Continued

Repairs and Renewals

Since the Western Electric Mine Telephone Set has been approved by the Bureau of Mines, parts used for repair or renewal must be identical with those furnished. Renewals or repairs should be made only by an experienced and competent person. An individual who does not understand the many protective features of the set might, by tampering, endanger the lives of many people.

The parts which have been approved for replacement are:

No. P-201339 Impregnated Cartons
No. 51-A Generator
No. 63-B Ringer
No. 149-A Switchhook
No. 04606 Eagle Padlock with two Keys
No. 558W Receiver
No. 312W Transmitter
No. R2AD Cord

Dry Batteries. A dry battery meeting requirements of the American Standards Association for telephone batteries should be used.

PROTECTORS

The telephones installed above ground should be equipped with protectors consisting of open space cut outs to prevent damage to the telephone by lightning. In case there is a chance of contact between the telephone line and a power circuit protectors consisting of open space cut outs and fuses should be used.

TELEPHONES—CENTRAL BATTERY

No. 1653 Type Telephones



No. 1653 Type Telephone

The No. 1653 Type Telephone Sets are common battery anti-sidetone wall sets with enclosed gongs. They have a metal case with a black finish. The base is flanged to prevent marring of walls.

The No. 1653 Type Telephone Sets are intended for use in manual or dial systems. For dial service they require a No. 5H Type Dial, which is not furnished unless specified. For manual service they require a No. 50B Apparatus Blank which also is not furnished unless specified.

When specified in the order these sets can be equipped with a No. 61D Filter to suppress dialing induction into radio receiving sets.

A writing shelf can be provided for these sets by using a No. 146A Backboard.

The No. 1653A Telephone Set is intended for use in individual lines, P.B.X. stations, two-party selective and four-party semi-selective lines in either manual or dial telephone systems and anti-sidetone equipment.

The Nos. 1653E, F, G and H Telephone Sets are intended for use in two or four-party harmonic ringing systems.

Code No.	Dial	Ringer			Ringing Current
		Code No.		Resistance	
1653A	*	68AG	.....	1500	A.C.
1653E	*	41SG	33⅓ cycles	....	Harmonic
1653F	*	41TG	50 cycles	....	Harmonic
1653G	*	41UG	66⅔ cycles	....	Harmonic
1653H	*	41RG	16⅔ cycles	....	Harmonic

* As specified in order.

The following apparatus is common to the No. 1653 Type Telephone Sets listed above:

1—No. 140AK Switch Hook
1—No. 101A Induction Coil
1—No. 194A Condenser
1—635A Transmitter
1—No. 706A Receiver
1—No. R2B Cord
2—No. T1A Transmitter Cords, 9⅞" long

TCI Library: www.telephonecollectors.info

TELEPHONES—CENTRAL BATTERY

No. 1653 Type Telephones—*Continued*

Instructions for Ordering Telephones

In addition to specifying the code number of the telephone desired, information must be given as to the dial that is to be furnished, as the dial is not included as a part of these telephones (nor is it included in their price); for example, orders should read as follows:

10—No. 1653A Telephones
10—No. 5HA-3 Dials

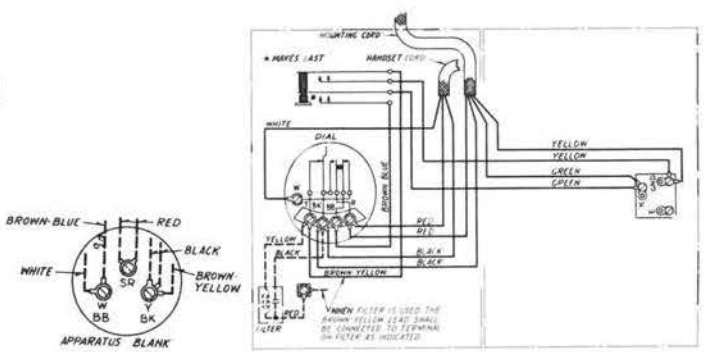
In case the machine switching feature is not desired, the order should read as follows:

10—No. 1653A Telephones
10—No. 50B Apparatus Blanks

No. 250 Type Telephone Sets



No. 250-AW Telephone



Wiring Diagram No. 250 Type Telephone Set

The No. 250 Type Telephone Sets are common battery sets intended for use in individual line, regular P.B.X. extensions and bridged stations.

Each set consists of an F1AW-3 Hand Set, a telephone set mounting and the necessary cords and wiring. The telephone set mounting which has been coded AA1-3 is the same as the No. H1-3 Telephone Set Mounting except that the condenser, ringer and induction coil have been omitted. Each set, therefore, requires a suitable subscriber's set associated with it in order to complete the station equipment.

If desired, the No. 250 Type Telephone Sets can be readily converted to the No. 302 Type Telephone Set simply by adding the condenser, ringer and induction coil.

Consists of the following apparatus:

Code No.	Tel. Set Mounting	Hand Set	Dial No.	Dial Adapter No.	Apparatus Blank No.	*Cords
250AW-3	AA1-3	F1AW-3	.....	.....	82A-3	D2D-9
(a) 250BW-3	AA1-3	F1AW-3	5HA-3	59A	.....	D2D-9

Note. Since the magnetization of the receivers in these sets is affected by D.C. current, they should not be associated with equipments which permit D.C. current to flow through the receivers such as the No. 634Y Subscriber's Set arranged for local battery talking on long subscriber loops and long P.B.X. extensions.

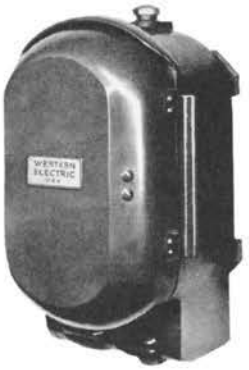
* Cords 5′ 6″ in length will be furnished unless otherwise specified. Cords also available in 9′, 13′ and 25′ lengths if desired. Cords can also be obtained equipped with a No. D2E Type Cord assembled with a No. 273A Type Plug if desired.

(a) When specified in order, this set can be obtained equipped with a No. 61P Filter to suppress dialing induction into radio receiving sets.

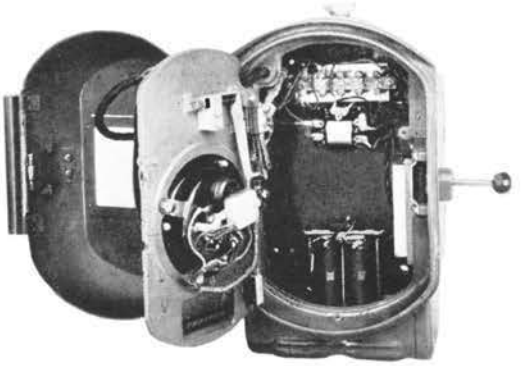
TCI Library: www.telephonecollectors.info

TELEPHONES—CENTRAL BATTERY

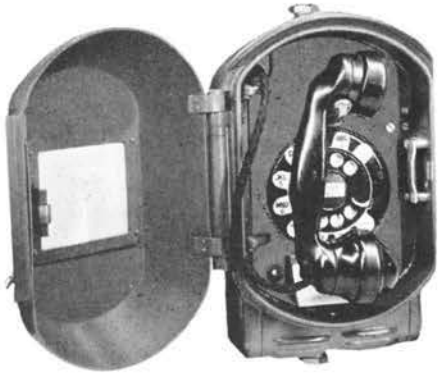
No. 300 TYPE TELEPHONE SET FOR OUTDOOR USE



Closed View



Inner Door Open



Outer Door Open

The No. 300 Type Telephone Set is for outdoor use in anti-sidetone equipment in either manual or dial service. It consists of a gray finished metal mounting in which the induction coil, ringer and condensers are assembled. A moisture-proofed handset is hung on a switch hook which is assembled to the inner door. The inner door also provides a method of mounting the dial or apparatus blank. The outer door is fastened by means of a lock and has an instruction card holder welded to its inside surface.

Overall dimensions are approximately 1′ 1″ high x 9″ wide x 6¼″ deep.

The No. 300AW Telephone Set is arranged for manual service and the Nos. 300BW, CW and DW Telephone Sets are arranged for dial service.

A No. 29A Bracket is required for use in mounting each of these Telephone Sets on buildings, fences, poles, etc., and must be ordered separately.

When it is desired to eliminate interference to radio reception where a dial is used a No. 61L filter is required. This filter is furnished and assembled only when specified in the order.

Arranged to mount a No. 85N relay, when required for auxiliary signaling, by means of a bracket both of which must be ordered separately.

Telephone Set	Dial	Number Plate	Dial Adapters	Apparatus Blanks
300AW	.....	....	.....	80A
300BW	5HH-3	147A	56A and 58A	...
300CW	4HH-3	147B	56A and 58A	...
300DW	4HH-3	147E	56A and 58A	...

NOTE: In addition to the apparatus listed above each set contains the following: 2 No. 29C Gongs, 1 No. 147A Condenser, 1 No. 101A Induction Coil, 1 No. 68L Ringer, 1 No. 149D Condenser and 1 No. E1D Handset.

TCI Library: www.telephonecollectors.info

TELEPHONES—CENTRAL BATTERY—*Continued*

No. 302 Type Telephone Sets

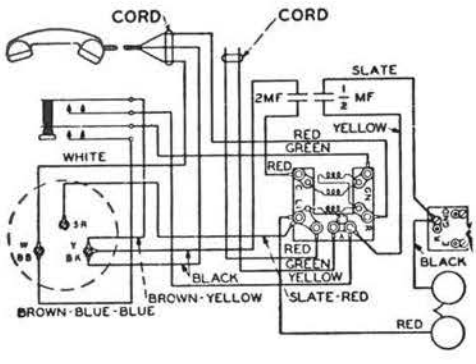


No. 302AW Telephone



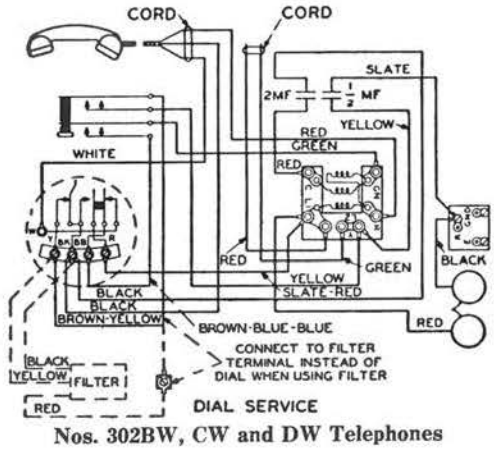
No. 302BW Telephone

WIRING DIAGRAMS



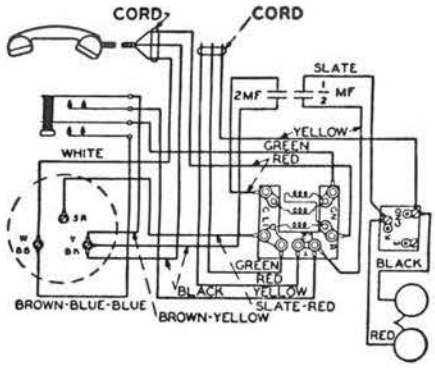
MANUAL SERVICE

No. 302AW Telephone



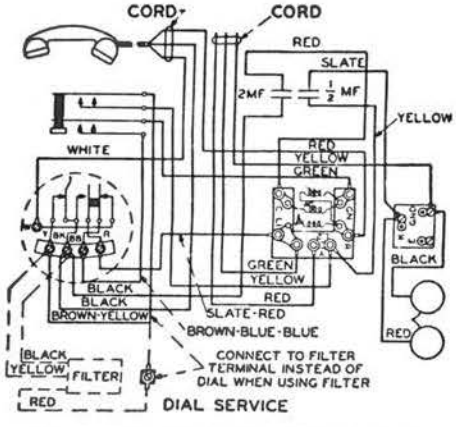
DIAL SERVICE

Nos. 302BW, CW and DW Telephones



MANUAL SERVICE

No. 302EW Telephone



DIAL SERVICE

Nos. 302FW, GW and HW Telephones

The No. 302 Type Telephone Sets are the new combined sets and represent the latest development of the Western Electric Company in telephone station equipment. The telephone set mounting consists of a housing and a base on which is mounted the induction coil, condenser, ringer and other apparatus so that the telephone set mounting and a hand set form the complete telephone set.

TCI Library: www.telephonecollectors.info

TELEPHONES—CENTRAL BATTERY

No. 302 Type Telephone Sets—*Continued*

The No. 302 Type Telephone Sets are intended for use in common battery talking, common battery signaling service.

The Nos. 302AW–3, BW–3, CW–3 and DW–3 Types described below are for individual line, P.B.X. extensions and bridged stations.

The Nos. 302EW–3, FW–3, GW–3 and HW–3 Types are for two-party selective and four-party semi-selective stations and divided code ringing.

The Nos. 302AW–3 and EW–3 Types are for use at manual stations and 302BW–3, CW–3, DW–3, FW–3, GW–3 and HW–3 are for use at dial stations.

The suffix "–3" refers to a black finish telephone set. These telephone sets however are available in the following colors on a special order basis. When ordering these colors, the dash number indicated should be specified on the order.

Dash Number	Color	Dash Number	Color
–4	Ivory	–16	Old Rose
–6	Old Brass	–18	Dark Blue
–7	Statuary Bronze	–19	Gray-Green
–8	Oxidized Silver	–20	Pekin Red
–12	Dark Gold		

When sets in –4, –16, –18, –19 and –20 colors are specified, the No. 5J Type Dial will be furnished instead of the 5H. Sets in –3, –6 or –7 colors are furnished with brown (–9) cords. Other sets have cords of corresponding color.

Code No.	Tel. Set Mounting	Dial Number	Dial Adapter No.	Apparatus Blank Number	*Cords	Hand Set
302AW–3	H1–3	.....	.....	82A–3	(a) D2D–9	F1AW–3
(b) 302BW–3	H1 3	5HA–3	59A	.....	(a) D2D–9	F1AW–3
(b) 302CW–3	H1–3	5HB–3	59A	.....	(a) D2D–9	F1AW–3
(b) 302DW–3	H1–3	5HE–3	59A	.....	(a) D2D–9	F1AW–3
302EW–3	H1–3	.....	.....	82A–3	(c) D3AL–9	F1AW–3
(b) 302FW–3	H1-3	5HA–3	59A	.....	(c) D3AL–9	F1AW–3
(b) 302GW–3	H1–3	5HB–3	59A	.....	(c) D3AL–9	F1AW–3
(b) 302HW–3	H1 3	5HE–3	59A	.....	(c) D3AL 9	F1AW–3

* The cords are 5′ 6″ long. They can, however, be obtained in 9′, 13′ and 25′ lengths when specified in the order.

(a) When specified in the order a No. D2E–9 cord assembled with a No. 273A Plug can be obtained instead of the No. D2D–9.

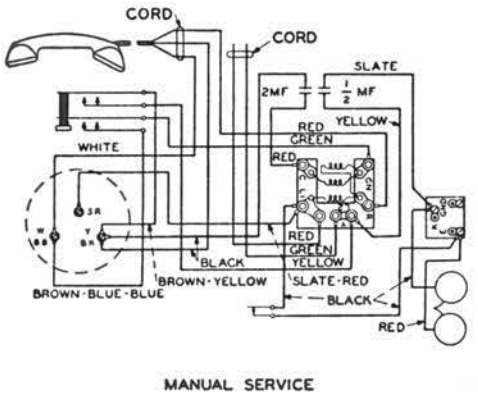
(b) When specified in the order, can be obtained equipped with a No. 61P Filter to suppress dialing induction into radio receiving sets.

(c) When specified in the order a No. D3AD–9 Cord assembled with a No. 273A Plug can be obtained instead of the No. D3AL–9.

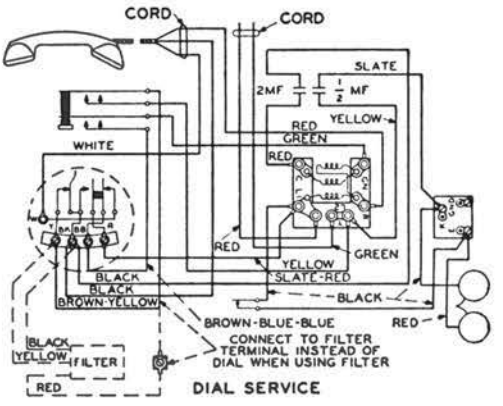
TCI Library: www.telephonecollectors.info

TELEPHONES—CENTRAL BATTERY

No. 305 Type Telephone Sets



Wiring Diagram
No. 305AW Telephone



Wiring Diagram
Nos. 305BW, CW and DW

The No. 305 Type Telephone Sets are intended for use as extension stations in common battery talking, common battery signaling service for individual line, regular P.B.X. extensions and bridged stations. They are of the new combined telephone set type and are equipped with a key for silencing the ringer when so desired.

The suffix "–3" refers to a black finish telephone set. These telephone sets however are available in the following colors on a special order basis. When ordering these colors, the dash number indicated should be specified on the order.

Dash Number	Color	Dash Number	Color
–4	Ivory	–16	Old Rose
–6	Old Brass	–18	Dark Blue
–7	Statuary Bronze	–19	Gray-Green
–8	Oxidized Silver	–20	Pekin Red
–12	Dark Gold		

When sets in –4, –16, –18, –19 and –20 colors are specified, the No. 5J Type Dial will be furnished instead of the No. 5H. Sets in –3, –6 or –7 colors are furnished with brown (–9) cords. Other sets have cords of corresponding color.

Code No.	Tel. Set Mounting	Dial Number	Dial Adapter No.	Apparatus Blank Number	*Cords	Hand Set
305AW–3	H4–3	.....	.....	82A–3	(a) D2D 9	F1AW–3
(b) 305BW–3	H4–3	5HA–3	59A	.....	(a) D2D–9	F1AW–3
(b) 305CW–3	H4–3	5HB–3	59A	.....	(a) D2D–9	F1AW–3
(b) 305DW–3	H4–3	5HE–3	59A	.....	(a) D2D–9	F1AW–3

* The cords are 5′ 6″ long. They can, however, be obtained in 9′, 13′ and 25′ lengths when specified in the order.

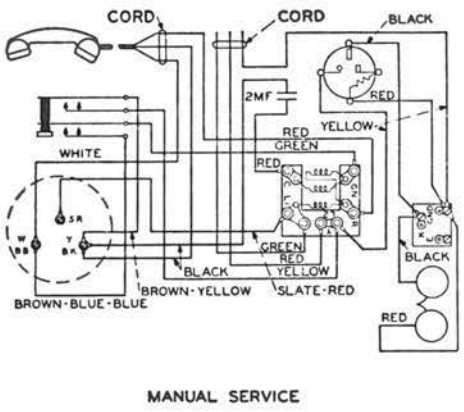
(a) When specified in the order can also be obtained with a No. D2E Type Cord assembled with a No. 273A Type Plug instead of a No. D2D–9.

(b) When specified in the order can also be obtained equipped with a No. 61P Filter to suppress dialing induction into radio receiving sets.

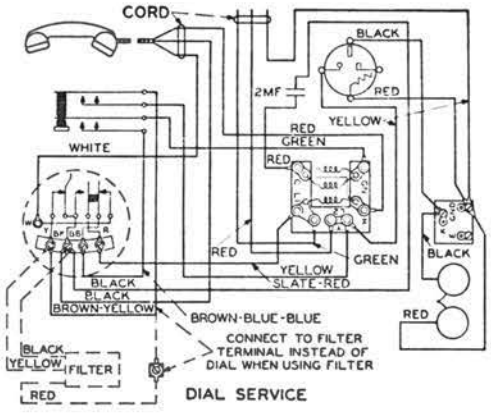
TCI Library: www.telephonecollectors.info

TELEPHONES—CENTRAL BATTERY

No. 306 Type Telephone Sets



Wiring Diagram
No. 306AW Telephone



Wiring Diagram
Nos. 306BW, CW and DW Telephones

The No. 306 Type Telephone Sets are of the combined set type for use in four-party selective and eight-party semi-selective service at subscriber's stations. The No. 306A Type is used at manual stations and the Nos. 306B, C and D Types are used at dial stations.

The suffix "–3" refers to a black finish telephone set. These telephone sets however are available in the following colors on a special order basis. When ordering these colors, the dash number indicated should be specified on the order.

Dash Number	Color	Dash Number	Color
–4	Ivory	–16	Old Rose
–6	Old Brass	–18	Dark Blue
–7	Statuary Bronze	–19	Gray-Green
–8	Oxidized Silver	–20	Pekin Red
–12	Dark Gold		

When sets in –4, –16, –18, –19 and –20 colors are specified, the No. 5J Type Dial will be furnished instead of the No. 5H. Sets in –3, –6 or –7 colors are furnished with brown (–9) cords. Other sets have cords of corresponding color.

Code No.	Tel. Set Mounting	Dial Number	Dial Adapter No.	Apparatus Blank Number	*Cords	Hand Set
306AW–3	H5–3	.....	.....	82A–3	(a) D3AL–9	F1AW–3
(b) 306BW–3	H5–3	5HA–3	59A	.....	(a) D3AL–9	F1AW–3
(b) 306CW–3	H5–3	5HB–3	59A	.....	(a) D3AL–9	F1AW–3
(b) 306DW–3	H5–3	5HE–3	59A	.....	(a) D3AL–9	F1AW–3

* The cords are 5′ 6″ long. They can, however, be obtained in 9′, 13′ and 25′ lengths when specified in the order.

(a) When specified in the order can also be obtained equipped with a No. D3AD Type Cord assembled with a No. 273A Type Plug instead of the No. D3AL–9 Cord.

(b) When specified in the order can be obtained equipped with a No. 61P Filter to suppress dialing induction into radio receiving sets.

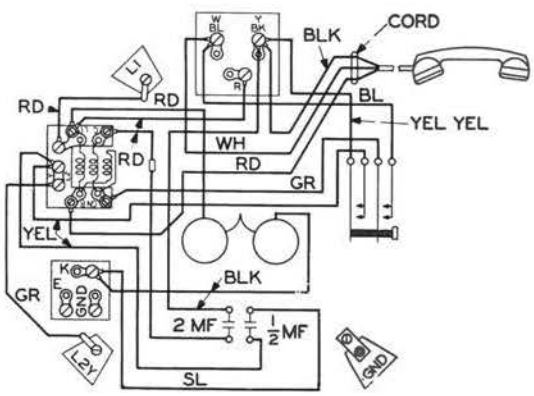
TCI Library: www.telephonecollectors.info

TELEPHONES—CENTRAL BATTERY

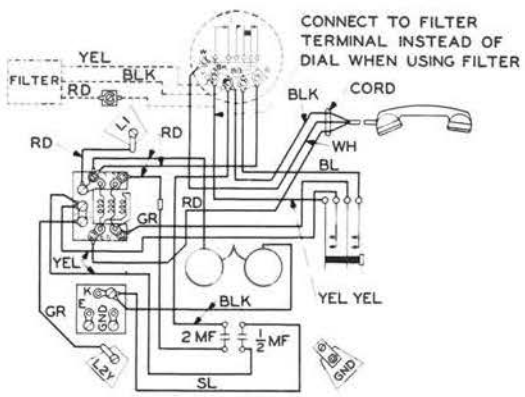
No. 320 Type Telephone Sets



Closed and Open Views of No. 320 Telephone
Center Illustration shows Rear View of Main Housing



Wiring Diagram No. 320AW Telephone



Wiring Diagram Nos. 320BW, CW and DW Telephone

The No. 320 Type Telephone Sets are intended for use in Class 1, Groups B, C and D atmospheres, as defined by the National Electrical Code.

The component parts of these telephone sets except the hand set are contained within an enclosure consisting of a cast aluminum housing and base having a threaded joint. Protection against the probability of flames resulting from an internal explosion reaching the surrounding atmosphere is accomplished by the strength of the castings and by controlling the length and clearance of the openings through which any element in the design is brought through the housing.

They are intended for use in common battery systems, for individual line, regular P.B.X. extensions and bridged stations. Designed to normally employ bridged ringing. They may be made suitable, however, for grounded ringing by means of a minor change in the internal wiring.

TCI Library: www.telephonecollectors.info

TELEPHONES—CENTRAL BATTERY

No. 320 Type—*Continued*

The No. 320AW Telephone Set is for use in manual systems.

The Nos. 320BW, CW and DW are for use in dial systems. These sets are identical except for the number plate used on the dial.

When specified in the order, the dial sets may be obtained equipped with a No. 61L filter to suppress dialing induction into radio receiving sets.

Code No.	Dial	Dial Number Plate	Apparatus Blank
320A	.....	.....	85A
320B	*5HH-3	147A	.....
320C	*5HH-3	147B	.....
320D	*5HH-3	147E	.....

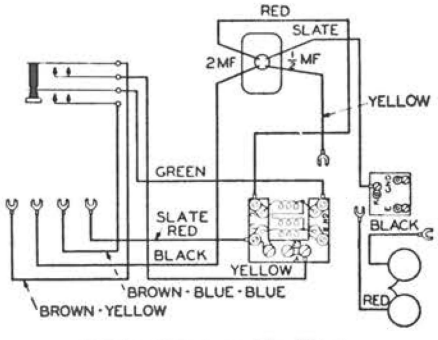
* The No. 5HH-3 Dial furnished less clamping ring, number plate and finger stop.

In addition to the above apparatus the No. 320 Type Telephone Set contains the following common equipment:

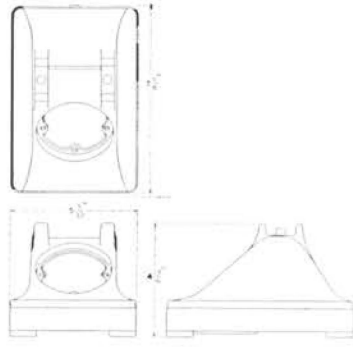
1—195A Condenser
1—101A Induction Coil
2—29C Gongs
1—B1A Receiver (less gongs)
1—F6A-3 Hand Set

TELEPHONE SET MOUNTINGS

No. H1-3



Wiring Diagram No. H1-3 Telephone Set Mounting



Dimensional Drawing No. H1-3 Telephone Set Mounting

TCI Library: www.telephonecollectors.info

TELEPHONE SET MOUNTINGS

No. H1-3—*Continued*

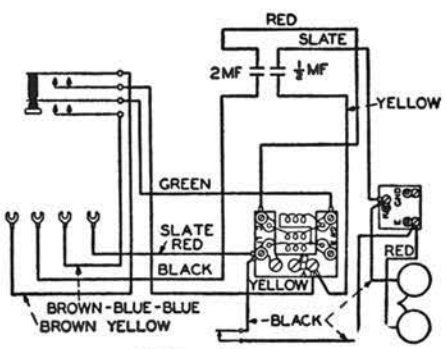
The No. H1–3 Telephone Set Mounting forms a part of the No. 302 Type Telephone Set described in this catalog. It is intended for use in manual or dial common battery talking, common battery signaling service.

This mounting is arranged for the No. E1E and F1AW Type Hand Sets. It consists of a housing and a base on which is mounted a No. 101A Induction Coil, No. B1A Ringer, No. 195A Condenser and other apparatus so that the telephone set mounting and a hand set form a complete telephone set.

The No. H1–3 Telephone Set Mounting is finished in black. This mounting is available, however, finished in the following colors on a special order basis. When ordering these mountings in colors, the dash number representing the color should be included in the order.

Dash No.	Color	Dash No.	Color
–4	Ivory	–16	Old Rose
–6	Old Brass	–18	Dark Blue
–7	Statuary Bronze	–19	Gray-Green
–8	Oxidized Silver	–20	Pekin Red
–12	Dark Gold		

No. H4-3



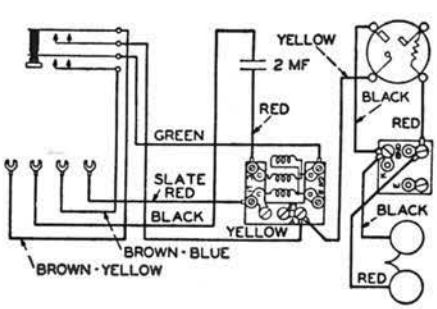
Wiring Diagram
No. H4-3 Telephone Set Mounting

The No. H4–3 Telephone Set Mounting forms a part of the No. 305 Type Telephone Set. It is the same as the No. H1–3 Telephone Set Mounting except that it is equipped with a No. 560A Key for silencing the ringer. Finished in black. Available in same colors as No. H1–3 on special order basis.

No. H5-3

The No. H5–3 Telephone Set Mounting forms a part of the No. 306 Type Telephone Set. It is intended for use in four-party selective and eight-party semi-selective service at subscriber's stations. It consists of a housing and a base the same as the No. H1 Telephone Set Mounting on which is mounted a No. 195C Condenser, a No. 101A Induction Coil, a No. B3A Ringer and one No. 333A Vacuum Tube which serves as a relay.

Finished in black. Available in same colors as No. H1 on special order basis.



Wiring Diagram
No. H5-3 Telephone Set Mounting

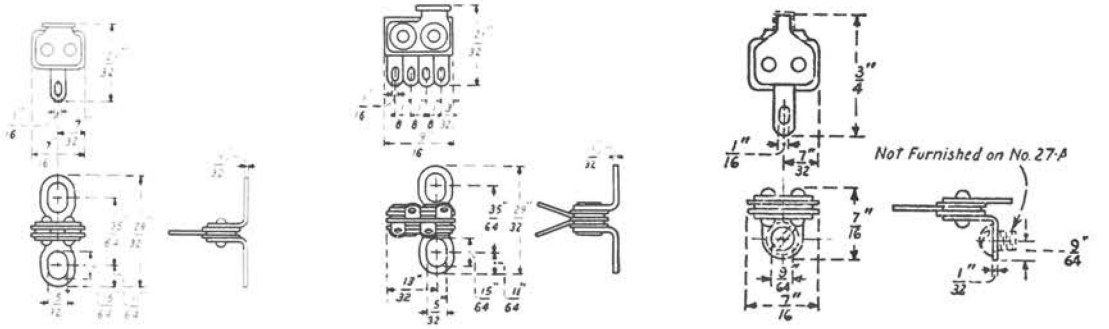
TCI Library: www.telephonecollectors.info

TERMINAL PUNCHINGS



No. 3 No. 6 No. 8 No. 9 No. 12A No. 13A No. 14 No. 15A No. 17A No. 21A

Code No.	Material	Use
3	Nickel Silver	On fuse posts and fuse blocks.
6	Brass, tinned ends	For the ground side of ringing leads.
8	Brass, tinned ends	On double sided connecting racks.
9	Brass, tinned ends	On No. 10 Switchboards.
12A	Brass, dip tin finish	
13A	Brass, dip tin finish	On double sided connecting racks.
14	Brass, one end tinned	For screw connection on one end.
15A	Brass, tinned ends	On one sided connecting racks.
17A	Brass, tinned ends	On induction coils and telephone coils.
18A	Brass, tinned ends	
21A	Brass, dip tin finish	On repeating coils, induction coils and retardation coils.



No. 25A No. 26A Nos. 27A and B

Nos. 25, 26 AND 27 TYPES

Terminal punchings for use in connection with relays as extra terminals to which wires may be soldered for strapping, grounding, pairing, etc.

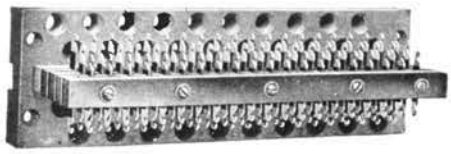
Code No.	No. of Terminals	Used with Relays
25A	1	Intended for use with B and G Type Relays on No. 606 or similar type mounting plates and with A, E, F, H and R Type Relays on No. 737 or similar type mounting plates. Mounts under relay mounting screws on terminal side of relay mounting plate.
26A	2	
27A	1	Intended for use with relays and resistances on mounting plates as extra terminals for terminating leads at any apparatus position.
27B	1	Same as No. 27A except furnished with a mounting screw.

No. 30 TYPE

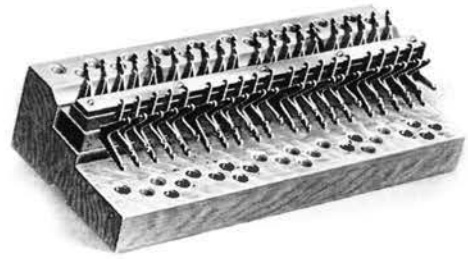
Consists of twenty terminals. Intended for use in central offices on "A" Type Main Frames in connection with the No. 21A Bracket for grounding spare conductors in outside plant cables when fuses are omitted between aerial plant and underground cables.

TCI Library: www.telephonecollectors.info

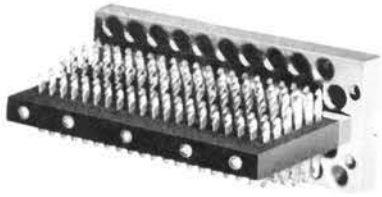
TERMINAL STRIPS



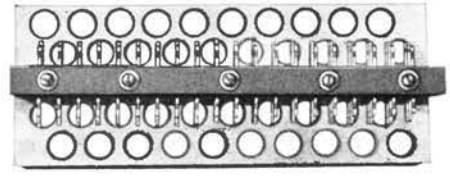
No. 35 Terminal Strip



No. 65 Terminal Strip



No. 85 Terminal Strip



Nos. 100A and 101A Terminal Strips

The following terminal strips have a solid maple base upon which are assembled hard rubber insulating strips which hold the terminal punchings in place. The base is drilled to act as a fanning strip for wires and the holes are chamfered to prevent injury of the insulation. These terminal strips are furnished unnumbered unless otherwise specified.

The Nos. 35, 36, 37 and 51 Types are for use on 8 inch intermediate distributing frames.

The Nos. 38, 39, 40 and 41 Types are for use on 6½ inch intermediate distributing frames.

The Nos. 85 and 88 Types are for use on 6½ inch intermediate distributing frames provided with a wide clamping strip for designation purposes.

The Nos. 65, 91, 92 and 93 Types are for use on 8 inch main distributing frames.

The No. 99 Type are for use on dial equipments.

The Nos. 100A, B, C and D and 101A and B Types are intended for general use. Arranged to mount on ½ inch by ½ inch bar.

The No. 176 Type is for use in existing offices for terminating outside cables on main frames.

The No. 185A Type is for use on No. 1 Switchboards.

Code No.	Number of Terminals per Row	Number of Rows of Terminals	Length of Strips in (Inches)	Width (Inches)	Height Overall (Inches)
35	20	3	$7\frac{31}{32}$	$2\frac{17}{32}$	$2\frac{31}{64}$
36	20	4	$7\frac{31}{32}$	$2\frac{17}{32}$	$2\frac{55}{64}$
37	20	5	$7\frac{31}{32}$	$2\frac{17}{32}$	$3\frac{15}{64}$
38	20	3	$6\frac{15}{32}$	$2\frac{19}{32}$	$2\frac{31}{64}$
39	20	4	$6\frac{15}{32}$	$2\frac{19}{32}$	$2\frac{55}{64}$
40	20	5	$6\frac{15}{32}$	$2\frac{19}{32}$	$3\frac{15}{64}$
41	20	6	$6\frac{15}{32}$	$2\frac{19}{32}$	$3\frac{39}{64}$
51	20	6	$7\frac{31}{32}$	$2\frac{17}{32}$	$3\frac{7}{16}$
65	*40	1	$7\frac{31}{32}$	$3\frac{3}{8}$	$2\frac{3}{32}$
85	20	6	$6\frac{15}{32}$	$2\frac{19}{32}$	$4\frac{1}{64}$
88	20	4	$6\frac{15}{32}$	$2\frac{19}{32}$	$3\frac{1}{4}$
91	20	5	$7\frac{31}{32}$	$3\frac{3}{8}$	$3\frac{23}{64}$
92	20	3	$7\frac{31}{32}$	$3\frac{3}{8}$	$2\frac{39}{64}$
93	20	4	$7\frac{31}{32}$	$3\frac{3}{8}$	$2\frac{63}{64}$
99	50	6	$14\frac{7}{16}$	$2\frac{19}{32}$	$3\frac{7}{16}$
100A	20	3	$6\frac{1}{16}$	$2\frac{15}{16}$	$2\frac{11}{16}$
100B	20	4	$6\frac{1}{16}$	$2\frac{15}{16}$	$3\frac{1}{32}$
100C	20	5	$6\frac{1}{16}$	$2\frac{15}{16}$	$3\frac{13}{32}$
100D	20	6	$6\frac{1}{16}$	$2\frac{15}{16}$	$3\frac{3}{4}$
101A	20	3	$7\frac{9}{16}$	$2\frac{15}{16}$	$2\frac{11}{16}$
101B	20	4	$7\frac{9}{16}$	$2\frac{15}{16}$	$3\frac{1}{32}$
176	20	6	$7\frac{31}{32}$	$3\frac{3}{8}$	$3\frac{3}{4}$
185A	30	6	11	$2\frac{15}{16}$	4

*Three way.

TCI Library: www.telephonecollectors.info

TESTING APPARATUS

Portable Test Sets



No. 1017 Type Test Set

No. 1017C TEST SET consists of a wooden box telephone set equipped with a regular battery talking circuit consisting of a standard transmitter, induction coil, receiver and a special three cell dry battery unit. It can be used either on magneto or central battery lines. Will ring through 5,000 ohms. Contains:

Code No.	Description	
1017C	1 No. 2D Buzzer 1 No. 29F Generator 1 No. 572 Cord 1 No. 13 Induction Coil 1 No. 515 Receiver 1 No. 266 Transmitter	1 No. 703 Eveready Battery (must be ordered separately) 1 Special Switch 3 No. 3C Binding Posts

THE No. 1017E TEST SET is similar to the No. 1017C except it is equipped for use on either composited or straight telephone lines. Contains:

1017E	*1 No. 29F Generator 1 No. 2E Buzzer 1 No. 515 Receiver 1 No. 13 Induction Coil 1 No. 266 Transmitter	1 No. 714 Eveready Battery (must be ordered separately) 1 No. 572 Cord, 2 ft. 1 No. 6000A Interrupter

* This generator will operate a No. 56A Drop through 11,500 ohms resistance.

The above sets have a birch mahogany finish. Size of case, length $6\frac{3}{32}$", width $4\frac{27}{32}$" and height $7\frac{27}{32}$". Weight 7 lbs.

D86418 Similar to a No. 1017E Test Set except that it includes an exploring coil, special switching device, and a modified circuit for controlling the test tone for the exploring coil. This set is intended to fulfill the standard uses for the No. 1017 Type Sets and in addition includes a fault direction locating feature for use in testing open wire lines. The No. 515 Receiver and No. 266 Transmitter are required for operation but must be ordered separately.

Nos. 90510 to 90530

Consist of a generator and ringer, in series for testing through various line resistances.

The case of the set is finished in birch and is designed to withstand rough handling. A leather strap handle is provided.



No. 90530 Test Set

List No.	Generator	Ringer Type	Ringer Ohms	Gen. Operates Ringer Through	Size of Case in (Inches)
90530	22K	19B	2500	10,000 ohms	
90510	22K	19H	500	35,000 ohms	
90511	22N	19A	1000	50,000 ohms	$5\frac{3}{4}$ x $6\frac{5}{8}$ x $5\frac{1}{4}$
90512	22N	19B	2500	100,000 ohms	

TCI Library: www.telephonecollectors.info

TESTING APPARATUS

Portable Test Sets—*Continued*



No. 43A Test Set

Code No.	Description
43A	Splicer's Portable Test Set. Intended for use in connection with the installation and maintenance of cable in manual or dial telephone areas. Consists of a buzzer circuit which provides tone for identifying wires for balance testing and for running down resistance faults on short non-loaded cable by the exploring coil method; together with auxiliary circuits which provide for a battery for detecting defective pairs by receiver battery tests or for energizing the transmitter of a talking set and a ringer buzzer by means of which the splicer may be called from a central office when communication with him is desired. Woodwork birch, finish olive-green. Contains:

10 Binding Posts
1 No. 149A Condenser
1 No. 149C Condenser
1 No. 2D Buzzer
2 SPST Snap Switches
2 No. 1AG Resistances
1 No. 15 Lungen Buzzer. Size No. 2, wound to 40 ohms
2 No. 771 Eveready Batteries required (must be ordered separately)
1 No. 13 Induction Coil

45A This is a portable set designed to facilitate the usual testing done by splicers in connection with the installation and maintenance of cables. It provides a space for a battery which by means of a dial switch in the test set furnishes a voltage of either 4½, 9, 31½ or 54 volts for supplying direct current for Wheatstone bridge measurements. It includes a buzzer circuit which provides tone for identifying wires, for balance testing and for locating low resistance faults on a short non-loaded cable by the exploring coil method.

The woodwork is birch, finished in olive green.



No. 66AW Test Set

66AW Intended for use in making tone and D.C. continuity tests in tracing dead drop, block and inside wires.

Consists of a tubular fibre flashlight case, housing a condenser, buzzer and single dry cell battery. A KS-6522 battery is required for operation and must be ordered separately. Has three binding posts for making external connections. The screw cap when turned acts as a switch for turning the set on or off.

Overall dimensions are approximately 1¾" in diameter x 6¼" long. The weight when equipped with a battery is approximately 12 ounces.

TCI Library: www.telephonecollectors.info

TESTING APPARATUS

Portable Test Sets—*Continued*



No. 1020C Test Set

Code No.	Description
1020C	Designed for use by cable repairmen as a portable test set for locating shorts, grounds, crosses, split pairs and wet spots in cables. The case has a birch mahogany finish and weighs 12½ lbs. without batteries. Size 12 1/16" wide, 6 7/16" deep and 10 7/16" high. Consists of the Nos. 20C and 1019C Test Sets, the latter being contained in the case of the former:
	THE No. 1019C TEST SET consists of the No. 19C Test Set equipped with one No. 747 Cord, one No. 186 Plug and one No. 528 Receiver.
	THE No. 19C TEST SET consists of an exploring coil, a condenser and three jacks enclosed in a nickel silver case.
	THE No. 20C TEST SET consists of the following apparatus:
	3 No. 540 Cords 1 No. 18AC Resistance 1 No. 21K Condenser 1 Vibrator 1 Interrupter 1 2-Point Switch 4 Dry Cells (must be ordered separately)
1120C	This Test Set is the same as the No. 1020C Test Set except that it contains a No. 1119C Test Set instead of a No. 1019C.
	THE No. 1119C TEST SET consists of a No. 19C Test Set equipped with one No. 584 Cord, one No. 186 Plug, one No. 1A Headband and two No. 502 Receivers.

No. 1407C Testing Cabinet



No. 1407C Test Cabinet

This Testing cabinet provides adequate, efficient, and reliable testing equipment, which is adaptable to either magneto or central battery systems. All classes of trouble, such as grounds, short circuits, crosses, open circuits, high resistance, can be tested for and the location calculated from the direct reading voltmeter with no complicated mathematical calculations involved.

In exchanges where the installation of a regular wire chief's desk is not warranted, the installation of the No. 1407C Testing Cabinet is the ideal testing equipment. It can be installed at either side of the switchboard or at the end of the main frame, or any convenient place in the central office. The operation is simple and the operator can be trained to assist in making tests which would aid materially in clearing up trouble after a storm.

The consistent application of the simple tests featured in this cabinet will eliminate the guesswork from small exchange maintenance and tend to raise the service of the exchange to a higher level by clearing troubles with the utmost dispatch. The cabinet is compact measuring overall, height 18 ins., width 12 ins., depth 9½ ins. Constructed of birch with a durable mahogany finish.

TCI Library: www.telephonecollectors.info

TESTING APPARATUS

No. 1407C Testing Cabinet—*Continued*

EQUIPMENT

It is equipped with the standard "Weston Voltmeter" which is well known for its accuracy and reliability. If the voltmeter is not accurate and dependable, all results of the testing will be unreliable.

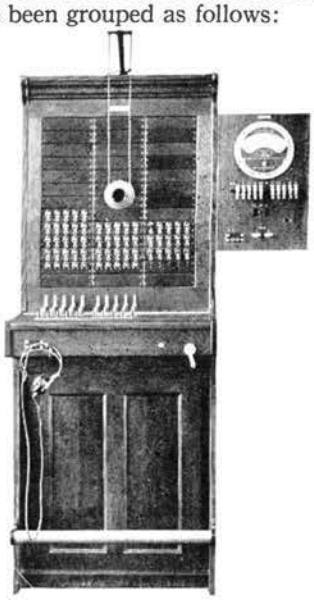
This cabinet is stocked in accordance with Lists Nos. 1 and 1C, but can be furnished with alternative features as specified in the order. These alternative features have been grouped as follows:

Lists No. 1 and No. 1C

List No. 1 consists of one No. 1407C Testing Cabinet equipped for one local battery (magneto) system.

List No. 1C consists of one Weston Model 24 Voltmeter (0–30 volts) with 10,000 ohm resistance, calibrated and adjusted for vertical mounting,

A copy of specification covering "Method of Operation" is included in this list.



Showing Cabinet Mounted on Switchboard

List No. 1A

List No. 1A covers the equipment required in addition to Lists Nos. 1 and 1C, for a 24 volt common battery testing cabinet.

List No. 1B

List No. 1B covers the equipment required in addition to Lists Nos. 1 and 1C, for a 38 volt common battery testing cabinet.

List No. 2

Testing battery equipment. This list consists of:

3—No. 540 Cords
1—No. 766T Eveready Battery
3—No. 771 Eveready Batteries

List No. 3

Distributing frame testing equipment. Consists of:

4—No. 9 Cord Fasteners
1—No. 716 Cord (10 ft.) equipped with
1—No. 206 Plug

List No. 4

Covers the Two-conductor Switchboard Test Cords. This list consists of:

1—No. S2A Cord (8 ft. white) equipped with
1—No. 47B Plug
1—No. S2A Cord (8 ft. green) equipped with
1—No. 47B Plug

List No. 5

Covers the Three-conductor Switchboard Test Cords, for Switchboards using No. 92 or similar type Jacks. Consists of:

1—No. S3A Cord (8 ft. white) equipped with
1—No. 109 Plug
1—No. S3A Cord (8 ft. green) equipped with
1—No. 109 Plug

List No. 6

Covers the Three-conductor Switchboard Test Cords, for Switchboards using No. 49 or similar type Jacks. Consists of:

1—No. S3B Cord (8 ft. white) equipped with
1—No. 110 Plug
1—No. S3B Cord (8 ft. green) equipped with
1—No. 110 Plug

List No. 7

Sleeve Make-busy Key for testing common battery lines having cut-off relays. This list consists of one No. 378A Key equipped with a No. 6A Key Lever and a 12B Number Plate.

Lists No. 8 and No. 8B

List No. 8 covers the equipment for the Call Circuit and the Telephone Line to a magneto switchboard. Consists of one No. 390A Key; one No. 381A Key with 6A Key Lever; two 12B Number Plates.

List No. 8B consists of a No. 127A Subscribers Set which is used in conjunction with the equipment covered by List No. 8.

List No. 8A

This list covers the equipment required in addition to List No. 8 when the Call Circuit and Telephone Line connects to a common battery switchboard. Consists of one No. 628A Mounting Plate equipped with one No. 47F Retardation Coil.

TCI Library: www.telephonecollectors.info

TESTING APPARATUS

No. 1407C Testing Cabinet—*Continued*

List No. 9

This list covers the Transmitter Battery for local battery (magneto) offices.

Consists of two No. 540 Cords and three No. 6 Dry Cells.

List No. 10

This list covers the Ringing Keys for four-party selective, harmonic, or pulsating ringing.

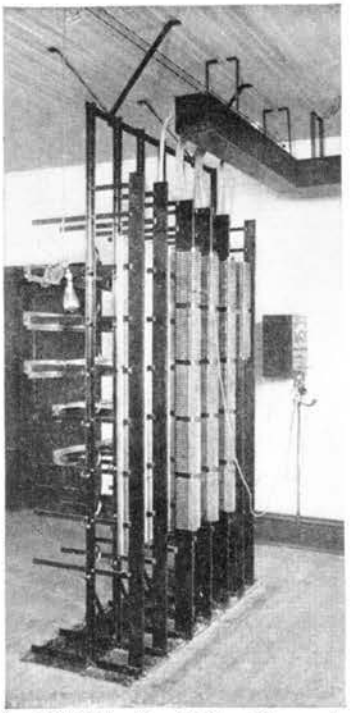
Consists of four No. 378A Keys equipped with No. 6A Key Levers and 12B Number Plates.

List No. 11

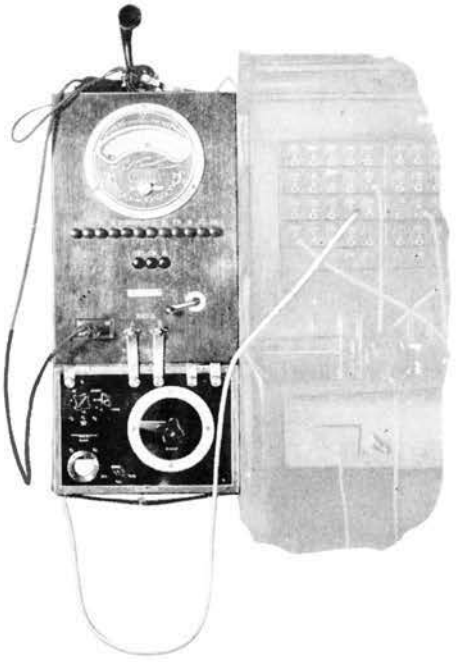
Consists of a special 48B Hand Generator for four-party pulsating magneto ringing.

List No. 12

Consists of a 48J Hand Generator for two-party selective, four-party semi-selective, and bridged magneto ringing.



No. 1407C Testing Cabinet Connected to Main Distributing Frame



No. 1407 Testing Cabinet with No. 1407 Bridge Unit Attached to the Side of a Switchboard

Auxiliary Equipment for Use with No. 1407C Testing Cabinet

No. 1407A BRIDGE UNIT

For a more accurate means of making resistance measurements than is possible with a voltmeter, the No. 1407A Bridge Unit was developed. It consists of a Wheatstone Bridge outfit and is so designed that it will line up and attach by means of No. 1407B Bracket Unit to the bottom of a No. 1407C Testing Cabinet.

With this equipment Murray and Varley loop tests as well as straight resistance measurements can be quickly made in addition to the regular voltmeter testing possible with the No. 1407C Testing Cabinet.

Unknown resistances can be read directly from the scale without referring to tables or other data, and such readings are accurate up to one-half of one per cent.

This bridge unit is easily detached from the testing cabinet by loosening the binding posts holding the bracket unit straps and moving the bridge about an inch to the right. When removed it can be used as a portable bridge. A cover and carrying strap are provided.

TCI Library: www.telephonecollectors.info

TOOLS



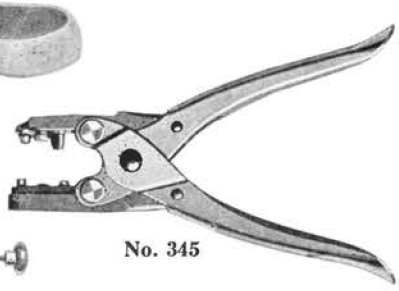
No. 62267



No. 490A Tool



No. 149



No. 345



No. 103



No. 39



No. 117



No. 118

CABLE AND CABLE TERMINAL TOOLS

Code No.	Use	Approximate Dimensions (Inches) Overall
216B	Combination double end screwdriver and double end socket wrench (taking hexagonal nuts, $^{3}/_{8}$ in. and $^{7}/_{16}$ in. across 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 shank. Ends are insulated from each other. Replaces Nos. 30, 31, 34 and 216 Tools	$6^{3}/_{4}$
287	A flat steel blade with a slot at one end which is bent up at an angle of 15 degrees. Has wood handle. Intended for sewing switchboard cable in run	$5^{5}/_{8}$
311	A double ended socket wrench for use on $^{3}/_{8}$ in. and $^{7}/_{16}$ in. hexagonal nuts, having slots at either end for inserting a screwdriver	$2^{5}/_{8}$
410A 410B	Hard wood wedges, for use as multiple cable lifters. Together replace the No. 93	16 x $2^{5}/_{8}$ x 1 16 x $3^{1}/_{2}$ x 1
R62267	For use in stripping braid from switchboard cable. Consists of a steel blade, slotted at one edge and sharpened, assembled in a metal band by means of two screws. This tool replaces the No. 288 Tool	$5^{5}/_{8}$

DISTRIBUTING FRAME TOOLS

33	Socket wrench for $^{11}/_{32}$ in. hexagonal nuts on distributing frames	$4^{11}/_{16}$
447A	Intended for adjusting the outer heat coil springs and the associated clamping nuts and protector mountings on main distributing frames. The socket wrench end is for use on hexagonal nuts $^{1}/_{4}$ in. across flats	$4^{1}/_{8}$ x $1^{5}/_{32}$

DROP TOOLS

39	For adjusting shutter supports on drops	$5^{3}/_{4}$ x $^{3}/_{16}$ x $^{3}/_{32}$
40	Double screw driver for use on drops. One end bent at angle of 90 degrees	7 x $^{9}/_{32}$ x $^{5}/_{32}$

JACK TOOLS

64	Combination wrench and screw driver for use in adjusting Nos. 4, 6, 7, 10, 11 and 15 Jack Fasteners	27 x 1
103	Combination wrench and screw driver for adjusting No. 16 Jack Fastener	27 x 1

TCI Library: www.telephonecollectors.info

TOOLS

JACK TOOLS—Continued

Code No.	Use	Approximate Dimensions (Inches) Overall
117	Adjusting tip and ring springs of Nos. 49 and 92 Jacks. Used with No. 118 Tool for adjusting abnormally bent ring springs of No. 92 Jack	7 37/64 x 1
118	With No. 117 Tool for adjusting abnormally bent ring springs of No. 92 Jacks	7 3/8 x 1
149	Spring tweezers for use in holding wires to jack terminals while soldering	21 1/2 x 1 3/4
338	Strip of insulating material. Intended for opening the jack springs on line switchboards in step-by-step machine switching equipments for cutover purposes.	4 15/64 x 33/64
345	Consists of a parallel jaw plier handle and two tool heads, one on each jaw, arranged so that they may be rotated in turret fashion. For use on No. 92 Jacks to remove old sleeves and replace them with new sleeves	7 1/4 x 1 1/8
409A	Consists of a handle, two hand wheels, a cam shaft and a steel housing. For use in the field for offsetting the terminal tang of Nos. 49 and 141 Type Jack Sleeves	6 11/16 x 3 13/16
490A	A scraper intended for use in removing markings from the faces of jack mountings.	5 7/8 x 1/2 x 5/16

KEY TOOLS

143	Adjusting springs of horizontal type keys	4 1/4 x 3 3/4 x 15/64
303	Adjusting springs on vertical type keys	3 1/32 x 1/4 x 15/64



No. 90



No. 213



No. 116



No. 316

LAMPS AND LAMP CAP TOOLS

116	For removing and inserting switchboard lamps in lamp sockets	3 7/8
319B	For removing No. 2 Type Lamp Caps and Nos. 59 and 60 Type Number Plates. Similar to the No. 58 Tool. Replaces No. 146	4 5/8 x 1 7/8

TCI Library: www.telephonecollectors.info

TOOLS—*Continued*

MESSAGE REGISTER TOOL

Code No.	Use	Approximate Dimensions (Inches) Overall
90	For removing caps of Message Registers	$6\frac{3}{16}$ x $1\frac{5}{8}$ x $\frac{1}{2}$

PLUG TOOLS

213	Socket wrench for use in adjusting nuts of Nos. 103 and 137 Plugs and consists of a hardened steel socket attached to a wood handle	$6\frac{1}{2}$ x $1\frac{1}{4}$
255	Grooved pliers for use in conjunction with Nos. 200, 201, 202, 316 and 317 Tools for attaching plugs to repaired cords	$6\frac{1}{4}$ x $2\frac{1}{8}$
316	Consists essentially of a hollow shaft which is equipped with a crank and contains a chuck. This shaft is provided with a collar whereby the chuck is adjusted to grip the stop shoulder of a No. 109 or No. 110 Plug. Replaces combination of Nos. 200, 201 and 202 Tools	6 x $7\frac{11}{16}$
KS2348	Combination tool for inserting and extracting shell and connecting screws of plugs. (Replacing No. 109)	

PORTABLE TESTING EQUIPMENT

360A 360B 360C	Spring chucks intended for use in conjunction with the Nos. 361, 361B, 364, 365, or 419A tools and arranged to attach to Nos. 893, W1C, W1H, W1J, W1K, W1L, W1M or similar type cords. Have shells of insulating material colored as indicated. Colors: No. 360A, red; No. 360B, black; No. 360C, white	1 x $\frac{1}{4}$
364	For use in conjunction with No. 360 Type Tools, in connection with portable testing equipment	$1\frac{15}{32}$ x $\frac{1}{2}$ x $\frac{3}{32}$
365	For use in conjunction with No. 360 Type Tools, in connection with portable testing equipment	$1\frac{5}{8}$ x $\frac{3}{8}$

PROTECTOR TOOLS

These include Fuses, Heat Coils, etc.

84	Wrench and screwdriver for No. 7 Type Fuse. Fits $\frac{7}{16}$ in. hexagonal nuts	$2\frac{5}{8}$ x $1\frac{3}{4}$ x $\frac{5}{8}$
KS2827	Pliers for use in handling heat coils of protectors	

TCI Library: www.telephonecollectors.info

TOOLS—*Continued*

Relay Tools



No. 45B



No. 50B



No. 221



No. 376A



No. 419A

Code No.	Use	Approximate Dimensions (Inches) Overall
43	Double wrench arranged for .195 in. and .260 in. hexagonal nuts	4 x $1\frac{1}{2}$
45B	Socket wrench for use on armature adjusting nuts of relays and clamping and mounting nuts of No. 114 or similar type relays . . . . . shank	$1\frac{3}{16}$ x $\frac{7}{16}$
46	Socket wrench for $\frac{3}{8}$ in. hexagonal cap nuts, of No. 122 Type Relays . . . shank	$1\frac{3}{8}$ x $\frac{1}{2}$
48	Double socket wrench and screwdriver for adjusting armature contact screws of relays. Fits $\frac{1}{4}$ in. hexagonal nuts	$4\frac{5}{8}$ x $\frac{3}{8}$
50B	For adjusting relay springs. Replaces No. 50	$4\frac{1}{2}$
72	Double socket wrench (No. 403A Tool) for $\frac{3}{16}$ in. and $\frac{5}{32}$ hexagonal nuts and screwdriver (No. 147 Tool), for adjusting armature contact screws. Similar to No. 48.	$4\frac{5}{8}$ x $\frac{5}{16}$
130	For use in adjusting the middle bank of springs on the No. 125 Type Relays	5 x $1\frac{5}{16}$ x $\frac{17}{32}$
136B	Intended for use as a cut-over tool for holding the armature of flat type relays in either the operated or unoperated positions. Has spring construction. Replaces No. 136	$\frac{3}{4}$ x $1\frac{1}{2}$
147	Intended for adjusting contact screws of relays. Fits in No. 403A Tool when used as part of No. 72 Tool	$4\frac{5}{8}$ x $\frac{5}{16}$
206	An off-set screwdriver used with the No. 207 Tool for adjusting the screws holding the springs on flat type relays ("E" Types) after the relays have been mounted	5 x $1\frac{1}{4}$
207	Used with No. 206 Tool	5 x $1\frac{1}{4}$
219	Socket wrench for $\frac{7}{16}$ in. hexagonal nut. Arranged to fit over the shank of the No. 220 Tool	$1\frac{1}{2}$ x $\frac{7}{8}$
220	Socket wrench for $\frac{3}{16}$ in. hexagonal nut. Arranged to fit over screwdriver shank of the No. 35 Tool	$3\frac{1}{4}$ x $\frac{7}{8}$
221	Consists of a combination of the Nos. 219, 220 and KS6854 Tools	$7\frac{1}{4}$ x $\frac{7}{8}$

TCI Library: www.telephonecollectors.info

TOOLS

Relay Tools—*Continued*

Code No.	Use	Approximate Dimensions (Inches) Overall
259	A single piece, bar shaped, vanadium steel tool. From the side of one end extend two bevel tipped jaws. These tips are so proportioned that they can be inserted between the springs of the "A" and "E" Type Relays, thus permitting of adjusting them to the proper tension	$5^{9}/_{16} \times {}^{9}/_{32}$
265C	Designed for cleaning contact points of relays. Consists of a chuck which is designed for holding a No. 266B and 266C Tool. The magazine provides space for holding spare No. 266B and 266C Tools. Six No. 266B and six 266C Tools are furnished as a part of this tool	$4^{3}/_{8} \times {}^{7}/_{16}$
266B	Sand blasted steel blades. Part of No. 265C Tool for cleaning contact points of relays	$1^{1}/_{2} \times {}^{3}/_{16} \times .0035$
266C	Consists of a piece of steel music wire having a ball tip formed at each end. Intended for use with the No. 265C Tool for cleaning pits in disc contacts of relays	$1^{1}/_{4} \times .024$
268	For adjusting contact springs of relays. For use in P.B.X. Switchboards of the No. 550 S.C. Types	$5^{1}/_{2} \times {}^{1}/_{4}$
300	Intended for use to adjust relay springs. Handle covered with cotton sleeving	$5^{19}/_{32} \times {}^{1}/_{4}$
340	For adjusting armature and contact air gaps on polarized relays of the Nos. 206 and 215 Types. Replaces No. 212	$3 \times {}^{1}/_{4}$
349	Double closed end wrench used for adjusting nuts on "E" and No. 207 Type Relays. Engages hexagonal head nuts $^{3}/_{16}$ in. and $^{7}/_{32}$ in. across flats	$1^{17}/_{32} \times {}^{3}/_{8} \times {}^{1}/_{16}$
361B	For use in conjunction with No. 360 Type Tools to make connections with winding terminals of "A", "E" and "R" Type Relays from contact end of relay. Replaces No. 361	$5^{29}/_{32} \times {}^{17}/_{32}$
371	Intended for use in adjusting the contact springs of No. 177 Type Relays. Handle is insulated	$4 \times {}^{1}/_{4}$
373B	Handle for holding and storing No. 374 Type Tools separately or simultaneously. Replaces No. 373	$6^{9}/_{16} \times {}^{5}/_{8}$
374A	Intended for use in burnishing contact points. Can be held in jaws of No. 373 Tool	$5 \times {}^{15}/_{16} \times .018$
374B	Intended for use in burnishing contact points. Can be held in jaws of No. 373 Tool.	$2^{23}/_{64} \times {}^{15}/_{64} \times .018$
376A	Magnifying mirror intended for use as a visual aid in adjusting relays, selectors, etc. Metal surfaces are insulated.	$6^{3}/_{4} \times {}^{1}/_{4}$
403A	Intended for use in adjusting armature contact screws of relays. Fits over the shank of No. 147 Tool and is part of No. 72 Tool	$3 \times {}^{5}/_{16}$
411A	Adjustable test pick having a handle of insulating material. Used in connection with the No. 360A Tool	$5^{1}/_{2} \times {}^{3}/_{8}$
419A	Consists of a tweezer-like arrangement, encased in a fibre tube, operated by a button. Intended for use in making test connections to the springs and terminals of relays and other telephone apparatus. Together with the No. 360 Type Tool replaces the No. 252 Tool and No. 88 Cord Tip	$3 \times {}^{3}/_{4}$

TCI Library: www.telephonecollectors.info

TOOLS—*Continued*

RESISTANCE COIL TOOLS

Code No.	Use	Approximate Dimensions (Inches) Overall
276	Socket wrench for adjusting mounting nuts of Nos. 18 or 19 Resistances. Arranged for $\frac{1}{4}$ in. hexagonal nuts	$9\frac{3}{4}$ x $1\frac{1}{8}$
277	Open end off-set wrench intended for use on mounting nuts of Nos. 18 or 19 Type Resistances when wired in position. Arranged for $\frac{1}{4}$ in. hexagonal nuts	$9\frac{1}{4}$ x $\frac{7}{8}$

RINGER TOOLS



No. 96



No. 129B





No. 48



No. 144



No. 115



No. 145

Code No.	Use	Approximate Dimensions (Inches) Overall
48	Double socket wrench and screwdriver for use in adjusting armature contact screws of relays	$4\frac{5}{8}$ x 3
96	Double screwdriver for ringers	$3\frac{1}{4}$ x $\frac{5}{8}$ x $\frac{3}{16}$
115	Used for changing Nos. 50A and 50B Selectors to call different stations. It is a small double ended tool, one end consisting of a wrench for $\frac{1}{4}$ in. hexagonal nut; the other end a small wire hook	.....
129B	Double wrench for use in adjusting armature pivot screw nuts, armature stop screws, adjusting posts and biasing spring studs on ringers. Replaces No. 129	$2\frac{27}{32}$ Offset
144	Used for changing Nos. 60A and 60B Selectors to call different stations. Consists of a socket wrench and screwdriver	.....
145	Used for changing Nos. 60A and 60B Selectors to call different stations. Small double ended tool, one end consisting of a wrench for $\frac{1}{8}$ in. hexagonal nut; the other end a small wire hook	.....

SWITCHBOARD CORD TOOLS

312B	Intended for use in connection with the solderless cord tip method of repair. Can also be used for repair of cords arranged for No. 47 and similar type plugs for the punched hole method of repair. Severs braid approximately $1\frac{3}{16}$ inches from the end	$4\frac{11}{16}$ x $2\frac{1}{8}$

TCI Library: www.telephonecollectors.info

TOOLS—*Continued*

Telephone Set Tools



No. 63



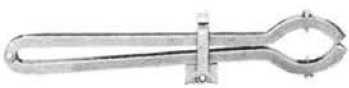
Nos. 43 and 74



No. 110



No. 438A



No. 439A



No. 466A



No. 514A

TELEPHONE SET TOOLS

Including Transmitters, Receivers, etc.

Code No.	Use	Approximate Dimensions (Inches) Overall
63	Offset triple wrench for use on nuts of binding posts of receivers and transmitters	$2\frac{23}{64}$ x $1\frac{5}{16}$
110	Double socket wrench for No. 20 Type Desk Stands and No. 40 Type Transmitter Arms. Fits $\frac{5}{16}$ and $\frac{9}{32}$ in. hexagonal nuts	4 x 1
438A	Intended for use in removing and replacing transmitters, receivers and various parts on No. E1B Type Hand Sets	$8\frac{3}{16}$ x $3\frac{7}{16}$
439A	Same use as No. 438A	$7\frac{7}{8}$ x $2\frac{3}{16}$
466A	For adjusting contact springs on handset mountings, desk stands, wall sets, coin collectors and other station apparatus	$4\frac{1}{8}$ x $\frac{7}{16}$ x 1
514A	Strap wrench with metal handle for tightening and loosening the transmitter and receiver caps of the No. F1AW Type Hand Set	$7\frac{7}{8}$ x $2\frac{3}{4}$

WIRE TOOLS

71	Wire skinner for use in removing the insulation from braided rubber covered wire. Has adjustable blades arranged to receive wire of different gauges	4 x $3\frac{1}{2}$
79	Cable butter for use in turning back external braiding on switchboard cables	
289	A steel rod one end of which is bent at right angles with the axis of the rod and formed into a hook. Has wood handle. For use in dressing skinners to relays and resistances	8
291	Consists of a piece of music wire formed into a loop and mounted in a wood handle. Intended for pulling wires in terminal blocks	8

MISCELLANEOUS TOOLS

74	Double wrench; same as No. 43 except arranged for $\frac{5}{32}$ in. and $\frac{7}{32}$ in. hexagonal nuts	4 x $1\frac{1}{2}$
303	For use in adjusting interrupter spring and retaining pawl on No. 200 Type Selectors	$3\frac{1}{32}$ x $1\frac{1}{4}$ x $\frac{15}{64}$
363	For use in adjusting rotor brush springs and the feeder springs of No. 200 and similar type selectors. Equipped with a handle of insulating material	4 x $1\frac{1}{2}$
375A	Intended for use as a make busy plug and trouble ticket holder in maintenance of connectors, selectors, line switches and repeaters of step-by-step equipment	$3\frac{1}{32}$ x $\frac{13}{16}$ x $\frac{7}{16}$
504A	A rectangular cage with an inner shield mounted on a base which may be fastened to a ladder step. The base is formed to fit the handle of a soldering copper	$10\frac{9}{16}$ x $2\frac{7}{8}$ x $3\frac{13}{16}$

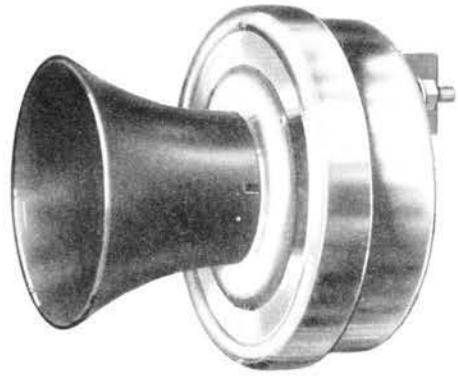
TCI Library: www.telephonecollectors.info

TRANSMITTERS

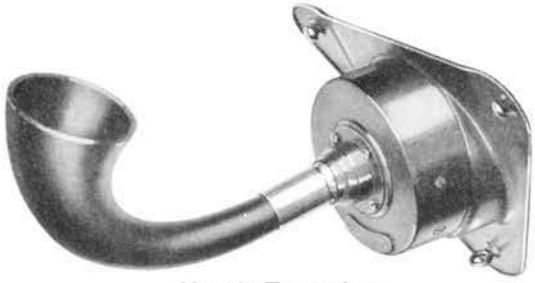
Western Electric transmitters represent the highest development from all angles, and are recognized as standard throughout the world by leading telephone authorities.



No. 232 Transmitter



No. 312 Transmitter



No. 234 Transmitter



No. 266 Transmitter

Code No.	Replaces	Description
232	232W	Intended for operator's use at magneto and common battery switchboards where a hanging transmitter is employed. Arranged to be suspended by means of two transmitter cords. Has a black finish.
234	234BW	Operator's chest type transmitter having an adjustable mouthpiece. The breastplate is of a design which permits a proper and comfortable adjustment of the transmitter mouthpiece. Arranged for, but not equipped with, a No. 3 Type Transmitter Attachment. Intended for use at magneto and common battery switchboards. Has a black finish. Resistance approximately 40 ohms in operation.
266	266BW	No. 1017 Type Test Set Transmitter. Mounts on back of perforated plate in test set. Has black finish and is equipped with mounting screws.
312	312W	For use in No. 1336 Type Mine Telephones. Treated to resist the action of moisture and fumes. Nickel plated finish with black finished brass mouthpiece. Drilled and tapped for mounting screws.
396A	.....	Operator's chest type transmitter similar to the No. 234 Type. For use at magneto, common battery and P.B.X. switchboards. This transmitter has a higher efficiency than the No. 234 and is recommended in place of the No. 234 wherever a high resistance transmitter (approximately 175 ohms in operation) will work satisfactorily. Arranged for, but not equipped with, a No. 3 Type Transmitter Attachment. Has a black finish.

TCI Library: www.telephonecollectors.info

TRANSMITTERS—*Continued*



No. 635A Transmitter



No. 635A Transmitter Unit



Clamping Ring



Mouthpiece



F1 Transmitter Unit

No. 635A

The new Western Electric No. 635A Transmitter was designed to permit the use of the High Quality F1 Transmitter Unit in desk stands. This F1 Unit is used in the modern No. 302 Type Hand Telephone Set, and furnishes a much better grade of transmission than older desk stand transmitters using a carbon button.

The No. 635A Transmitter consists of a No. 635A Transmitter Unit mounted in a bell together with a machine screw, nut and lock washer for assembling the transmitter to a desk stand. It entirely replaces and is interchangeable with the Western Electric Nos. 337, 626A, 629A and D-99639 Transmitters.

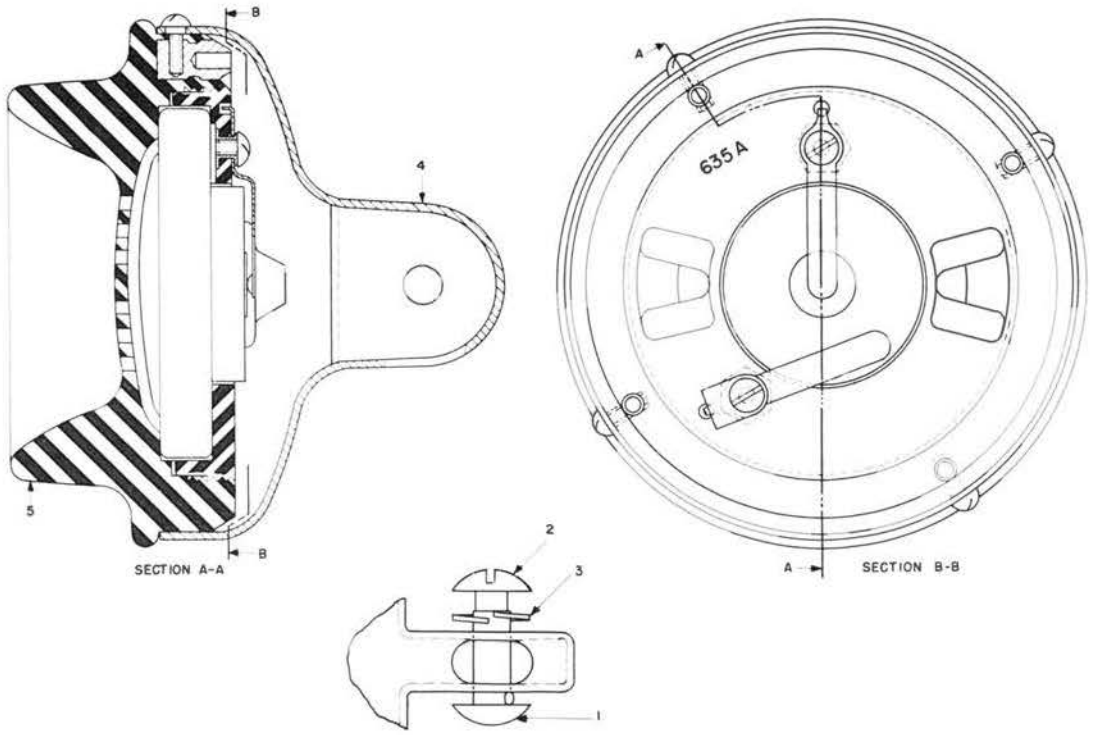
The No. 635A Transmitter Unit consists of an F1 Transmitter Unit mounted on a combined faceplate and mouthpiece. The F1 Unit is held to the faceplate by means of a clamping ring and electrical connections are made by means of springs mounted on the clamping plate.

If desired, however, the No. 635A Transmitter Unit may be ordered separately to replace only the mouthpiece, faceplate and carbon button of various older type desk stand transmitters, thus converting them to No. 635 Type Transmitters. When the transmitter unit is ordered separately four rim mounting screws are furnished for mounting.

TCI Library: www.telephonecollectors.info

TRANSMITTER REPLACEMENT PARTS

No. 635A

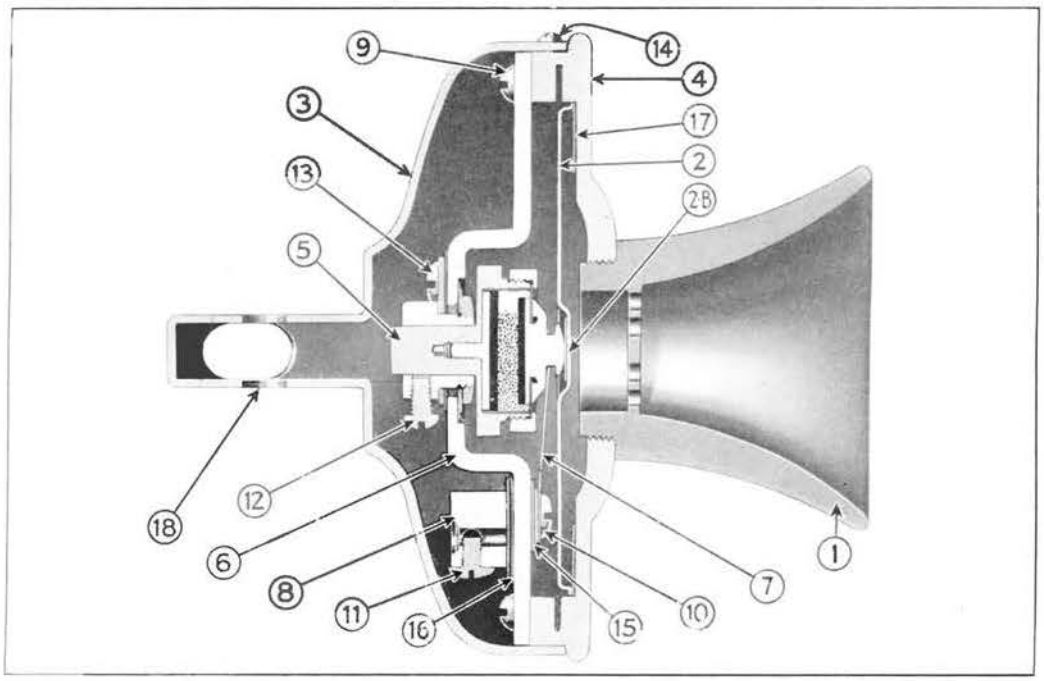


Symbol	Name of Part	Code No.
1	Bolt	P- 92375
2	R.H. Machine Screw	P- 92378
3	Washer	P- 92381
4	Bell	P-222386
5	635A Transmitter Unit	

The above layout shows the component parts of the No. 635A Transmitter for identification purposes.

TCI Library: www.telephonecollectors.info

TRANSMITTER REPLACEMENT PARTS—*Continued*



Transmitter Replacement Parts

Symbol	Name of Part	Transmitter Code Numbers 232	266	312
1	Mouthpiece	P-84570		P-106561
2	Diaphragm	P-90689	P- 90160	P- 90513
	Diaphragm Band	P-89052	P- 89047	P- 89048
2B	Diaphragm Nut or Screw	P-95093	P- 82278	P- 82278
3	Back Case or Bell	P-95228	*P- 99611	P-205900
4	Transmitter Face	P-90083		P- 98074
	Transmitter Face Ring			P- 94935
5	Granular Button	P-95172	P- 99377	P- 85577
6	Bridge and Center	P-95192	P- 98453	P- 84761
7	Damping Spring	P-89587	P- 86547	P- 86546
8	Terminal Block	(1)	P-209853	P- 84780
9	Machine Screw	P-85787	P- 85990	
10	Machine Screw			P-128914
11	Set Screw		P-115484	
12	Adjusting Screw	P-85545	P- 81389	P- 84808
13	Terminal Screw		P-116353	
14	Rim Mounting Screw	P-82291		
15	Washer or Insulator			
16	Terminal Insulator		P- 86769	
17	Cloth Washer	P-95195	P- 88333	P- 81697

(1) Binding Post Block—P-82697 (Hard Rubber), P-82698 (Brass).
* Transmitter case assembly.

234

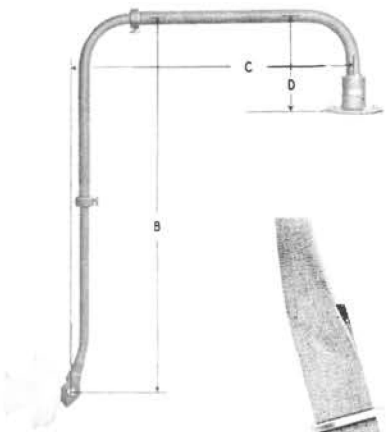
Breastplate Assembly	P-217431
Mouthpiece	P- 91818
Mouthpiece Tip	P- 91819
Transmitter Case	P-220034
Granular Button	P- 99377

396A

Breastplate	P-219481
Mouthpiece	P-297467
Transmitter Unit	A-1
Front Case Assembly	P-290035
Back Case Assembly	P-290034
Bolt and Nut Assembly	P-290033

TCI Library: www.telephonecollectors.info

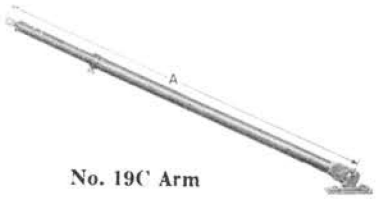
TRANSMITTER ARMS



No. 50 Type Arms



No. 7G Arm



No. 19C Arm



No. 3A Attachment



No. 7A Bracket



No. 8A Bracket

FOR SWITCHBOARDS USING SUSPENDED TRANSMITTERS

The code number does not include transmitter or cords.

Code No.	Description
7G	Consists of one arm, two cord escutcheons with tubes, and two No. 103 Cord Weights. Finished in black. Available with 7 in. or 13 in. cord escutcheon tubes. When ordering please specify which is desired.
7H	Same as No. 7G, except that it is available with $13\frac{3}{16}$ in. tubes only.
19C	Oxidized copper finish. Dimensions A: maximum, $28\frac{3}{4}$ ins., minimum, 16 ins.
19D	Oxidized copper finish. Dimensions A: maximum, $19\frac{7}{16}$ ins., minimum, $11\frac{3}{16}$ ins.

USING TRANSMITTER WITH A LUG

The code number does not include transmitter or cords.

Finished in black.

No. 50 TYPE

Code No.	Dimensions (Inches) B Max.	B Min.	C Max.	C Min.	D
50A	$25\frac{1}{4}$	$18\frac{3}{4}$	$22\frac{1}{4}$	$14\frac{1}{4}$	$5\frac{1}{4}$
50B	$18\frac{1}{4}$	12	$22\frac{1}{4}$	$14\frac{1}{4}$	$5\frac{1}{4}$
50C	$14\frac{3}{4}$	12	$22\frac{1}{4}$	$14\frac{1}{4}$	*

* Minimum, $5\frac{1}{4}$ inches, but may be increased by 1 inch steps to a maximum of $12\frac{1}{4}$ inches.

Transmitter Attachments

Code No.	Color of Strap	Description
2A	.....	Nickel plated buckle used in connection with the No. 3 Type Transmitter Attachments.
3A	Slate	These transmitter attachments consist of a tape strap equipped with two No. 2A Transmitter Attachments. They are used for supporting operator's chest type transmitters. Overall length, 17 ins. (Used with Nos. 234 and 396A Transmitters.)
3B	Black	
3C	White	

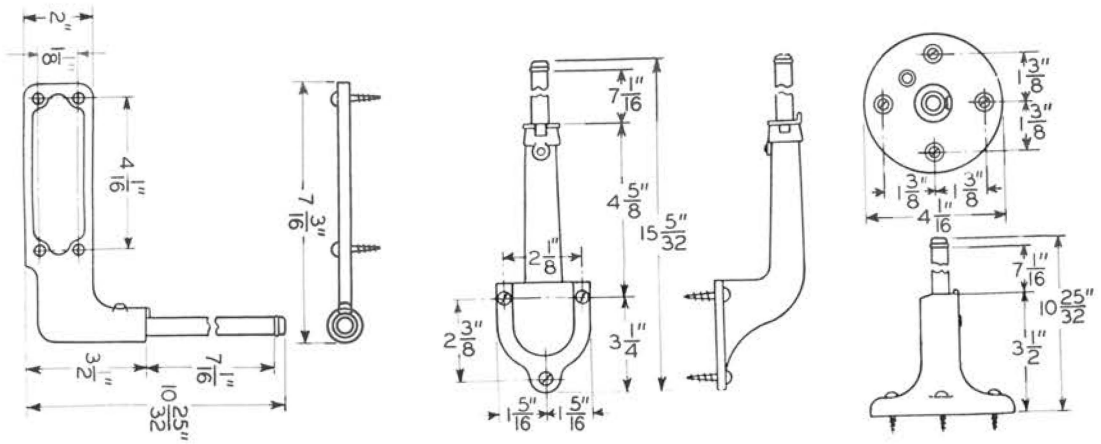
TCI Library: www.telephonecollectors.info

TRANSMITTER BRACKETS

These transmitter brackets will mount any Western Electric transmitter that is equipped with a mounting lug and screw, for example the No. 635 Transmitter.

Code No.	Finish	Description
3D	Black	For mounting old style grounded transmitters on wooden telephones. Has a stud for making the ground connection.
3E	Black	For mounting insulated transmitters. Used principally on wooden telephones.
7A	Nickel Plate	For mounting insulated transmitters in a semi-flush position no metal telephones. For example, No. 1533 Type and similar telephones.
8A	Black	For mounting insulated transmitters on wooden telephones. For example, No. 1317 Type Telephones.

TRANSMITTER ARM BRACKETS



2A 2B 2C

Transmitter Arm Brackets

Code No.	Description	Dimensions (Inches) Length of Rod	Dimensions (Inches) Overall Length	Use
2A	Consists of an iron base equipped with a steel rod about which the arm rotates.	$7\frac{1}{16}$	$10\frac{25}{32}$	Mounts on the side of roll top desks.
2B	Same as the No. 2A except equipped with a collar assembled on the rod for the purpose of stopping the rotation of the transmitter arm in any one of the four predetermined positions.	$7\frac{1}{16}$	$15\frac{5}{32}$	Mounts on wall or side of flat top desks.
2C	Similar to the No. 2A.	$7\frac{1}{16}$	$10\frac{25}{32}$	Mounts on the top of a flat top desk.

TCI Library: www.telephonecollectors.info

WIRE

Lacquer Treated

Lacquer treated wire is especially adapted for use in local and toll switchboards and has many advantages over the old style wax impregnated type. Some of these advantages are as follows:

1. Eliminates wax as a fire hazard.
2. Eliminates insulation fraying at terminals.
3. Does not collect dirt.
4. Colors are brighter after long periods of service.
5. Special purified textiles used.

C1 WIRE

Tinned conductors, double silk and single cotton servings, lacquer coated. Obtainable in 14, 16, 19, 22 and 24 gauges; single, pair, triple or quadruple. Available in various colors.

This wire is designed primarily for use in local cable forms in local, toll and telegraph circuits.

D1 WIRE

Designed primarily for use in circuits above 48 volts in moisture-proof installations.

Tinned enameled conductors, double silk and single cotton servings, lacquer coated. Obtainable in 14, 16, 18, 19, 20 and 22 gauges; single, pair, triple or quadruple. Available in various colors.

F1 WIRE

Designed primarily for use as battery leads in local cables and general wiring where the added protection of a braided covering is necessary.

Tinned enameled conductors, silk serving and cotton braid, wax impregnated. Obtainable in 14, 16, 18, 19, 20 and .024″ gauges; single, pair, triple, quadruple or quintuple. Available in various colors.

G1 WIRE

Designed primarily for use in surface wiring.

Tinned conductors, silk serving and cotton braid, wax impregnated. Obtainable in 22 and 24 gauges. Singles only. Available in various colors.

J1 WIRE

Designed primarily for use as strap wire.

Tinned conductors, two cotton braids, asphaltic impregnation. Obtainable in 18, 20, 22 and 24 gauges; singles only; black only.

K1 WIRE

Designed primarily for cross-connecting relay frames and decoders.

Tinned conductors, double silk servings and cotton braid, lacquer coated. Obtainable in 22 and 26 gauges; singles only. Available in various colors.

M1 WIRE

Designed primarily for wiring carrier terminating equipment.

Tinned conductors, double silk servings and silk braid, lacquer coated. Obtainable in 22 gauge; single and pairs. Available in various colors.

N1 WIRE

Designed primarily for bank multiple wiring.

Tinned conductors, single silk and single cotton servings, wax impregnated. Obtainable in 24 gauge only; singles, red and blue; pairs, red paired with blue.

TCI Library: www.telephonecollectors.info

WIRE—*Continued*

P1 WIRE

(Shielded D1 Wire 22 Gauge only)

Designed primarily for high grade transmission circuits.

Tinned enameled conductors, double silk and single cotton servings, lacquer coated. The wires are covered with a braided shield of tinned copper wires with a 22 gauge tinned copper wire running longitudinally under the shield for grounding purposes. The braided shield is covered with a paper tape and a gray cotton braid. Both the cotton braid and the braided shield may be readily pushed back in terminating the wires.

Obtainable in 22 gauge; single, pair and triple. Available in various colors.

AA1 WIRE

Designed primarily for wiring amplifiers and rectifiers.

Tinned stranded conductors, double silk and single cotton servings, silk braid, lacquer coated. Obtainable in 16 and 22 gauges; single and pair. Available in various colors.

AB1 WIRE

Same as AA1 Wire except wax impregnated instead of lacquer coated. Obtainable in 12, 14, 16 and 22 gauges; single and pairs. Available in various colors.

AC1 WIRE (Coated)

Arranged in multiple twin construction which assures minimum cross-talk when used in phantom circuits.

Tinned conductors, double silk and single cotton servings, lacquer coated.

The AC1 Wire has a thicker insulation than the C1 Wire.

Obtainable in 22 gauge only; quadruple only. Available in various colors.

AD1 WIRE

Designed primarily for use in toll telephone circuits in moisture-proof installations.

Same as AC1 Wire except conductors are tinned and enameled.

CROSS-CONNECTING OR DISTRIBUTING FRAME

Jumper Wire

"L" TYPE

This wire, usually known as Jumper Wire, is made in single, twisted pair, triple or quadruple conductors.

This wire is made in No. 20 or No. 22 B. & S. Gauge conductors; tinned copper enameled double silk and cotton served lacquer treated conductors. Furnished in 1500 foot coils.

Code No.	Size (B. & S. Gauge)	No. of Conductors	Colors	Replaces
L20S	20	1	Brown	E20S and E22S
L20P	20	(a) 2	Brown, *Black	
L22M	22	(b) 4	Black, Black-white, Red, Green	L20F
L22P	22	(a) 2	White, Black	E22P and L20P
L22T	22	(a) 3	White, Black, Red	E22T and L20T
L22F	22	(a) 4	White, Red, Black, Green	E22F

* Has a single thread brown tracer.

(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.

TCI Library: www.telephonecollectors.info

INDEX

Material	Page
A	
Adapters, Cable Terminal	53
Adapters, Condenser	67
Adapters, Dial	95
Apparatus Blanks	3
Apparatus Blanks, Dial	98
Apparatus, Testing	278
Arms, Telephone (See Transmitter Arms)	
Arms, Transmitter	294
Attachments, Gong	112
B	
Backboards	4
Battery Boxes	5
Bells	5
Bells, Extension (Subscriber Sets)	229
Binding Posts	6
Binding Post Chambers	49
Blocks, Connecting	68
Blocks, Fuse	106
Blocks, Protector	175
Booth Switches	9
Booths, Telephone	7
Boxes, Battery	5
Boxes, Cable Terminal	43
Boxes, Desk Set (Subscriber Sets)	232
Boxes, Hand Generator	116
Brackets, Condenser	67
Brackets, Transmitter	295
Brackets, Transmitter Arm	295
Bridging Connectors	10
Buzzers	10
C	
Cabinets, Testing	280
Cable, Interphone	33
Cable, Lead Covered	12
Cable, Switchboard	29
Cable, Terminals	37
Cable Terminal Adapters	53
Cable Terminal Boxes	43
Cable Terminal Sections	46
Cable Terminal Tools	283
Carrier Telephone Equipment —C, G, and H Type	54
Cases, Loading Coil	161
Central Battery Multiple Switchboard	250
Central Battery Non-Multiple Switchboard	243
Central Battery Telephones	266
Clocks, Electric	11
Coils, Heat	125
Coils, Induction	126
Coils, Loading	160
Coils, Repeating	197
Coils, Retardation	207
Combined Jacks and Signals	58
Condensers	63
Condenser Adapters	67
Condenser Brackets	67
Condenser Mountings	67
Condenser Straps	68
Connecting Blocks	68
Connectors, Bridging	10
Cords	70-86
Desk Stand Cords	76
Handset Cords	79
Miscellaneous Cords	81
Operators' Telephone Set Cords	74
Patching Cords	73
Receiver Cords	81
Replacement Information	86
Switchboard Cords	71
Test Cords	85
Transmitter Cords	84
Cord Accessories	87
Cord Fasteners	87
Cord Hooks	87
Cord Pulleys	87
Cord Tips	88
Cord Weights	91
Counters	162
D	
Designation Strips	91
Desk Set Boxes (Subscriber Sets)	232
Dials	93
Dial Adapters	95
Dial Apparatus Blanks	98
Dial Mountings	96
Dial Number Plates	97
Dial Tester	98
Distributing Frames	99
Distributing Rings	102
Distributing Frame Tools	283
Drop Tools	283
Dummy Fuses	104
E	
Electric Clocks	11
Extension Bells (Subscriber Sets)	229
F	
Fanning Strips	102
Fasteners, Cord	87
Fasteners, Jack	138
Frames, Distributing	99
Fuses	102
Fuse Blocks	106
Fuse Chambers	52
Fuse Posts	107
Fuses, Dummy	104
G	
Gauges	108
Generators, Hand	112
Generator Boxes, Hand	116
Gongs	112
Gong Attachments	112
H	
Hand Generators	112
Hand Generator Boxes	116
Hand Sets	117
Handset Hangers	118
Handset Mountings	119
Hand Telephone Sets	121
Head Bands (Receivers)	124
Heat Coils	125
Hooks, Cord	87
Hooks, Switch	254
I	
Indicators, Ringer	223
Induction Coils	126
Interphone Cable	33
J	
Jacks	129
Jack Fasteners	138
Jack Mountings	139
Jack Spaces	140
Jack Tools	283
Jacks and Signals, Combined	58
K	
Keys	140
Key Levers	154
Key Mountings	154
Key Spaces	154
Key Tools	284
Key Units	155
L	
Lamps	155
Lamp Caps	156
Lamp Sockets	158
Lamps, Resistance	206
Lamp Socket Mountings	159
Lamp and Lamp Cap Tools	284
Lead Covered Cable	12
Levers, Key	154
Loading Coils	160
Loading Coil Cases	161

TCI Library: www.telephonecollectors.info

Material	Page
M	
Magneto Non-Multiple Switchboards	239
Magneto Telephones	256
Message Registers	162
Message Register Tools	285
Mine Telephones	260
Mounting Plates	164
Mountings, Condenser	67
Mountings, Dial	96
Mountings, Handset	119
Mountings, Jack	139
Mountings, Key	154
Mountings, Lamp Socket	159
Mountings, Protector	177
Mountings, Signal	227
Mountings, Telephone Set	274
N	
Number Plates	167
Number Plates, Dial	97
P	
Plugs	168
Plugs, Signal	228
Plug Seats	171
Plug Tools	285
Plug Trouble Caps	171
Portable Test Sets	278
Portable Testing Equipment Tools	285
Private Branch Exchange Switchboard	245
Protectors	172
Protector Blocks	175
Protector Groups	176
Protector Mountings	177
Protector Tools	285
Pulleys, Cord	87
Push Buttons	178
R	
Receivers	179
Receiver Head Bands	124
Receiver Holder	182
Receiver Units	182
Registers, Message	162
Relays	183
Relay Covers	194
Relay Tools	286
Repeaters	195
Repeating Coils	197
Resistances	202
Resistance Lamps	206
Resistance Coil Tools	288
Retardation Coils	207
Ringers	212
Ringer Indicator	223
Ringer-Oscillator	224
Ringer Tools	288
S	
Signals	226
Signal Mountings	227
Signal Plugs	228
Signals and Jacks, Combined	58
Sockets, Lamp	158
Spaces, Jack	140
Spaces, Key	154
Straps, Condenser	68
Strips, Designation	91
Strips, Fanning	102
Strips, Terminal	277
Subscriber Sets	229
Switchboard Cable	29
Switchboards, Central Battery Multiple	250
Switchboards, Central Battery Non-Multiple	243
Switchboards, Magneto Non-Multiple	239
Switchboards, P.B.X.	245
Switches, Booth	9
Switch Hooks	254
T	
Telephone Arms (See Transmitter Arms)	
Telephone Booths	7
Telephone Sets, Hand	121
Telephone Set Mountings	274
Telephone Set Tools	289
Telephones, Central Battery	266
Telephones, Magneto	256
Telephones, Mine	260
Terminal Punchings	276
Terminal Strips	277
Testing Apparatus	278
Testing Cabinets	280
Testing Equipment, Portable	278
Test Sets	278
Test Sets, Portable	278
Tester, Dial	98
Tools, Cable and Cable Terminal	283
Tools, Distributing Frame	283
Tools, Drop	283
Tools, Jack	283
Tools, Key	284
Tools, Lamp, Lamp Cap	284
Tools, Message Register	285
Tools, Miscellaneous	289
Tools, Plug	285
Tools, Portable Testing Equipment	285
Tools, Protector	285
Tools, Relay	286
Tools, Resistance Coil	288
Tools, Ringer	288
Tools, Switchboard Cord	288
Tools, Telephone Set	289
Tools, Wire	289
Transmitters	290
Transmitter Arms	294
Transmitter Arm Brackets	295
Transmitter Attachments	294
Transmitter Brackets	295
Trouble Caps, Plugs	171
W	
Weights, Cord	91
Wire	296
Wire Tools	289

TCI Library: www.telephonecollectors.info