



STROMBERG-CARLSON

TELEPHONES

SWITCHBOARDS

ACCESSORIES

CODED PARTS

CONSTRUCTION MATERIALS

STROMBERG-CARLSON COMPANY

100 CARLSON ROAD • ROCHESTER 3, N. Y. • TEL. CULVER 0260

NATION-WIDE SERVICE

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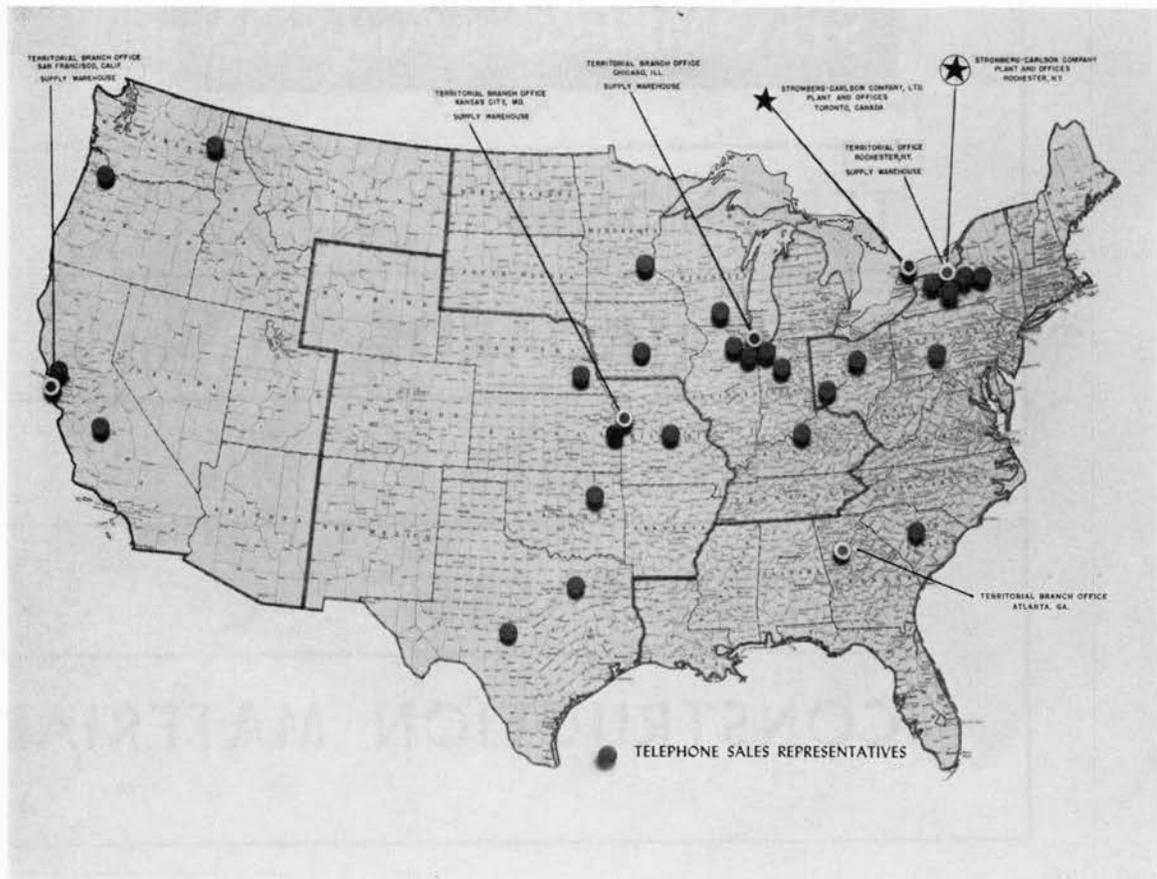
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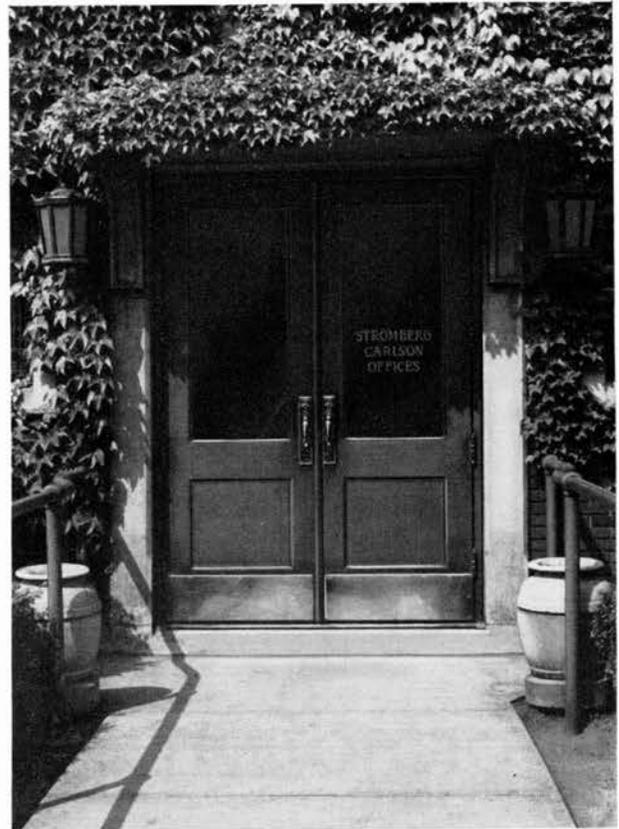


Foreword

OLD FRIENDS will recognize the main entrance to the Stromberg-Carlson plant—a doorway dedicated to service for the industry. This catalogue, like the door, is an invitation to look inside at the products which have made the name Stromberg-Carlson stand for the finest in telephone equipment.

This new catalogue is different in appearance and arrangement from the old, but it retains the same, or similar, factual information on Telephones, Switchboards, Accessories, Coded Parts, and Construction Materials, that made the former catalogue such a helpful reference book. Changes have been made with the expectation that it will be easier to use, and consequently of more value to you. It is your door to Stromberg-Carlson's advanced engineering and time proven, dependable, economical telephone equipment.

Users of this book will find information on all products which meet the requirements of the industry at large. A selection from these standard products will insure more rapid delivery and tangible economies for the purchaser. The accompanying map shows the warehouses in strategic locations for carrying on nation-wide service. Here are kept supplies of telephones and maintenance parts of all types; also selected construction materials



which conform to the high standard of Stromberg-Carlson's own products.

The book has two principal divisions. In the first are those items manufactured by Stromberg-Carlson and such others as are necessary for the modern plant. These are grouped into convenient sections. The second division covers construction materials and supplies, also divided into sections, thus making it an easy matter to locate the desired items. Colored thumb-index tabs on the sectional sheets, and a complete alphabetical cross index at the center of the book, give further assistance, and will enable you to locate in a minimum of time the technical or ordering information desired. Price information has been conveniently placed on separate sheets interleaved through the catalogue so that complete data is available quickly and easily.

For your Information



OUR WARRANTY — For more than half a century Stromberg-Carlson's high quality production standards have been well known to the telephone industry and an enviable record for excellence in manufacture has earned for the Company many friends and satisfied customers. Because of this record, all material properly installed and operated is fully guaranteed against defects in material and workmanship for a period of one year from the date of shipment.

WHEN ORDERING — In order to assure prompt handling and shipment of your order please include the name or description of each article and its Stock Number and Code Number. When requesting information please use a separate sheet from the order blanks.

SHIPPING INFORMATION — Shipment can be expedited and better service obtained if complete shipping information is given, such as rail freight, express, truck or parcel post. If by rail freight or truck, give the routing, otherwise we shall use our judgment to assure you of the best service.

Unless otherwise agreed upon, all goods are sold f.o.b. Rochester, N. Y., or f.o.b. Branch Offices, and transportation charges will therefore be collected by the carriers upon arrival of the goods at destination.

ALL AGREEMENTS — Are made contingent upon strikes, fires, accidents or causes beyond our control.

TERMS — Are net 10 days E. O. M. (End of Month) billing.

NEW ACCOUNTS — Are welcomed on a credit basis. When you are not rated by commercial credit agencies shipment can be handled more quickly if references and credit information are sent with the order. Special references or information will be immediately acted upon, and the result held in strict confidence for our sole use.

In order to avoid delay incidental to checking references you may prefer to have an initial order shipped C.O.D. by express or parcel post (insured if so instructed), or by freight subject to sight draft through a local bank against bill of lading. C.O.D. or sight draft orders receive the same prompt handling as other orders.

REMITTANCES — May be made by bank draft, postoffice or express money orders. Cash should be sent only by registered mail. Unless accompanied by orders all remittances should be addressed to our General Offices at Rochester 3, New York.

CLAIMS AGAINST TRANSPORTATION COMPANIES — Should be made immediately by you upon receipt of the shipment when evidence of the breakage or shortage is discovered. We will gladly assist you in presenting these claims.

RETURN SHIPMENTS — In the event that it is necessary to return material to the factory please write us for shipping instructions. This will enable us to make proper adjustment without delay, and to provide for the most efficient handling of the returned material.

SUBSTITUTIONS — In some instances it may be necessary to depart from the specifications covering materials listed in this catalog. Substitutions will be made only when regular materials are not obtainable. They will be chosen carefully in order to assure you of the dependability and excellent service you expect of Stromberg-Carlson equipment.

GENERAL INDEX—TELEPHONE EQUIPMENT

FOR ITEMS LISTED IN SECTIONS "a" THROUGH "g"

(Editor's Note: Items shown are indexed according to section only.

See the sectional contents for exact page location.)

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"A" Type Relay Spring Combinations	F	2-10	C
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Battery Eliminators	G	Transmitters	F
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GENERAL INDEX—TELEPHONE EQUIPMENT (Cont.)

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XY Supervisory Equipment	B and G
XY Toll Ticketing	B
XY Universal Switch	B and F

STROMBERG-CARLSON

Telephones



For over sixty years the Independent industry has relied on Stromberg-Carlson Telephones. They are found in modern skyscrapers and underground mines; in city apartments and scattered farms. The complete line includes common battery dial or manual instruments for either desk or wall; multi-line telephones for better office communication. Magneto and Iron-clad sets for companies using this service.

TELEPHONES

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STROMBERG-CARLSON

Telephones



For over sixty years the Independent industry has relied on Stromberg-Carlson Telephones. They are found in modern skyscrapers and underground mines; in city apartments and scattered farms. The complete line includes common battery dial or manual instruments for either desk or wall; multi-line telephones for better office communication. Magneto and Iron-clad sets for companies using this service.

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STROMBERG-CARLSON TELEPHONES

Eye Appeal

Colorful, graceful, modern. Short, light handset. Extended dial number plate.

Dependability

High fidelity on extended loops. Matched ringers and capacitors. Water proofed networks.

Wide Assortment

Desk type or wall type instruments. Single line, two-line or multi-line telephones, dial or manual.



Revised 10-1-58

THE 1500 SERIES TELEPHONES

The Stromberg-Carlson 1500 Series Telephones offer the operating company today's most advanced telephone instruments: in outward appearance, mechanical design, and operating efficiency.

The 1500 Series Telephones feature a short graceful handset. The ringing capacitor is now mounted on the ringer base, thus making it an integral part of the ringer assembly.

Features include: dual use of the same instrument as a desk or wall type telephone; the extended number plate which makes it easier to dial; the well-known Stromberg-Carlson dial, the pioneer with the plastic dust cover and service door; and the sturdy housing made from Tenite II.

1543 and 1543-W Telephones



1543 Telephone

The 1543 Telephones are the standard models in the 1500 Series. They are available for either manual or dial, and can be mounted on either a desk or a wall. Standard telephones are furnished with the plungers used for desk installation; however, plungers for wall operation are available in Package Assembly 211650-000. This package assembly consists of two plungers, and four mounting screws. Dial blanks and adapters are furnished as standard equipment unless the instruments are ordered equipped with dials. The 1543 Telephones may be equipped with tuned frequency or straight line ringers. When desired, the 1543 Telephone will be furnished with a two-step hookswitch. Provision is made for including ringing tubes when desired.

THE HOUSING—The housing for the 1500 Series Telephones is made from a tough thermoplastic, Tenite II. This material has been chosen because of its light weight, its great strength, and its ability to retain its lustre. All operating components of the telephone are conveniently mounted on the base, thereby allowing the housing to serve its proper function—that of a cover only.

THE HANDSET—The handset accentuates the flowing lines of the housing to achieve the perfect combination in modern design. Transmission is improved by the simple expedient of bringing the mouthpiece closer to the subscriber's lips.

The transmitter capsule has a long life brought about by the use of new age stabilized carbon in the capsule. As in the previous models, the transmitter capsule is non-positional; connection is established through precious metal spring contacts. Once dropped into place, it is held firmly by the mouthpiece.

The receiver capsule in the 1500 Series is connected by screws to the spade terminals of two cords running through the handle of the handset. After connection, the receiver is held rigidly by the earcap.

THE DIAL—The dial and extended number plate add beauty and practicality to the 1500 Series Telephones. On the extended number plate, the letters and digits are located outside the periphery of the fingerwheel. This provides greater visibility and, at the same time, keeps the letters and digits from being scratched or marred during dialing.

The time-tested Stromberg-Carlson dial, with the original dust cover, affords the best protection to delicate working parts and the assurance of long, trouble-free service.

THE RINGER—The 1543 Telephones use single coil, high impedance ringers which are advantageous on heavily loaded lines. The ringing capacitor is mounted on the ringer base, thus making it an integral part of the ringer assembly. Perfectly mated ringers and capacitors can be replaced as a unit.

Ringers are available in four groups—Straight Line, Harmonic, Synchronic, and Decimonic. Provision is made for including standard ringing tubes, employed in superimposed ringing systems.

THE HOOKSWITCH—The hookswitch in the 1500 Series Telephones operates without any complicated linkages and is completely independent of the housing. The precious metal twin contacts are protected by a transparent dust cover. A separate coil spring restores the hookswitch. The design of the plungers prevents a cord under the handset from interfering with the proper operation of the hookswitch.

TWO-STEP HOOKSWITCH—The two-step hookswitch is also available in the 1543 Telephones. Known as the "Farmer's Friend," this arrangement allows a subscriber to monitor his own line to determine if it is busy, without connecting his transmitter to the line. This has the further advantage in dial systems of permitting a party line subscriber to determine if the line is free without mutilating the dial pulses of a call already in progress.

STROMBERG-CARLSON

1543 TELEPHONES (Cont.)

COIL-CAPACITOR UNIT—The coil-capacitor unit, in the 1500 Series Telephones, consists of a plastic housing in which the induction coil, resistor, and talking capacitor are embedded in Mitchell Rand No. 3738, a dense tar-like compound. This design protects the apparatus from mechanical injury as well as excessive humidity, and is therefore particularly desirable in hot, damp climates. Tests conducted under water have demonstrated the reliability of this unit. Terminals, plainly marked, show proper connections for the line and handset cords as well as the hook-switch, ringer, and dial.

THE CONNECTING BLOCK—The No. 17A connecting block is used on all but the multi-line telephones. Designations "R," "G," "Y," and "B" are clearly marked on the base. Openings are provided for interconnecting the line and stations, for bringing line cord and station wires through the cover, and for bringing station wires through the back of the block. Mounting screws are included in the assembly.

CORDS—Both the handset cords and the line cord on the 1500 Series Telephones have natural rubber insulated tinsel conductors with an exterior jacket of Neoprene. The construction of the conductors and the Neoprene jacket give these cords greatly increased life, with less tendency to kink.

CONVERSION FROM DESK TYPE TO WALL TYPE TELEPHONE—It is easy to convert the 1500 Series Telephone from a desk type to a wall type with a screwdriver as the only tool and Package Assembly 211650-000 as the only parts necessary. The package assembly consists of two wall type plungers, one restoring spring and four mounting screws for attaching the instrument to the wall. The following steps make this simple conversion.

1. Remove the housing
2. Install wall type plungers and spring
3. Rotate dial 180°, using *other* set of holes in bracket when mounting
4. Fasten base to the wall
5. Replace the housing.

The 1500 Series Telephone thus affords a real saving in both time and inventory; one instrument in the storeroom, one instrument in the installer's truck. Greatly improved customer relations are a natural outgrowth of this choice of mounting made possible in the design of the 1500 Series Telephones.

**1543-W TELEPHONES**

The 1543-W is a full range telephone featuring a fully automatic equalization network, thus providing one instrument which is self-regulating for highest efficiency under different loop conditions. The 1543-W Telephone provides transmission characteristics equivalent to the best high efficiency instrument now available. New transmitter and receiver units provide a 10 db overall gain for a connection involving long loops at both ends of the connection when using the 1543-W sets in place of the 1543 (or comparable) standard instruments at both subscriber stations. The full efficiency of these transmitter and receiver capsule units is realized in the handset design, provided on *both* the 1543-W and the standard 1543 Telephone.

The 10 db gain in the transmitter and receiver units would result in an equal gain in sidetone level—interfering with intelligibility of the voice signal—unless steps were taken to sub-

stantially reduce sidetone noise. In the 1543-W Telephone, capacitors are added to the balancing impedance in the network, providing this essential reduction in the sidetone path throughout the transmitter voice frequency range. The desirability of greater efficiency and improved sidetone balance is easily demonstrated on long loops—particularly those where, with a given type of line facility, standard instruments would be unsatisfactory. However, if a set incorporating these gains only were to be used on short loops, the output level from the receiver would be too high, and cross-talk and line noise would be more critical due to the higher instrument efficiencies. To make the 1543-W Telephone truly a FULL RANGE instrument, usable anywhere without zoning, a fully automatic equalization feature has been included in the network. This is, in effect, a "volume stabilizer" which permits the higher efficiencies to be effective when long loop conditions obtain, and successively reduce this gain as the loop becomes shorter. Varistors and associated resistors in the circuit, in addition to creating an equalization of transmission efficiency, are also beneficial in maintaining proper sidetone balance for any given loop condition. This equalization is entirely controlled by the relative magnitude of direct current received over the loop at any given subscriber station; it does not require selection, zoning, or adjustment.

Network

In addition to the normal induction coil and capacitors provided in all telephones, the 1543-W network contains fully automatic equalization elements acting as a progressively variable volume limiter—balancing the level in accordance with changes in loop. Electronic semi-conductors whose resistance varies in proportion to the direct current voltage received over differing loop resistances make the network self-adjusting. Thus the 1543-W is truly a FULL RANGE telephone.

1543 and 1543-W TELEPHONES

ORDERING INFORMATION

Complete Telephones

Code	Description
1543	Black Telephone, less dial
2-1543	Same as above, arranged for 2-step operation
1543-W	High efficiency black telephone, less dial
2-1543-W	Same as above, arranged for 2-step operation

COLOR—All 1543-W Telephones are available in the following colors besides black and white: Desert Beige, Aqua Blue, French Blue, Chestnut Brown, Dove Gray, Olive Green, Antique Ivory, Rose Pink, Chinese Red, and Canary Yellow. When ordering, specify color.

WALL MOUNTING—Order package assembly 211650-000, specify color.

DIALS—When dial is required, the DE-212 Metropolitan Type Dial is normally furnished unless otherwise specified. Refer to Section F for complete list of available dials.

RINGERS—Available in all standard frequencies. Specify type of ringer required. Refer to Section F for complete list of available ringers.

TWO-STEP CONVERSION—To convert 1543 and 1543-W instruments to Two-step operation in the field, order package assembly 211681-000 and housing 209327-000, specifying color.

HANDSET CORDS—1543 Telephones are equipped with straight neoprene cords. Coiled Kords available at extra cost. All 1543-W Telephones are equipped with Coiled Kords in matching color.

The 1544 Telephone



The 1544 Telephone is sometimes used to make a two-piece set, comprised of a telephone and a desk set box. The telephone is the same as the 1543, but without the ringer and coil-capacitor unit. Like the 1543, the 1544 Telephone may be used in either dial or manual systems. The telephone may be used on a desk or installed on a wall. A more common use of the 1544 Telephone is as an extension set. Another use is as a PBX Operator's telephone. (See 1544-P and 1544-C.)

The 1544 and 1544-B Telephones for Magneto Service

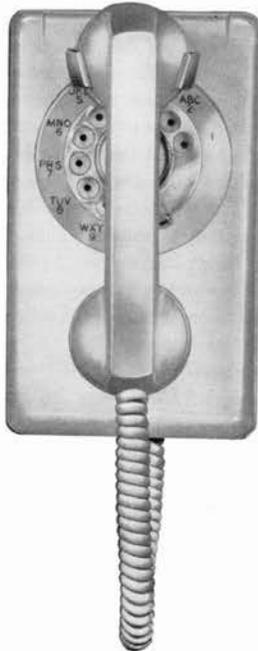
The 1544 Telephone is used with magneto desk set boxes which contain an induction coil, ringer and hand generator. The 1544-B Telephone which includes an induction coil is provided for use with magneto desk set boxes which contain a ringer and hand generator, but no induction coil.

ORDERING INFORMATION

Stock No.	Code No.	Description and Use
211749-000	(1544)	Complete telephone, less coil-capacitor and ringer.
211750-000	(1544-B)	Same as 1544 with a 46-B Induction Coil.
211751-000	(1544-P)	Operator's phone without coil capacitor unit. Six conductor line cord with separate leads for transmitter, receiver and dial impulse springs.
*211758-000	(1544-C)	Operator's phone with coil-capacitor unit. Four conductor line cord with separate leads for dial impulse springs.
*211759-000	(1544-K)	Same as 1544P except dial shunt springs wired to shunt receiver.

*Stock number for these two telephones includes DE-212 Dial.

1553-W WALL TELEPHONE



1553-W Wall Telephone

Modern in design, the 1553-W Wall Type Telephone can be quickly installed on any wall. Only two screws are needed to mount this instrument.

Besides black and white, this telephone instrument is available in the following colors, with matching Coiled Kords:

- | | |
|---------------|---------------|
| Canary Yellow | Antique Ivory |
| Desert Beige | Dove Gray |
| Chinese Red | Rose Pink |
| Olive Green | Aqua Blue |

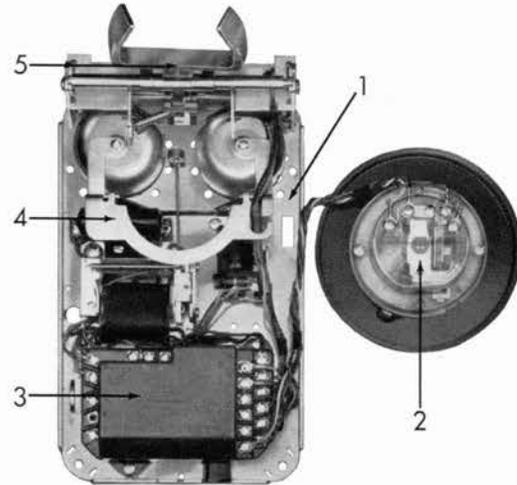
Features

HOUSING—Made of a durable, color fast thermoplastic, the housing will withstand abuse without chipping or cracking. Because the color is made into the housing, it will not fade nor peel away. The housing is held securely in place by means of a metal hook, located on the top underside of the housing, that links the housing to the baseplate, and a captive screw through the bottom front of the housing into the baseplate. Removal and replacement of the housing is thereby simplified.

HANDSET—Made of the same material as the housing, this handset features the high efficiency "W" type transmission network that has been so widely acclaimed in other Stromberg-Carlson telephones. All handsets are furnished with Coiled Kords in matching color.

HOOKEWITCH AND CRADLE—The cradle has been conveniently placed in the center of the instrument making the handset easily accessible to both right handed and left handed persons.

The hookswitch has a unique feature of being able to operate either as a single step hookswitch or as a two-step hookswitch. The shifting of a coil spring from one side of the hookswitch



Legend

No.	Part Name
1	Baseplate
2	Dial
3	Coil-capacitor assembly
4	Dial and gong bracket
5	Hookswitch assembly

bracket to the other side and the addition of a capacitor (Stock No. 211439-000) to terminals on the coil-capacitor unit will convert the standard arrangement to a two-step operation.

DIAL—The Stromberg-Carlson dial has a new face, adding to its present attraction and to ease of operation. Its finger wheel is of clear plastic and features tapered finger holes for comfort while dialing. The extended number plate is of metal with a ceramic coating to protect the numbers from scratches and wear.

Dial blanks are made from thermoplastic and are available in the same selection of colors as are the housings.

RINGERS—Like the other 1500 Series Telephones, the 1553-W Telephones use the same ringers. When a 1553-W Telephone is shipped, the ringer is packaged separately. This permits a smaller inventory on instruments with respect to ringers.

ORDERING INFORMATION

Complete Telephones

Code	Description
1553-W	Less dial (specify color)

DIALS—When dial is required, the DE-212 Metropolitan type Dial is normally furnished unless otherwise specified. Refer to Section F for complete list of available dials.

RINGERS—Available in all standard frequencies. Specify type of ringer required. Refer to Section F for complete list of available ringers.

TWO-STEP CONVERSION — Order Package Assembly 204785-090 if this feature is desired.

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1573 TWO-LINE TELEPHONE



1573-WA Two-Line Telephone

The Stromberg-Carlson 1573-W Telephone is a two-line telephone equipped with a holding feature on both of its lines. The same telephone instrument provides intercommunication or local PX service over a third line. This telephone will be useful in all applications where a single instrument is desired with connection to two outside lines and with or without a third line for local intercommunicating service. Outside calls can be originated, answered, or held while maintaining connection on another line.

Optional Feature

It is now possible to use the 1573-W Telephone as a three-line instrument with the Hold feature on all three lines.

The mechanism to provide this holding feature to the third (white button) line is contained in one plunger. A kit is available consisting of the aforementioned plunger, a resistor, which is wired to the plunger, and necessary hardware and instructions for mounting this kit. This arrangement provides the user with the same holding facility as are on the other two lines.

To hold a call on the third line, simply lift the button on the left hookswitch plunger. In resuming conversation on the third line, depress the button to its normal position.

There is no possibility of a call being left in a held condition because the line will be restored upon replacement of the handset.

Stock No.	Description
204785-023	Package assembly, gray
204785-034	Package assembly, black
	Contains the Following
202131-406	Plunger switch assembly, gray
202131-516	Plunger switch assembly, black

General Design

The 1573-W Telephone is an adaptation of the 1543-W Telephone, modified to provide line selection and hold keys. The handset and coil-capacitor unit are identical to those of the 1500-W Series Telephones. The standard housing and base have been slightly modified so that the entire switching mechanism can be mounted on the base-plate of the telephone. One line selecting and two hold keys extend through the front of the telephone housing. Two other buttons are mounted on the housing: the red button is a recall button used to signal an operator or regain access to dial central office equipment when one line is on hold. The white button is used to establish a path for intercommunication over line three.

The 1573-W Telephone may be used with either a dial or manual central office or PBX system. No ringers are provided inside the telephone. Signaling is provided by using the new 1561 Bell Box, or similar bell, chime or buzzer apparatus.

The Stromberg-Carlson 2-10 or 4-20 Dial System is available for connection to the third line when a selective signaling and secret conversation system is desired for intercommunication.

Color

All 1573-W Telephones are available in the same decorator colors as the 1543-W and 1553-W instruments.

ORDERING INFORMATION

Stock No.	Code No.	Description
218462-000	(1573-WA)	Manual (High Eff.)
218463-000	(1573-WA)	With DE-212 Dial (High Eff.)
218464-000	(G1573-WA)	Manual (High Eff.)
218465-000	(G1573-WA)	With DE-315 Dial (Gray) (High Eff.)



STROMBERG-CARLSON

THE 1575 SERIES MULTI-LINE TELEPHONE



1575 Multi-Line Telephone

The 1575 Series Multi-Line Telephone is the station equipment for use with the Stromberg-Carlson 6K and 6K-1 System. In this desk instrument, similar in size and general appearance to all the 1500 Series Telephones, is the equivalent of a small switch-board. Each subscriber, with or without assistance from an operator, can originate and receive calls on from one to five central office, PBX, intercommunicating, or private lines. The subscriber will also be able to hold calls on from one to five central office or PBX lines. In addition each user can, if the instrument is so

equipped, signal and talk over local or intercommunicating lines while holding central office calls. The user may then tell the called party that he should pick up the held incoming call, or obtain information from within the plant to relay back to the caller on the held outside line.

The many possibilities for the 1575 Series Telephones as a component of the 6K-1 System are described in more detail under Interior Systems in Section C of this catalog.

General Design

The 1575 Series Telephones may be used with either a manual or dial central office or PBX. Its general design is similar to the 1543 Standard Telephone and the 1573 Two-Line Telephone. Five line keys, each with its associated lamp for visual indication, are arranged across the front of the housing.

The No. 96 Terminal Box is part of the 1575 Series Telephones and provides convenient terminals for connection to the distribution cable.

The handset is the same as that used on the 1543 Telephone. The same dials that are available for the 1543 can be used with the 1575 telephones.

The six keys on the 1575 telephones can be arranged to furnish many combinations of service. The maximum number of lines to central office or PBX is five. When holding, intercommunication, or signaling keys are desired, the number of line keys are correspondingly reduced. This telephone replaces the cumbersome method of providing multi-line service with key boxes or push buttons with ordinary telephones.

Color

All 1575-WA1 and -WB1 Telephones are available in the same decorator colors as the 1543-W and the 1553-W instruments.



ORDERING INFORMATION

Stock No.	Code No.	Systems used by	Dial Uses	Description
211117-000	(1575-A)	6-K	None	Complete with 96-A terminal box
211118-000	(1575-A)	6-K	DE-210 Dial	Complete with 96-A terminal box
211120-000	(1575-A)	6-K	DE-212 Dial	Complete with 96-A terminal box
211143-000	(1575-B)	6-K	None	Complete with 96-B terminal box
211144-000	(1575-B)	6-K	DE-210 Dial	Complete with 96-B terminal box
211146-000	(1575-B)	6-K	DE-212 Dial	Complete with 96-B terminal box
218589-000	(G1575-WA1)	6-K-1	None	Complete with G96-C terminal box
218590-000	(G1575-WA1)	6-K-1	DE-315 Dial	Complete with G96-C terminal box
218591-000	(G1575-WB1)	6-K-1	None	Complete with G96-C terminal box
218592-000	(G1575-WB1)	6-K-1	DE-315 Dial	Complete with G96-C terminal box

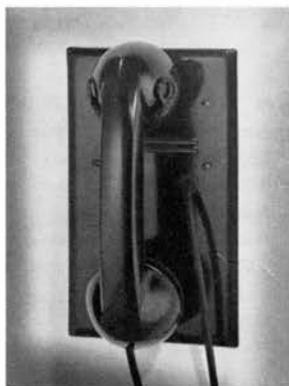
Revised 10-1-58

Suspended Type Telephones with Hookswitch Boxes

THE 1532, 1533, 1533-MK, AND 1534 TYPE SUSPENDED HANDSET TELEPHONES are convenient instruments where space is at a premium. The 1532 Telephone is designed and arranged for service as an extension and requires only two conductors for connection to its associated main line telephone. The main telephone bell serves as the signal for this instrument.



1532-M Telephone



1533-MK Telephone

The 1533 Telephone is a complete instrument that uses an A.C. buzzer to provide a signal. The 1534 Telephones are arranged to be used with standard desk set boxes and therefore do not have induction coil, capacitor or buzzer. The letter "M" affixed to the code number indicates telephone for manual operation. The plain code number, less suffix, denotes telephone arranged for dial.

MOUNTING—The 1532, 1533, and 1534 Telephones may be readily mounted on a side of a desk, on a column, or in a restricted wall space. Holes are drilled through the mounting bracket to permit these instruments to be mounted with the broad portion at the front or the narrow portion (as shown in the illustration). The dial may be turned to any convenient angle by loosening one screw under the dial mounting bracket.

SIGNAL—The 1533 Telephones are equipped with 1000 ohm buzzers that respond to straight line ringing current only. This is particularly desirable when there are a number of telephones in one office. The 1534 Telephones are arranged to be used with desk set boxes (1560) and therefore have no induction coil capacitor units or buzzers.

THE 1533-MK TELEPHONE makes a very neat and efficient wall installation, particularly useful for schools, hospitals, dormitories, and apartments. The 1533-MK Telephone is flush mounted on a wall, therefore these instruments should preferably be installed while building is being constructed in order to provide wiring and proper casing for the telephone. Only the handset and hook protrude from the wall. The rest of the telephone is behind the wall plate inside the wall. This telephone is equipped with an A.C. buzzer that responds to straight line ringing current only.

The 1533-MK Telephone can be mounted in any standard electrical outlet box with cover set in a wall. This telephone was designed to mount on a Steel City $4\frac{1}{16}$ " square outlet box No. 72171 $\frac{1}{2}$ or equivalent, with a Steel City $4\frac{1}{16}$ " cover No. 72-C-18 or equivalent.

STOCK and CODE NUMBERS

Dial Instruments

with Dial Mounting—Less Dial

Stock No.	Code No.	Description
210957-000	(1532)	For extension (less D.S. Box)
210959-000	(1533)	Complete Telephone with Buzzer
*210961-000	(1534)	Telephone, requires D.S. Box

Manual Instruments

210958-000	(1532-M)	For extension (less D.S. Box)
210960-000	(1533-M)	Complete Telephone with Buzzer
†210962-000	(1534-M)	Telephone, requires D.S. Box
210952-000	(1533-MK)	Flush mounted telephone

*Desk Set Box for Common Battery service is 1560.

†Desk Set Box for Magneto Service is 1268-W.

Hands-free Telephone

The "Hands-Free" Telephone is a new type of instrument that permits the user to initiate or receive calls without removing the handset from its cradle. This telephone is ideal for conferences, where a group of people sit around a table, for all can hear and take part in the conversation with the party on the other end of the line. It is possible for the user to leave his desk, go to a filing cabinet or other places within the room and still carry on a conversation.

The telephone instrument is the Stromberg-Carlson 1500 Series Telephone, gray in color, to which a sub-base and separate

microphone has been attached. This telephone can be used exactly as any other standard telephone. In addition, it may be utilized to provide two-way conversation even though the handset remains on the housing.

The sub-base contains controls that permit operation of the telephone as a loud speaking system. The left hand button is the "On" button. The one next to it is the "Off" button. A light indicates when the loud speaking system is in use. The "MCO" button cuts off the microphone. Volume is controlled by the knob on the right hand side.

To initiate a call, simply depress the "On" button, listen for the operator or dial tone, on the speaker, and either state the desired number or dial it — all without lifting the handset. To terminate a call, depress the "Off" button. If it is desired to cut down interfering noises or other conversations within the room, depress the "MCO" button which temporarily kills the microphone.

Volume level of the speaker is controlled by a volume control knob. The speaker and microphone are immediately cut off when the handset is lifted. To return to the speaker, depress the "On" button and replace the handset.

To install this telephone connect the line cord to a terminal box in the same way as a standard telephone. Connect power cord to any 110-volt A.C. outlet and connect microphone cord to a jack on the instrument.

Cat. No. 1583-A

Stock No. 895826

Gai-Phone

The Gai-Phone is a telephone subset designed expressly for use in high noise level areas. The instrument eliminates the need for noise-proof booths or other means of acoustic protection.

Installation and operation is simple. The instrument is connected to an existing telephone circuit and can be provided for either dial or manual operation; for desk or wall mounting. It is operated in the same manner as a standard telephone. A source of 110 v, 60 cycles AC is required for each instrument.

Sidetone can be varied from normal to below audibility. In areas of high noise level, the noise picked up on the transmitter and fed to the receiver can be eliminated or reduced to a comfortable level. This permits the user to hear clearly the voice signal coming into that area. A concealed control adjusts sidetone level at the time of installation.

The Gai-Phone provides control of incoming (receiver) volume level and outgoing (transmitter) level. This feature allows its use as a terminal repeater station on relatively long lines.

The electronic tubes used in this instrument have been chosen for their ruggedness and long life. The voltages at which the tubes operate are approximately 50% of the values normally used. This feature promotes long, trouble-free use.

The power used by the Gai-Phone is so low that it can be operated satisfactorily with a small D.C. inverter (the type normally used to operate an electric shaver from the cigarette lighter socket of an automobile). This feature, coupled with the instrument's built-in repeater characteristics, provides an ideal solution to temporary and other long line problems where reliable communication is difficult.



Catalog No.
100

Stock No.
895344

Description
Desk Type

To convert the desk type Gai-Phone to wall type, a wall mounting conversion assembly is available. Order Package Assembly Stock No. 212833-000.

STROMBERG-CARLSON

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MAGNETO TELEPHONES

In appearance, efficiency, adaptability and long life, Stromberg-Carlson Magneto Telephones offer everything you would expect from one of the industry's oldest, most experienced companies.

This modern Magneto series includes a self-contained desk type handset telephone (1248-W), a self-contained wall type handset telephone (1258-W), and a Magneto desk set box (1268-W).

The base assemblies of all three instruments are interchangeable for service economy.



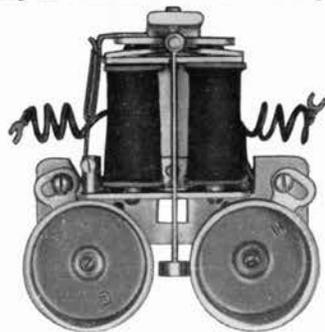
1248-W Handset Desk Telephone

THE 1248-W is a modern, self-contained desk type magneto telephone in a die-cast zinc housing which includes the handset cradle. A sub-base provides mounting space for the generator; in converting to common battery, this is removed. Four rubber feet grip any surface on which the telephone is placed.

The base plate is attached to the housing by screws which may be easily removed for inspection and testing of all component parts. Components are so designed and mounted on the base that it is an easy matter to change from magneto to common battery operation with either manual or dial service.

INDUCTION COIL AND CAPACITOR ASSEMBLY (200595-000) consists of a plastic housing in which the coil and capacitors are embedded in Mitchell Rand #3738. This design protects the apparatus from mechanical injury as well as excessive humidity.

THE NO. 61 and 65 RINGERS are specially designed for Magneto service with standard resistances of 2040, 3100 and 4850 ohms. Because the impedance of the No. 65 and the older type ringers is matched, resistances of 1600 ohms and 3100 ohms may be satisfactorily used on the same line. In the same way ringers of 2500 ohms and 4850 ohms may be used together. (See Ringers on later pages in this section.)



No. 61-A Ringer

THE HOOKSWITCH ASSEMBLY with twin contacts of precious metal, provides a reliable method of controlling the circuit.

THE NO. 23-R HANDSET presents an evenly balanced appearance. Capsule units are used for both receiver and transmitter;

long-wearing nylon braid increases cord life. Pressure spring contacts assure good transmission.

THE NO. 28 TRANSMITTER (210279-000) is a non-positional capsule type, affording high fidelity voice transmission.

THE CAPSULE RECEIVER (34230-000) unit has an equalized response frequency characteristic. Contact is made through pressure spring contacts when the earcap is tightened.

THE NO. 64 HAND GENERATOR using Alnico magnets, generates as much power as the older, more bulky types.

NON-INTERFERING PUSH BUTTON can be supplied on any magneto telephone when ordered. It is used for signaling the operator over one side of a metallic circuit and ground, without ringing the bells of the other telephones on the line.

SURE-RING CONDENSER. Standard equipment includes a 1.mf capacitor in the talking circuit making it possible to ring past telephones on party lines when a receiver is not on the hook.

MAGNETO TELEPHONE WITH STRAIGHT LINE BIASED RINGER. Stromberg-Carlson also offers the Magneto Telephones 1248-A, 1248-B, 1248-S. Four-party fully selective ringing is possible with the 1248-A; eight-party semi-selective ringing with the 1248-B; eight-ringers for semi-selective ringing with extensions if desired with the 1248-S.

1258-W WALL TYPE HANDSET TELEPHONE has a removable sub-base that houses the generator, ringer and coil-capacitor unit. The handset rests in a cradle that is part of the molded case.

EASY TO CONVERT. This wall set, like the 1248 desk telephone, can be changed from magneto to common battery service for either manual or dial operation. Thus these telephones become an investment for the future.



1258-W Wall Telephone

STROMBERG-CARLSON

STOCK AND CODE NUMBERS OF TELEPHONES

1248-W Handset Desk Type

Telephone		Ringer		
Straight Line				
Stock No.	Code	Stock No.	Code	Resistance
201804-000	(1248-WI)	201754-000	(65-C)	3100 Ohms
201805-000	(1248-WL)	201755-000	(65-F)	4850 Ohms
*201806-000	(1248-WIP)	201754-000	(65-C)	3100 Ohms
*201807-000	(1248-WLP)	201755-000	(65-F)	4850 Ohms
Straight Line Biased				
203071-000	(1248-WA)	801911-000	(61-A)	2040 Ohms
203035-000	(1248-WB)	202880-000	(65-B)	3100 Ohms
203069-000	(1248-WS)	801912-000	(61-S)	4850 Ohms

1258-W Handset Wall Type

Telephone		Ringer		
Straight Line				
Stock No.	Code	Stock No.	Code	Resistance
201808-000	(1258-WI)	201754-000	(65-C)	3100 Ohms
201809-000	(1258-WL)	201755-000	(65-F)	4850 Ohms
*201810-000	(1258-WIP)	201754-000	(65-C)	3100 Ohms
*201811-000	(1258-WLP)	201755-000	(65-F)	4850 Ohms
Straight Line Biased				
209279-000	(1258-WA)	801911-000	(61-A)	2040 Ohms
209280-000	(1258-WB)	202880-000	(65-B)	3100 Ohms
209281-000	(1258-WS)	801912-000	(61-S)	4850 Ohms

*The letter "P" indicates Stock No. 49299-000 Push Button mounted on Dial Blank. All 1248-W and 1258-W Telephones are equipped with Sure-Ring Condensers (1.mf) in the talking circuit.

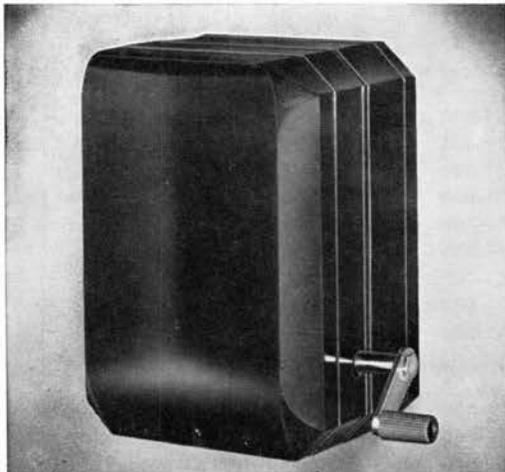
Dimensions:

1248-W	7 1/4" high with handset in cradle, 5 3/4" x 8 1/8" base
1258-W	8 3/4" high with handset in cradle, 5 3/4" x 8 1/8" base

Weight:

1248-W	Net 10 lbs. Packed for domestic shipment 13 lbs.
1258-W	Net 8 lbs. Packed for domestic shipment 11 lbs.

1268-W Magneto Desk Set Box



1268-W Desk Set Box

The 1268-W Desk Set Box is a companion set of the 1248-W and 1258-W Handset Telephones. It may be used with the 1544 Desk Type or 1534-M Suspended Handset Telephone to make a two-piece set.

The base plates of the 1268-W Desk Set Box and the 1248 and 1258 Telephones are interchangeable and the same ringer, generator, and sealed coil-capacitor unit are used, together with identical parts for mounting this apparatus.

All No. 1268-W Desk Set Boxes are equipped, in the talking circuit, with a 1.mf sure-ring capacitor which is part of the coil-capacitor unit.

Optional Feature

Stock No. 49299-000 Push Button is furnished when the letter "P" is added to the code number. Its use should be confined to full metallic (two-wire) lines. With this feature it is possible to signal the operator without ringing other bells on the line.

STOCK and CODE NUMBERS

Desk Set Box		Ringer		
Stock No.	Code	Stock No.	Code	Resist. Ohms
201812-000	(1268-WI)	201754-000	(65-C)	3100
201813-000	(1268-WL)	201755-000	(65-F)	4850
*201814-000	(1268-WIP)	201754-000	(65-C)	3100
*201815-000	(1268-WLP)	201755-000	(65-F)	4850

*Desk Set Boxes with suffix letter "P" are equipped with Stock No. 49299-000 Non-Interfering Push Button.

Telephones for Two-Piece Sets

The 1544 Handset Telephone is ideally suited for magneto service when used with the 1268 Desk Set Box. The 1544 Telephone can readily and economically be converted to common battery service at a later date, if desired. Parts and ordering information for the 1544 Telephone will be found with the complete description of the 1544 Telephones on a previous page.

The 1544-B Telephone may be used with older type desk set boxes that do not contain an induction coil, such as the No. 327. The 1544-B Telephone is similar in all respects to the 1544 except that a No. 46-B induction coil has been included.

The 1534-M Suspended Type Telephone can also be adapted to magneto service when used with the 1268 Desk Set Box. Parts and ordering information for suspended type sets may be found with the general description of the 1532, 1533, 1534 and 1533-MK Telephones on a previous page.

Handset Telephone		Used With
Stock No.	Code	Desk Set Box
211749-000	(1544)	No. 1268
211750-000	(1544-B)	No. 327

Revised 10-1-58

IRONCLAD WEATHERPROOF TELEPHONES

THE STROMBERG-CARLSON IRONCLAD TELEPHONE is moisture proof, concussion proof, and weatherproof, built especially for use out-of-doors or in underground localities which require extra high insulation and dependable service. This telephone is available in Common Battery or Magneto models.

Dials can be mounted on the 950 Ironclad Telephone set. Space is provided on the inner door for dials of the type DE-207, 208, and 209 (small dials). Inner door Stock No. 207659-000 is planned for dial, either presently equipped with dial or prepared for future installation. Parts for the dial will be found under "Dials" elsewhere in this section.

THE CASE is of heavy cast-iron, provided with outer door, inner door, and gong hood. All parts are heavily coated with rust resisting paint.

When these telephones are to be locked so that only designated persons may use them, the 11563-000 Plunger Lock may be replaced with a No. 8468-000 Key Snap Lock installed at factory.

THE OUTER DOOR is equipped with a rubber gasket and compression lever catch, arranged for either key or plunger type lock. Opening the outer door permits the use of the instrument for either signalling or talking.

THE INNER DOOR is hinged for opening during repairs, and is held securely closed by machine screws and a felt gasket. The inner door mounts the transmitter and receiver.

THE TRANSMITTER is a capsule unit, similar to those used in handset telephones, with a black, phenol compound mouthpiece.

THE RECEIVER consists of an outside plastic receiver shell and earcap and a capsule type receiver unit. The capsule may be changed by removing the earcap. A cord take-up device prevents the receiver cord being caught when the outer door is closed, following a conversation.

RINGER is equipped with loud, clear toned gongs concealed beneath the gong hood. The ringer, clapper rod, and armature are operated by magnetic induction through a tight brass plate. This design permits mounting the ringer coils in a protected position behind the inner door, entirely free from fumes and moisture.

THE HOOKSWITCH is of pressure, plunger construction, positive in operation and not dependent on gravity.

TERMINAL BOX is mounted on the under side of the telephone, containing two line terminals and a ground terminal, which pass through watertight bushings to the interior of the telephone so that it is unnecessary to open the instrument when making connections. Entrance hole is threaded for 1/2" conduit.

Parts common to the 950-C and 890-I and L Telephones

Hookswitch

Stock No.	Description
10818-000	Switch Hook Assembly only
8457-000	Spring Assembly
8465-000	Plunger
505303-000	Screws (2) (Mounting Hook on Door)

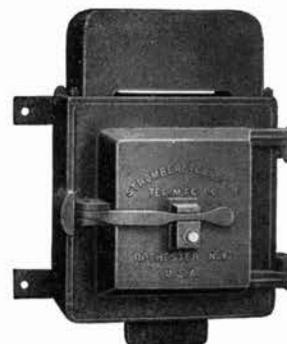
Receiver

Stock No.	Description
*801595-000	Receiver (30-B) and Cord

Parts for above

33179-000	Receiver shell
32864-000	Earcap
34230-000	Receiver
800627-000	Cord (M-2-1)

*The former No. 27-B Receiver is replaced by the No. 30-B receiver which is replaceable as a unit, but the parts are not.



No. 950-BY Ironclad Telephone

Transmitter

*209624-000	Transmitter Assembly, including
205784-000	Transmitter
209623-000	Mouthpiece
25608-000	Insulation
25892-000	Spring Clamp
209631-000	Gasket Assembly
15577-000	Terminal (3)
503500-000	Screw (3)

*Note: Telephones manufactured before 1/21/53 cannot use the Stock No. 209624-000 transmitter assembly. Instead order Stock No. 35434-000.

Replacement Parts for the 950-C Telephone Only

Stock No.	Code	Description
801825-000	(35-A)	Ringer-less gongs (1000 ohms)
12271-000		Coil (2)—500 ohms (For 801825 Ringer)
207658-000		Box Assembly
8871-000		Induction Coil and Condenser Assembly
16321-000		Adapter (Dial) (Order with dial)
13870-000		Blank (Dial)
525200-000		Nuts (2) Dial Blank
503620-000		Terminal Screw
29961-000		Terminal Block

Replacement Parts for the 890-I and -L Telephone

Stock No.	Code	Description
801826-000	(35-B)	Ringer-less gongs (1600 ohms)
801827-000	(35-E)	Ringer-less gongs (2500 ohms)
12272-000		Coil (2) —800 ohms
12273-000		Coil (2) —1250 ohms
8416-000		Box Assembly
8636-000		Induction Coil (Mounted)
800424-000		Induction Coil (only)
800526-000		1/2 MF Condenser (Receiver circuit)
201678-000	(64)	Generator

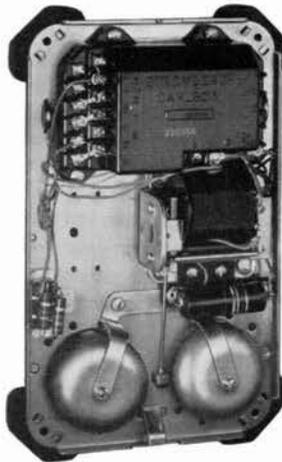
For other parts see Generator in Coded Parts Section.

Parts for Replacing the No. 62-A Generator with the No. 64 Generator

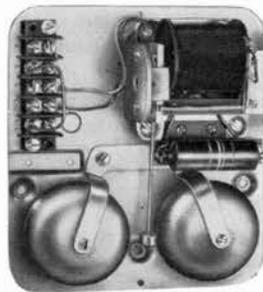
Stock No.	Description
208830-000	Generator Assembly (Mounting) (Includes No. 64 Generator, one 208832-000 Block, and four 508052-000 screws)
208834-000	Package Assembly (Includes two 512700-000 screws, one 204859-000 Crank Assembly, one 207595-000 Gland, one 207596-000 Gland, one 207601-000 washer, two 504052-000 screws and Instruction Sheet 208836-000)

#74-A Ringer from fairfax mo

DESK SET BOX AND RINGERS



1560 Desk Set Box



1561 Bell Box

1560 Desk Set Box

This desk set box is used in combination with the 1544 Telephone or earlier models to make a two-piece set. All components are mounted on the base, which can be fastened to a wall. The trim black cover is then attached, using tapped holes in the base plate. The over-all size is 9 1/8" high, 5 3/4" wide, with a 2 7/8" projection from mounting surface. Choice of straight line or tuned frequency ringers are available for the desk set box. With the exception of the parts listed below, all others are the same as those shown for the 1543 telephone.

Parts designed for use with 1560 Desk Set Box

Stock No.	Description
208589-000	Bell Box Housing Assembly
208614-000	Base
209218-000	Bracket (Tube)
32955-000	Grommet
505172-000	#8-32X 3/16" B.H.I.M. Screw

1561 Extension Bell Box

This bell box is used as an extension ringer or signal, employing either a straight line or tuned frequency ringer, or a buzzer. The over-all dimensions have purposely been kept small: approximately 6" high, 5 1/2" wide and projecting 2 3/8" from mounting surface. Commonly used with the 1573 or 1575 Telephone, the 1561 Extension Bell Box provides a completely satisfactory method of signaling on dual or multi-line systems. As with the 1560 Desk Set Box, many parts used in the 1561 Extension Bell Box are identical with those used in the 1543 Telephone.

The extension bell box may be equipped with a Hi and a Lo Gong, both Hi Gongs, or both Lo Gongs. This arrangement makes it easier for all parties to distinguish which line is being signaled.

Parts designed for use with 1561 Extension Ringer

Stock No.	Description
210244-000	Bell Box Housing Assembly
210378-000	Base Assembly
* 45304-000	Buzzer (2A)
* 34917-000	Capacitor (1.85 MF)
37204-000	Terminal Strip
44161-000	T-1-E Cord Assembly (3")
* 44163-000	T-1-E Cord Assembly (4")
†210916-000	Bracket (W.E. 426-A)
§210917-000	Bracket (W.E. 333-A)
‡149402-000	Resistor, 1 watt, 10,000 ohms

*Used on 1561-C only

†Used on 1561-BT3 only

§Used on 1561-BT only

‡Used only when 74-A Ringer is specified.

ORDERING INFORMATION

Desk Set Box		Ringer		Extension Bell Box		Desk Set Box		Ringer	
Stock No.	Code No.	Code	Freq.	Stock No.	Code No.	Stock No.	Code No.	Code	Freq.
210883-000	(1560)	None		209959-000	(1561)	214510-000	(G1561)	None	None
210897-000	(1560-A)	(74-A)	SL	209973-000	(1561-A)	214511-000	(G1561-I)	(73-I)	20
210885-000	(1560-E)	(73-E)	16 2/3	209961-000	(1561-E)	214512-000	(G1561-E)	(73-E)	16 2/3
210890-000	(1560-N)	(73-N)	25	209966-000	(1561-N)	214513-000	(G1561-F)	(73-F)	33 1/2
210886-000	(1560-F)	(73-F)	33 1/2	209962-000	(1561-F)	214514-000	(G1561-G)	(73-G)	50
210887-000	(1560-G)	(73-G)	50	209963-000	(1561-G)	214515-000	(G1561-J)	(73-J)	60
210889-000	(1560-H)	(73-H)	66 2/3	209965-000	(1561-H)	214516-000	(G1561-H)	(73-H)	66 2/3
210895-000	(1560-R)	(73-R)	16	209971-000	(1561-R)	214517-000	(G1561-N)	(73-N)	25
210891-000	(1560-K)	(73-K)	30	209967-000	(1561-K)	214518-000	(G1561-K)	(73-K)	30
210892-000	(1560-L)	(73-L)	42	209968-000	(1561-L)	214519-000	(G1561-L)	(73-L)	42
210893-000	(1560-M)	(73-M)	54	209969-000	(1561-M)	214520-000	(G1561-M)	(73-M)	54
210894-000	(1560-P)	(73-P)	66	209970-000	(1561-P)	214521-000	(G1561-P)	(73-P)	66
210884-000	(1560-I)	(73-I)	20	209960-000	(1561-I)	214522-000	(G1561-R)	(73-R)	16
210896-000	(1560-Q)	(73-Q)	40	209972-000	(1561-Q)	214523-000	(G1561-Q)	(73-Q)	40
210888-000	(1560-J)	(73-J)	60	209964-000	(1561-J)	214524-000	(G1561-A)	(74-A)	SL
		(74-A)	SL	210900-000	(1561-AH)	214526-000	(G1561-AH)	(74-A)	SL
		(High Gongs)						(High Gongs)	
		(74-A)	SL	210901-000	(1561-AL)	214527-000	(G1561-AL)	(71-A)	SL
		(Low Gongs)						(Low Gongs)	
		(2-A Buzzer)		210923-000	(1561-C)	214528-000	(G1561-C)	(2-A Buzzer)	
						214529-000	(G1561-BT3)	(71-B)	SL

Revised 7-15-57

1573 TWO-LINE TELEPHONE



1573-A Two-Line Telephone

The Stromberg-Carlson 1573 Telephone is a two-line telephone equipped with a holding feature on both of its lines. The same telephone instrument provides intercommunication or local PX service over a third line. This telephone will be useful in all applications where a single instrument is desired with connection to two outside lines and with or without a third line for local intercommunicating service. Outside calls can be originated, answered, or held while maintaining connection on another line.

General Design

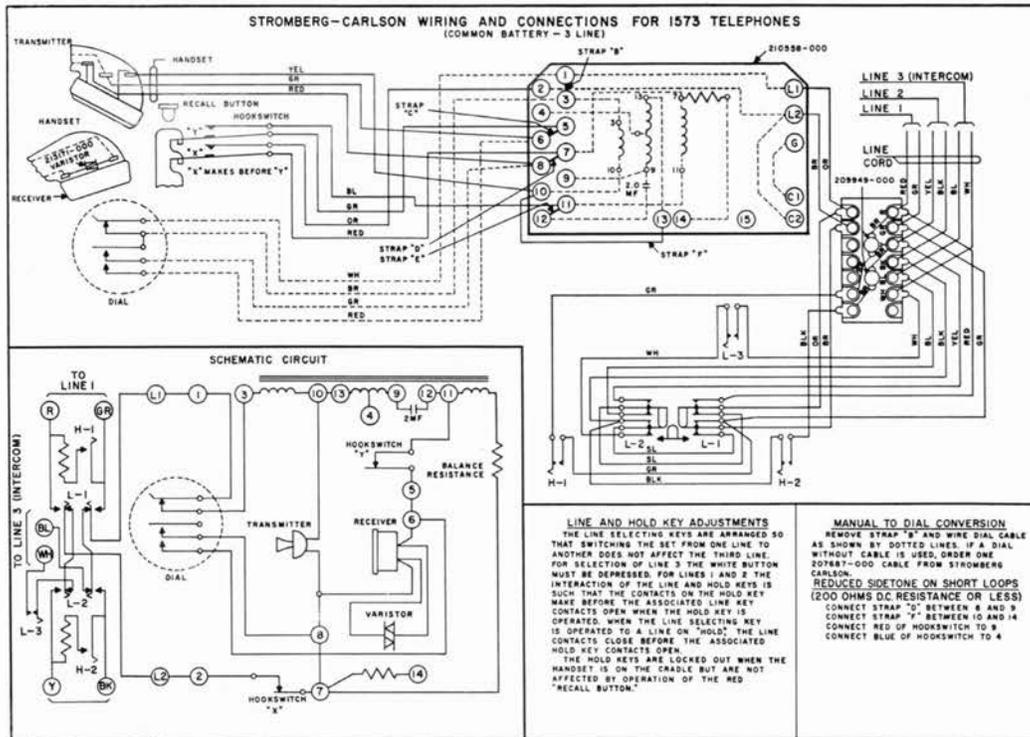
The 1573 Telephone is an adaptation of the 1543 Telephone, modified to provide line selection and hold keys. The handset and coil-capacitor unit are identical to those of the 1500 Series Telephones. The standard housing and base have been slightly modified so that the entire switching mechanism can be mounted on the base-plate of the telephone. One line selecting and two hold keys extend through the front of the telephone housing. Two other buttons are mounted on the housing: the red button is a recall button used to signal an operator or regain access to dial central office equipment when one line is on hold. The white button is used to establish a path for intercommunication over line three.

The 1573 Telephone may be used with either a dial or manual central office or PBX system. No ringers are provided inside the telephone. Signaling is provided by using the new 1561 Bell Box, or similar bell, chime or buzzer apparatus.

The Stromberg-Carlson 2-10 or 4-20 Dial System is available for connection to the third line when a selective signaling and secret conversation system is desired for intercommunication.

ORDERING INFORMATION

Stock No.	Code No.	Description
216531-000	(1573-A)	Manual
216532-000	(1573-A)	With DE-210 Dial
216533-000	(1573-A)	With DE-212 Dial
218462-000	(1573-WA)	Manual (High Eff.)
218463-000	(1573-WA)	With DE-212 Dial (High Eff.)
216529-000	(G1573-A)	Manual
216530-000	(G1573-A)	With DE-315 Dial (Gray)
218464-000	(G1573-WA)	Manual (High Eff.)
218465-000	(G1573-WA)	With DE-315 Dial (Gray) (High Eff.)



STROMBERG-CARLSON

**Parts List For 1573 Telephones
Telephone Assembly**

Stock No.	Part Name	Telephone Used On
209712-000	Base	1573-A, 1573-WA, G1573-A, G1573-WA
214190-000	Housing	G1573-A, G1573-WA
209731-000	Housing	1573-A, 1573-WA
209720-000	Knob Assembly (Line Selector Key)	1573-A, 1573-WA
214186-000	Knob Assembly (Line Selector Key)	G1573-A, G1573-WA
209721-000	Knob Assembly (Hold Key)	1573-A, 1573-WA
214188-000	Knob Assembly (Hold Key)	G1573-A, G1573-WA
210334-000	Card	1573-A, 1573-WA, G1573-A, G1573-WA
214208-000	Nut	1573-A, 1573-WA, G1573-A, G1573-WA
214207-000	Designation Holder	1573-A, 1573-WA, G1573-A, G1573-WA
210558-000	Coil Capacitor Assembly	1573-A, G1573-A
210640-000	Coil Capacitor Assembly	1573-WA, G1573-WA
213090-000	DE-210 Dial	1573-A
213092-000	DE-212 Dial	1573-A, 1573-WA
212862-000	DE-315 Dial (grey)	G1573-A, G1573-WA
208137-000	Dial Blank Assembly (black)	1573-A, 1573-WA
212450-000	Dial Blank Assembly (grey)	G1573-A, G1573-WA
208122-000	Adapter, Dial Blank (black)	1573-A, 1573-WA
212448-000	Adapter, Dial Blank (grey)	G1573-A, G1573-WA
216536-000	Hookswitch Assembly (black)	1573-A, 1573-WA
217064-000	Hookswitch Assembly (grey)	G1573-A, G1573-WA
213980-000	Key Assembly	1573-A, 1573-WA, G1573-A, G1573-WA
209744-000	Lens	1573-A, 1573-WA, G1573-A, G1573-WA
209956-000	Designation	1573-A, 1573-WA, G1573-A, G1573-WA
207687-000	Cable (dial) 4 cond.	1573-A, 1573-WA, G1573-A, G1573-WA
209952-000	Cord (WDN-6G)	1573-A, 1573-WA
213921-000	Cord (WDN-6GG)	G1573-A, G1573-WA

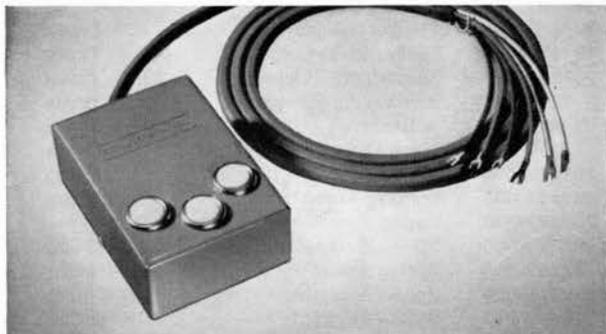
Hookswitch Assembly

Stock No.	Part Name
207670-000	Clamp Plate
207672-000	Bracket, Mounting
208552-000	Spring Assembly
208071-000	Spring Assembly
32957-000	Stiffener
13820-000	Insulation
207753-000	Bushing
207704-000	Pusher
208492-000	Hi-Tensile Screws
209709-000	Dust Cover
211121-000	Plunger (black)
212118-000	Plunger (grey)
211153-000	Plunger Retaining Spring

Key Assembly

Stock No.	Part Name
209725-000	Lever Assembly (Left Hand)
209726-000	Lever Assembly (Right Hand)
209687-000	Lever (Center)
209691-000	Cam
209696-000	Shaft
209684-000	Terminal Board Assembly
209723-000	Spring Assembly
209949-000	Resistor Assembly
209697-000	Spring (Plate)
209698-000	Spring (Lock)
209727-000	Spring Assembly (Contact)
209728-000	Spring Assembly (Contact Pusher)
12656-000	Spring Plate
213951-000	Lever
209735-000	Lever, Trip
209724-000	Spring Assembly
213952-000	Cam

**Button and Buzzer Assembly
(Accessory Equipment for use with
1573 Telephones)**



A button and buzzer assembly is available for use in inter-office signaling, so that one party on a line may signal another party on the same line. There are three standard button and buzzer assemblies. The first is equipped with one button and two blank caps, the second is equipped with two buttons and one blank cap, and the third with three buttons. One assembly can be converted to the other by substituting buttons in place of caps, or vice versa, and rewiring slightly.

Stock No.	Name	Stock No.	Name
211194-000	3 Button Assembly	213502-000	Base
211193-000	2 Buttons and 1 Cap Assembly	45304-000	Buzzer
211041-000	1 Button and 2 Caps Assembly	200387-000	Push Button
		126042-000	Cap
213501-000	Cover	205106-000	Terminal Block Assembly

THE 1575 SERIES MULTI-LINE TELEPHONE



1575 Multi-Line Telephone

The 1575 Series Multi-Line Telephone is the station equipment for use with the Stromberg-Carlson 6K and 6K-1 System. In this desk instrument, similar in size and general appearance to all the 1500 Series Telephones, is the equivalent of a small switchboard. Each subscriber, with or without assistance from an operator, can originate and receive calls on from one to five central office, PBX, intercommunicating, or private lines. The subscriber will also be able to hold calls on from one to five central office or PBX lines. In addition each user can, if the instrument is so equipped, signal and talk over local or intercommunicating lines while holding central office calls. The user may then tell the called party that he should pick up the held incoming call, or obtain information from within the plant to relay back to the caller on the held outside line.

The many possibilities for the 1575 Series Telephones as a component of the 6K-1 System are described in more detail under Interior Systems in Section C of this catalog.

General Design

The 1575 Series Telephones may be used with either a manual or dial central office or PBX. Its general design is similar to the 1543 Standard Telephone and the 1573 Two-Line Telephone. Five line keys, each with its associated lamp for visual indication, are arranged across the front of the housing.

The No. 96 Terminal Box is part of the 1575 Series Telephones and provides convenient terminals for connection to the distribution cable.

The handset is the same as that used on the 1543 Telephone. The same dials that are available for the 1543 can be used with the 1575 telephones.

The six keys on the 1575 telephones can be arranged to furnish many combinations of service. The maximum number of lines to central office or PBX is five. When holding, intercommunication, or signaling keys are desired, the number of line keys are correspondingly reduced. This telephone replaces the cumbersome method of providing multi-line service with key boxes or push buttons with ordinary telephones.

Parts List for 1575 Series Multi-Line Telephones Telephone Assembly

Stock No.	Part Name	Telephones Used On
209712-000	Base	All
209944-000	Housing (Blk)	-A and -B
214193-000	Housing (Gy)	G-A1, -B1, -WA1, -WB1
208122-000	Adapter, dial blank (Blk)	-A and -B
212448-000	Adapter, dial blank (Gy)	G-A1, -B1, -WA1, -WB1
207673-000	Dial Bracket	All
208137-000	Dial Blank Assem. (Blk)	-A and -B
212450-000	Dial Blank Assem. (Gy)	G-A1, -B1, -WA1, -WB1
207677-000	Gasket Assembly	All
211155-000	Coil Capacitor Assem.	-A, -B, G-A1, and -B1
218498-000	Coil Capacitor Assem.	G-WA1 and -WB1
209721-000	Knob Assembly (Black)	-A and -B
214188-000	Knob Assembly (Gray)	G-A1, -B1, -WA1, -WB1
209744-000	Lens	All
209956-000	Designation (Hold)	All
211106-000	Designation (Signal)	-B, G-B1, and -WB1
211107-000	Designation (Blank)	All
211130-000	Designation (Intercom)	All
213983-000	Key Assembly	-A
213984-000	Key Assembly	-B
216661-000	Key Assembly	G-A1 and -WA1
216662-000	Key Assembly	G-B1 and -WB1
211859-000	Sleeve, lamp	All
211108-000	Lamp	All
209713-000	Deflector, lamp	All
213092-000	Dial (DE-212)	-A and -B
213094-000	Dial (DE-315)	G-A1, -B1, -WA1, -WB1
207687-000	Dial Cable	All
203052-000	Clamp, dial cable	All
213240-000	Handset (26H)	-A and -B
216747-000	Handset (26J)	G-A1, and -B1
213767-000	Handset (27D)	G-WA1 and -WB1
210730-000	Terminal Box (96-A)	-A
211156-000	Terminal Box (96-B)	-B
216608-000	Terminal Box (G96-C)	G-A1, -B1, -WA1, -WB1
211211-000	Cord (WDN-36A)	-A and -B
213920-000	Cord (WDN-36AG)	G-A1, -B1, -WA1, -WB1
214055-000	Hookswitch Assem. (Blk)	-A and -B
217065-000	Hookswitch Assem. (Gy)	G-A1, -B1, -WA1, -WB1

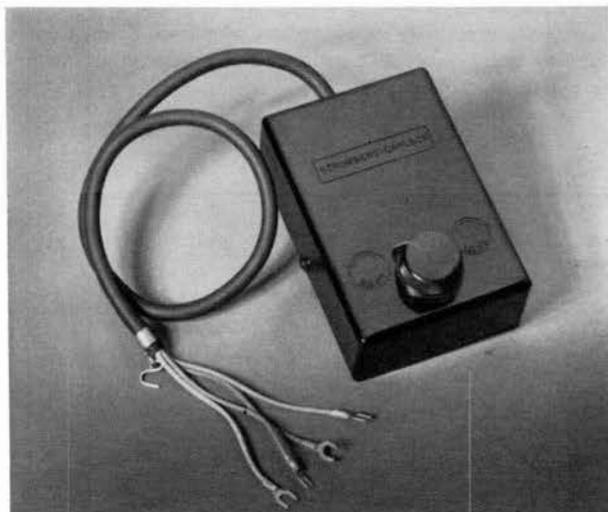
Hookswitch Assemblies

Stock No.	Description	Hookswitch Assem. Used On
209772-000	Clamp Plate	214055-000
216685-000	Clamp Plate	217065-000
211121-000	Plunger (Black)	214055-000
212118-000	Plunger (Gray)	217065-000
211153-000	Plunger Retaining Spring	Both Types
207681-000	Restoring Spring	Both Types
207672-000	Bracket (Hookswitch)	Both Types
207674-000	Lever (Hookswitch)	Both Types
207679-000	Bearing Pin (Hookswitch)	Both Types
211152-000	Bearing Pin (Plungers)	Both Types
32957-000	Stiffener	Both Types
13820-000	Insulation	Both Types
207704-000	Pusher	Both Types
208552-000	Spring Assembly	Both Types
208071-000	Spring Assembly	Both Types
209773-000	Spring Assembly	217065-000
28248-000	Spring Assembly	214055-000
211111-000	Spring Assembly	214055-000
216682-000	Spring Assembly	217065-000
201703-000	Terminal	Both Types

The 1575 Series Multi-Line Telephone (Cont.)

ORDERING INFORMATION			
Stock No.	Code No.	Dial Uses	Description
211117-000	(1575-A)	None	Complete with 96-A terminal box
211118-000	(1575-A)	DE-210 Dial	Complete with 96-A terminal box
211120-000	(1575-A)	DE-212 Dial	Complete with 96-A terminal box
211143-000	(1575-B)	None	Complete with 96-B terminal box
211144-000	(1575-B)	DE-210 Dial	Complete with 96-B terminal box
211146-000	(1575-B)	DE-212 Dial	Complete with 96-B terminal box
216854-000	(G1575-A1)	None	Complete with G96-C terminal box
216855-000	(G1575-A1)	DE-315 Dial	Complete with G96-C terminal box
216856-000	(G1575-B1)	None	Complete with G96-C terminal box
216857-000	(G1575-B1)	DE-315 Dial	Complete with G96-C terminal box
218589-000	(G1575-WA1)	None	Complete with G96-C terminal box
218590-000	(G1575-WA1)	DE-315 Dial	Complete with G96-C terminal box
218591-000	(G1575-WB1)	None	Complete with G96-C terminal box
218592-000	(G1575-WB1)	DE-315 Dial	Complete with G96-C terminal box

RECEIVER-AMPLIFIER
(RA-1000)



Stromberg-Carlson offers the new RA-1000 Receiver Amplifier to improve telephone service for the hard-of-hearing and to boost voice signal strength in noisy areas or on conference hook-ups. All the advantages of precision design, transistorization and printed circuitry have been incorporated into this unit.

Because it is transistorized, the RA-1000 rarely needs maintenance. Its small power demands are easily met by your central office battery. This makes modification of central office equipment unnecessary.

Its simple 4-wire cable makes the RA-1000 Receiver-Amplifier quick and easy to install.

The RA-1000 is equipped with a volume control which permits the user to adjust the listening levels to his own preference, taking into account the different levels of speech transmission. The quality of amplified speech is extremely high. The range over which the unit's output level can be varied is sufficient to provide this high quality reception for all individual require-

ments. When the volume indicator is adjusted to its lowest point, the output level is the same as the requirement for standard telephone hearing levels.

Features

- Use: With any standard telephone.
- Power Source: Central office battery or local battery.
- Variable Output Level: Standard telephone (0 db) to +16 db (depending upon line condition).
- Frequency Response: 300 to 3600.
- Percent Distortion: 3 to 8% (depending upon volume level).
- Size: 2 3/4" wide; 4" long; 1 1/4" high.
- Color: Black.
- Mounting: Desk or wall.

Stock No.	Code	Description
897161	(RA-1000)	Receiver-Amplifier

STROMBERG-CARLSON

Revised 7-15-57

HANDS-FREE TELEPHONE



The "Hands-Free" Telephone is a new type of instrument that permits the user to initiate or receive calls without removing the handset from its cradle. This telephone is ideal for conferences, where a group of people sit around a table, for all can hear and take part in the conversation with the party on the other end of the line. It is possible for the user to leave his desk, go to a filing cabinet or other places within the room and still carry on a conversation.

The telephone instrument is the Stromberg-Carlson 1500 Series Telephone, gray in color, to which a sub-base and separate

microphone has been attached. This telephone can be used exactly as any other standard telephone. In addition, it may be utilized to provide two-way conversation even though the handset remains on the housing.

The sub-base contains controls that permit operation of the telephone as a loud speaking system. The left hand button is the "On" button. The one next to it is the "Off" button. A light indicates when the loud speaking system is in use. The "MCO" button cuts off the microphone. Volume is controlled by the knob on the right hand side.

To initiate a call, simply depress the "On" button, listen for the operator or dial tone, on the speaker, and either state the desired number or dial it — all without lifting the handset. To terminate a call, depress the "Off" button. If it is desired to cut down interfering noises or other conversations within the room, depress the "MCO" button which temporarily kills the microphone.

Volume level of the speaker is controlled by a volume control knob. The speaker and microphone are immediately cut off when the handset is lifted. To return to the speaker, depress the "On" button and replace the handset.

To install this telephone connect the line cord to a terminal box in the same way as a standard telephone. Connect power cord to any 110-volt A.C. outlet and connect microphone cord to a jack on the instrument.

Cat. No. 1583-A

Stock No. 895826

GAI-PHONE

The Gai-Phone is a telephone subset designed expressly for use in high noise level areas. The instrument eliminates the need for noise-proof booths or other means of acoustic protection.

Installation and operation is simple. The instrument is connected to an existing telephone circuit and can be provided for either dial or manual operation; for desk or wall mounting. It is operated in the same manner as a standard telephone. A source of 110 v, 60 cycles AC is required for each instrument.

Sidetone can be varied from normal to below audibility. In areas of high noise level, the noise picked up on the transmitter and fed to the receiver can be eliminated or reduced to a comfortable level. This permits the user to hear clearly the voice signal coming into that area. A concealed control adjusts sidetone level at the time of installation.

The Gai-Phone provides control of incoming (receiver) volume level and outgoing (transmitter) level. This feature allows its use as a terminal repeater station on relatively long lines.

The electronic tubes used in this instrument have been chosen for their ruggedness and long life. The voltages at which the tubes operate are approximately 50% of the values normally used. This feature promotes long, trouble-free use.

The power used by the Gai-Phone is so low that it can be operated satisfactorily with a small D.C. inverter (the type normally used to operate an electric shaver from the cigarette lighter socket of an automobile). This feature, coupled with the instrument's built-in repeater characteristics, provides an ideal solution to temporary and other long line problems where reliable communication is difficult.



Catalog No.
100

Stock No.
895344

Description
Desk Type

To convert the desk type Gai-Phone to wall type, a wall mounting conversion assembly is available. Order Package Assembly Stock No. 212833-000.

STROMBERG-CARLSON

MAGNETO TELEPHONES

In appearance, efficiency, adaptability and long life, Stromberg-Carlson Magneto Telephones offer everything you would expect from one of the industry's oldest, most experienced companies.

This modern Magneto series includes a self-contained desk type handset telephone (1248-W), a self-contained wall type handset telephone (1258-W), and a Magneto desk set box (1268-W).

The base assemblies of all three instruments are interchangeable for service economy.



1248-W Handset Desk Telephone

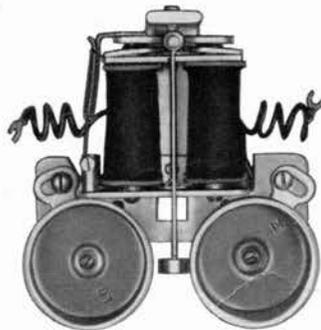
THE 1248-W is a modern, self-contained desk type magneto telephone in a die-cast zinc housing which includes the handset cradle. A sub-base provides mounting space for the generator; in converting to common battery, this is removed. Four rubber feet grip any surface on which the telephone is placed.

The base plate is attached to the housing by screws which may be easily removed for inspection and testing of all component parts. Components are so designed and mounted on the base that it is an easy matter to change from magneto to common battery operation with either manual or dial service.

INDUCTION COIL AND CAPACITOR ASSEMBLY (200595-000) consists of a plastic housing in which the coil and capacitors are embedded in Mitchell Rand #3738. This design protects the apparatus from mechanical injury as well as excessive humidity.

THE NO. 61 and 65 RINGERS are specially designed for Magneto service with standard resistances of 2040, 3100 and 4850 ohms. Because the impedance of the No. 65 and the older type ringers is matched, resistances of 1600 ohms and 3100 ohms may be satisfactorily used on the same line. In the same way ringers of 2500 ohms and 4850 ohms may be used together. (See Ringers on later pages in this section.)

THE HOOKSWITCH ASSEMBLY with twin contacts of precious metal, provides a reliable method of controlling the circuit.



No. 61-A Ringer

THE NO. 23-R HANDSET presents an evenly balanced appearance. Capsule units are used for both receiver and transmitter; long-wearing nylon braid increases cord life. Pressure spring contacts assure good transmission.

THE NO. 28 TRANSMITTER (210279-000) is a non-positional capsule type, affording high fidelity voice transmission.

THE CAPSULE RECEIVER (34230-000) unit has an equalized response frequency characteristic. Contact is made through pressure spring contacts when the earcap is tightened.

THE NO. 64 HAND GENERATOR using Alnico magnets, generates as much power as the older, more bulky types.

NON-INTERFERING PUSH BUTTON can be supplied on any magneto telephone when ordered. It is used for signaling the operator over one side of a metallic circuit and ground, without ringing the bells of the other telephones on the line.

SURE-RING CONDENSER. Standard equipment includes a 1.mf capacitor in the talking circuit which makes it possible to ring past telephones on party lines when a receiver is not on the hook.

MAGNETO TELEPHONE WITH STRAIGHT LINE BIASED RINGER. Stromberg-Carlson also offers the Magneto Telephones 1248-A, 1248-B, 1248-S. Four-party fully selective ringing is possible with the 1248-A; eight-party semi-selective ringing with the 1248-B; eight-ringers for semi-selective ringing with extensions if desired with the 1248-S.



1258-W Wall Telephone

STROMBERG-CARLSON

Revised 7-15-57

MAGNETO TELEPHONES (Cont.)

1258-W WALL TYPE HANDSET TELEPHONE has a removable sub-base that houses the generator, ringer and coil-capacitor unit. The handset rests in a cradle that is part of the molded case.

EASY TO CONVERT. This wall set, like the 1248 desk telephone, can be changed from magneto to common battery service for either manual or dial operation. Thus these telephones become an investment for the future.

Parts of 1248-W (Desk) and 1258-W (Wall) Types

Telephone Parts

- 201797-000 Housing (1248-W only)
- 201796-000 Housing (1258-W only)
- 201798-000 Sub-Base (Die-cast housing adapter)
- 508753-000 Screws (2) (Sub-Base)
- 205671-000 Base Plate (Metal)
- 35808-000 Feet (4)
- 32889-000 Rod (Handle)
- 33234-000 Screws (Bracket)
- 35860-000 Cable (Hookswitch)
- 35814-000 Connector
- 200595-000 Ind. Coil and Capacitor Unit in Plastic case
- 201794-000 Plate (Coil-Capacitor mounting)
- 35824-000 Screws (3) (Case to Plate)
- 208073-000 Plungers (2)

Generator Parts

- 201678-000 (No. 64) Generator, Alnico
 - 204859-000 Generator Crank
 - 507423-000 Screws (4), Generator Mtg.
 - 526294-000 Lockwashers (4), Generator Mtg.
- For other parts see Generator in Coded Parts Section

Handset Parts

- 216945-000 (No. 23-R) Handset with black cord (Complete)
- 211305-000 Cord (WCR-3J) 4'6"
- 203397-000 Molded Handle (3 Conductor) Complete with contact springs
- 210279-000 Transmitter
- 34230-000 Receiver
- 32863-000 Mouthpiece (Transmitter)
- 32864-000 Earcap (Receiver)

Hookswitch

- 42158-000 Complete Spring Comb. (Hookswitch)

Ringer Parts

See ringers in another portion of this section

Line Cord (Black)

- 211746-000 Line Cord (WDR-4J) 6' (1248-W only)

Terminal Block

- 205106-000 For Line Cord (1248-W only)

Dial Blank

Telephones not using push button are equipped with . . .

- 35709-000 Dial Blank
- 23766-000 Cap
- 25404-000 Protector
- 28479-000 Card

Push Button

Telephones using push button are equipped with . . .

- 49299-000 Push Button
- 200846-000 Dial Blank

STOCK AND CODE NUMBERS OF TELEPHONES

1248-W Handset Desk Type

Telephone Ringer

Straight Line

Stock No.	Code	Stock No.	Code	Resistance
201804-000	(1248-WI)	201754-000	(65-C)	3100 Ohms
201805-000	(1248-WL)	201755-000	(65-F)	4850 Ohms
*201806-000	(1248-WIP)	201754-000	(65-C)	3100 Ohms
*201807-000	(1248-WLP)	201755-000	(65-F)	4850 Ohms

Straight Line Biased

203071-000	(1248-WA)	801911-000	(61-A)	2040 Ohms
203035-000	(1248-WB)	202880-000	(65-B)	3100 Ohms
203069-000	(1248-WS)	801912-000	(61-S)	4850 Ohms

1258-W Handset Wall Type

Telephone Ringer

Straight Line

Stock No.	Code	Stock No.	Code	Resistance
201808-000	(1258-WI)	201754-000	(65-C)	3100 Ohms
201809-000	(1258-WL)	201755-000	(65-F)	4850 Ohms
*201810-000	(1258-WIP)	201754-000	(65-C)	3100 Ohms
*201811-000	(1258-WLP)	201755-000	(65-F)	4850 Ohms

Straight Line Biased

209279-000	(1258-WA)	801911-000	(61-A)	2040 Ohms
209280-000	(1258-WB)	202880-000	(65-B)	3100 Ohms
209281-000	(1258-WS)	801912-000	(61-S)	4850 Ohms

*The letter "P" indicates Stock No. 49299-000 Push Button mounted on Dial Blank. All 1248-W and 1258-W Telephones are equipped with Sure-Ring Condensers (1.mf) in the talking circuit.

Dimensions:

- 1248-W 7¼" high with handset in cradle, 5¾" x 8⅞" base
- 1258-W 8¾" high with handset in cradle, 5¾" x 8⅞" base

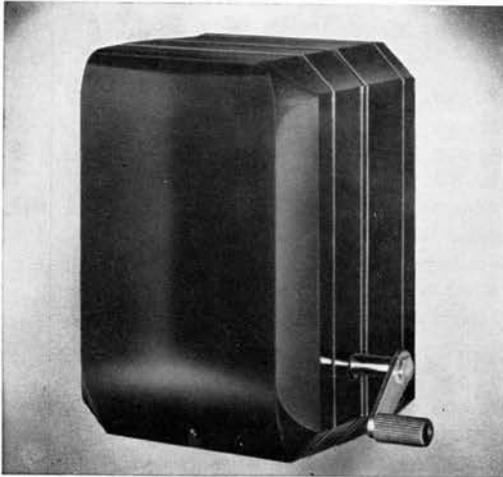
Weight:

- 1248-W Net 10 lbs. Packed for domestic shipment 13 lbs.
- 1258-W Net 8 lbs. Packed for domestic shipment 11 lbs.

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MAGNETO TELEPHONES (Cont.)

1268-W Magneto Desk Set Box and Two-Piece Telephones



1268-W Desk Set Box

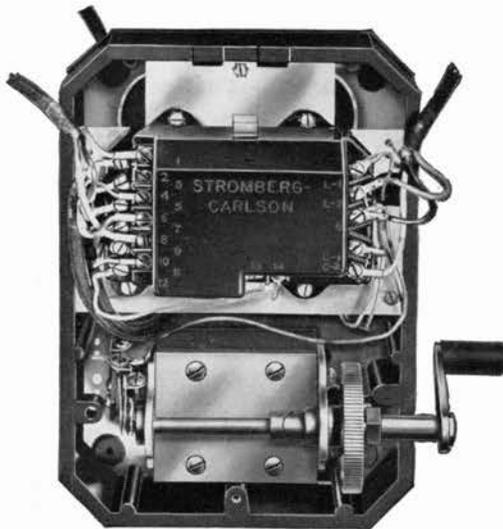
The 1268-W Desk Set Box is a companion set of the 1248-W and 1258-W Handset Telephones. It may be used with the 1544 Desk Type or 1534-M Suspended Handset Telephone to make a two-piece set.

The base plates of the 1268-W Desk Set Box and the 1248 and 1258 Telephones are interchangeable and the same ringer, generator, and sealed coil-capacitor unit are used, together with identical parts for mounting this apparatus.

All No. 1268-W Desk Set Boxes are equipped, in the talking circuit, with a 1.mf sure-ring capacitor which is part of the coil-capacitor unit.

Optional Feature

Stock No. 49299-000 Push Button is furnished when the letter "P" is added to the code number. Its use should be confined to full metallic (two-wire) lines. With this feature it is possible to signal the operator without ringing other bells on the line.



The Sub-Base Assembly, showing generator, coil-capacitor unit and ringer. Used commonly on the 1248, 1258 and 1268 instruments.

Parts of 1268-W Desk Set Box

Stock No.	Description
201795-000	Plastic Housing
41710-000	Retaining Screw (Front)
525033-000	Hex Nut (Retaining Screw)
201798-000	Sub-Base (Die-Cast Housing Adapter)
205671-000	Base Plate (Flat Metal)
41563-000	Screws (2) (Housing to base)
41685-000	Bracket (Base Plate)
35808-000	Feet (4)
200595-000	Ind. Coil and Capacitor unit in plastic case

Generator Parts

201678-000	(No. 64) Generator, Alnico
204859-000	Generator Crank
507423-000	Screws (4), Generator Mtg.
526294-000	Lock Washers (4), Generator Mtg.

For other parts see Generator in Coded Parts Section

Ringer Parts

See Ringers in another portion of this section.

STOCK and CODE NUMBERS

Desk Set Box		Ringer		Resist. Ohms
Stock No.	Code	Stock No.	Code	
201812-000	(1268-WI)	201754-000	(65-C)	3100
201813-000	(1268-WL)	201755-000	(65-F)	4850
*201814-000	(1268-WIP)	201754-000	(65-C)	3100
*201815-000	(1268-WLP)	201755-000	(65-F)	4850

*Desk Set Boxes with suffix letter "P" are equipped with Stock No. 49299-000 Non-Interfering Push Button.

Telephones for Two-Piece Sets

The 1544 Handset Telephone is ideally suited for magneto service when used with the 1268 Desk Set Box. The 1544 Telephone can readily and economically be converted to common battery service at a later date, if desired. Parts and ordering information for the 1544 Telephone will be found with the complete description of the 1544 Telephones on a previous page.

The 1544-B Telephone may be used with older type desk set boxes that do not contain an induction coil, such as the No. 327. The 1544-B Telephone is similar in all respects to the 1544 except that a No. 46-B induction coil has been included.

The 1534-M Suspended Type Telephone can also be adapted to magneto service when used with the 1268 Desk Set Box. Parts and ordering information for suspended type sets may be found with the general description of the 1532, 1533, 1534 and 1533-MK Telephones on a previous page.

Handset Telephone	Used With	
Stock No.	Code	Desk Set Box
211749-000	(1544)	No. 1268
211750-000	(1544-B)	No. 327

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IRONCLAD WEATHERPROOF TELEPHONES

THE STROMBERG-CARLSON IRONCLAD TELEPHONE is moisture proof, concussion proof, and weatherproof, built especially for use out-of-doors or in underground localities which require extra high insulation and dependable service. This telephone is available in Common Battery or Magneto models.

Dials can be mounted on the 950 Ironclad Telephone set. Space is provided on the inner door for dials of the type DE-207, 208, and 209 (small dials). Inner door Stock No. 207659-000 is planned for dial, either presently equipped with dial or prepared for future installation. Parts for the dial will be found under "Dials" elsewhere in this section.

THE CASE is of heavy cast-iron, provided with outer door, inner door, and gong hood. All parts are heavily coated with rust resisting paint.

When these telephones are to be locked so that only designated persons may use them, the 11563-000 Plunger Lock may be replaced with a No. 8468-000 Key Snap Lock installed at factory.

THE OUTER DOOR is equipped with a rubber gasket and compression lever catch, arranged for either key or plunger type lock. Opening the outer door permits the use of the instrument for either signalling or talking.

THE INNER DOOR is hinged for opening during repairs, and is held securely closed by machine screws and a felt gasket. The inner door mounts the transmitter and receiver.

THE TRANSMITTER is a capsule unit, similar to those used in handset telephones, with a black, phenol compound mouthpiece.

THE RECEIVER consists of an outside plastic receiver shell and earcap and a capsule type receiver unit. The capsule may be changed by removing the earcap. A cord take-up device prevents the receiver cord being caught when the outer door is closed, following a conversation.

RINGER is equipped with loud, clear toned gongs concealed beneath the gong hood. The ringer, clapper rod, and armature are operated by magnetic induction through a tight brass plate. This design permits mounting the ringer coils in a protected position behind the inner door, entirely free from fumes and moisture.

THE HOOKSWITCH is of pressure, plunger construction, positive in operation and not dependent on gravity.

TERMINAL BOX is mounted on the under side of the telephone, containing two line terminals and a ground terminal, which pass through watertight bushings to the interior of the telephone so that it is unnecessary to open the instrument when making connections. Entrance hole is threaded for 1/2" conduit.

Parts common to the 950-C and 890-I and L Telephones

Hookswitch

Stock No.	Description
10818-000	Switch Hook Assembly only
8457-000	Spring Assembly
8465-000	Plunger
505303-000	Screws (2) (Mounting Hook on Door)

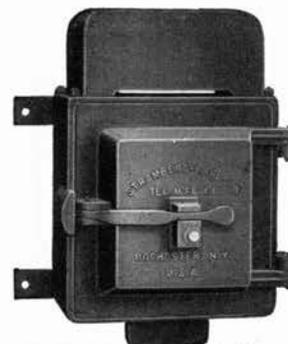
Receiver

Stock No.	Description
*801595-000	Receiver (30-B) and Cord

Parts for above

33179-000	Receiver shell
32864-000	Earcap
34230-000	Receiver
800627-000	Cord (M-2-1)

*The former No. 27-B Receiver is replaced by the No. 30-B receiver which is replaceable as a unit, but the parts are not.



No. 950-BY Ironclad Telephone

Transmitter

*209624-000	Transmitter Assembly, including
205784-000	Transmitter
209623-000	Mouthpiece
25608-000	Insulation
25892-000	Spring Clamp
209631-000	Gasket Assembly
15577-000	Terminal (3)
503500-000	Screw (3)

*Note: Telephones manufactured before 1/21/53 cannot use the Stock No. 209624-000 transmitter assembly. Instead order Stock No. 35434-000.

Replacement Parts for the 950-C Telephone Only

Stock No.	Code	Description
801825-000	(35-A)	Ringer-less gongs (1000 ohms)
12271-000		Coil (2)—500 ohms (For 801825 Ringer)
207658-000		Box Assembly
8871-000		Induction Coil and Condenser Assembly
16321-000		Adapter (Dial) (Order with dial)
13870-000		Blank (Dial)
525200-000		Nuts (2) Dial Blank
503620-000		Terminal Screw
29961-000		Terminal Block

Replacement Parts for the 890-I and -L Telephone

Stock No.	Code	Description
801826-000	(35-B)	Ringer-less gongs (1600 ohms)
801827-000	(35-E)	Ringer-less gongs (2500 ohms)
12272-000		Coil (2)—800 ohms
12273-000		Coil (2)—1250 ohms
8416-000		Box Assembly
8636-000		Induction Coil (Mounted)
800424-000		Induction Coil (only)
800526-000		1/2 MF Condenser (Receiver circuit)
201678-000	(64)	Generator

For other parts see Generator in Coded Parts Section.

Parts for Replacing the No. 62-A Generator with the No. 64 Generator

Stock No.	Description
208830-000	Generator Assembly (Mounting) (Includes No. 64 Generator, one 208832-000 Block, and four 508052-000 screws)
208834-000	Package Assembly (Includes two 512700-000 screws, one 204859-000 Crank Assembly, one 207595-000 Gland, one 207596-000 Gland, one 207601-000 washer, two 504052-000 screws and Instruction Sheet 208836-000)

DIALS



Stromberg-Carlson Dial with Extended Number Plate

The Stromberg-Carlson Dial with the extended number plate is used on the 1500 Series Telephone and the earlier 1400 Series. The extended-style number plate marks the dial of the future, with its distinctive numbers and letters in white on a black or colored background. The location of the letters and numerals outside of the finger wheel together with the new baked-on Vitreous Enamel finish, offers greater clarity, no glare and unmatched durability.

The new Stromberg-Carlson dial offers seven distinct features of design that result in longer life, lower maintenance cost, and pleasing operation for the subscriber.

1. The dial mechanism is mounted on a rigid die-cast aluminum housing and encased in a transparent plastic cover. The moving parts are thus always in perfect alignment, and are protected from dirt and grime.
2. The gears and other rotating parts are precision machined, or molded, to insure a smooth movement and to reduce wear.
3. The wind-up operation produces motion only in the main and secondary shafts, with the result that the other moving parts are in action for impulsing only. This gives additional quietness and decreases wear.
4. Quiet operation is further insured by using for the impulse cam drive two thin flat springs operating in conjunction with slots in their associated parts, a simple and dependable device that assures positive and uniform impulsing.
5. The digit number plate is locked into the housing rim for smoother contour and tighter fit, yet it is easily changed by removing the finger plate and only one screw.
6. Another feature is the simplified terminal arrangement whereby the terminal screws extend directly through the dust cover, avoiding cable, soldered connections and terminal block, thereby simplifying maintenance.

7. All necessary field adjustments can be made without removing the dust cover from the dial. The opening in the dust cover (closed by a snap-on lid) gives ready access to the working parts. Speed adjustment, cleaning of contacts, etc., can be done without disturbing any connection or mounting screws.

Spring Combinations

Shown below are the spring combinations most commonly used. Shunt springs are illustrated in off-normal positions.

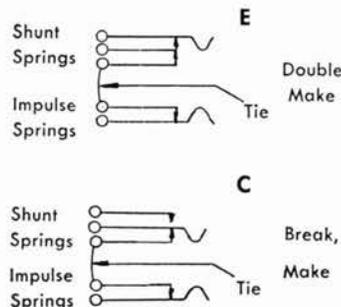


Diagram of Spring Combinations

SPRING COMBINATIONS shown are "E," and "C." Other types of spring combinations can be furnished when desired. The "E" or "C" is the second letter of the dial code number. When the second letter is followed by the letter "X" it indicates that the tie is omitted.

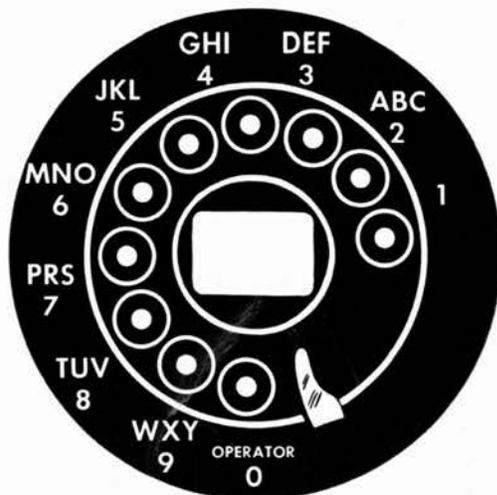
Finger Plate

The finger plate is metal with a black enamel finish. In the code number this finger plate is indicated by "12."



Revised 7-15-57

DIALS (Cont.)



Standard Dial—DE-212-45

The above picture shows the standard metropolitan number plate.

The second character of the dial code indicates type of spring used (i.e.—DE-212-45 has "E" type shunt springs). The standard dial contains the "E" type shunt springs that are combined with impulse springs. Other type shunt springs are available.

C.—A break-make type of shunt spring.

L.—A separate single make and single break shunt spring.

Example of Correct Order:

Present Series	Spring Combination	Finger Plate	Number Plate	Dash	Cable	Station Card	Description
D	E						Double-Make Combination
		2					Black Enamel Finger Plate
			12				Metropolitan Number Plate
				—			Dash
					4		4 Conductor Cable
						5	Std. Station Card

So that the ordering code of the above dial is DE-212-45



Front View of Small Dial

Standard Small Dial—DE-209-45

The above picture shows a small dial containing a number plate coded No. 7. Other number plates are available as follows:

No. 8—contains numbers 1-0, and the word "Operator" over the number "0."

No. 9—contains numbers and letters (Metropolitan).

Shunt springs for the small dial are coded in the same way as those for the large dial.

An attractive new booklet covering in detail the parts, construction, and maintenance of the Stromberg-Carlson Dial has been prepared and may be obtained from your nearest branch office.

"D" Series

Colors	Code	Stock No.
Black	(DE-207)	213075-000
Black	(DE-208)	213081-000
Black	(DE-209)	213084-000
Black	(DEX-207)	213076-000
Black	(DEX-209)	213085-000
Black	(DC-207)	213077-000
Black	(DC-208)	213082-000
Black	(DCX-207)	213078-000
Black	(DCX-209)	213086-000
Black	(FDE-207)	213079-000
Black	(DL-207)	213080-000
Black	(DL-208)	213083-000
Black	(DL-209)	213087-000
Black	(DE-210)	213090-000
Black	(DE-212)	213092-000
Black	(DC-209)	213088-000
Black	(FDCX-209)	213089-000
Black	(FDE-212)	213093-000
Dove Gray	(DE-315)	213094-000
Olive Green	(DE-316)	213095-000
Antique Ivory	(DE-317)	213096-000
Chinese Red	(DE-318)	213097-000
Canary Yellow	(DE-319)	213098-000
French Blue	(DE-320)	213099-000
Desert Beige	(DE-321)	213100-000
Chestnut Brown	(DE-322)	213101-000

HANDSETS



No. 26



No. 27

There are two series of handsets available to fit the 1500 Series Telephones, the No. 26 and 27. In outward appearances these two handsets look alike — short, lightweight, and are made of thermosetting plastic. The difference between the two series lies in the transmitter and receiver.

TRANSMITTERS. The No. 26 Series Handsets employ the 210279-000 transmitter which is a capsule type transmitter. Silver-plated contact springs in the transmitter cavity provide reliable connections when the mouthpiece is screwed down tight.

The No. 27 Series Handsets feature the new high efficiency "W" type transmitters which provide transmission characteristics equivalent to the best high efficiency instrument available. This Transmitter (211969-000) is a capsule type also.

RECEIVERS. Both series use capsule type receivers that must be attached to two terminal cords and locked into position by tightening the threaded earcap. The 210278-000 receiver is used in the 26 Series Handsets while the 211881-000 receiver is used in the high efficiency 27 Series Handsets. Ordering information and pertinent parts are listed below for both handsets.

Parts for the No. 26 and No. 27 Series Handsets

Stock No.	Code	Description
211305-000	(WCR-3J)	Neoprene Cord for No. 26C—4'6" (3 conductor)
211300-000	(WCK-3J)	Neoprene Cord for No. 26D—4'6" (3 conductor)
211745-000	(WCK-4J)	Neoprene Cord for No. 26E—4'6" (4 conductor)
211745-000	(WCR-4J)	Neoprene Cord for No. 26G—4'6" (4 conductor)
211300-000	(WCK-3J)	Neoprene Cord for No. 26H—4'6" (3 conductor)
213117-000	(WCK-3J)	Neoprene Cord for No. 26I—4'6" (3 conductor—Grey)
213117-000	(WCK-3J)	Neoprene Cord for No. 26J—4'6" (3 conductor—Grey)
210279-000		Transmitter Assembly for No. 26C, 26D, 26E, 26G, 26H, 26I, 26J
210278-000		Receiver Assembly for No. 26C, 26D, 26E, 26G, 26H, 26I, 26J
210276-000		Ear Cap for No. 26C, 26D, 26E, 26H
212115-000		Ear Cap (Grey) for No. 26G, 26I, 26J
210277-000		Mouthpiece No. 26C, 26D, 26E, 26H
212116-000		Mouthpiece (Grey) No. 26G, 26I, 26J
211275-000		Handle Assembly (Replacement for No. 26E Handset)
211233-000		Handle Assembly (Replacement for 26C, 26D, Handsets complete with wiring and contact springs)
211373-000	(WCR-3K)	Neoprene Cord for No. 27C—4'6" (3 conductor)
211375-000	(WCK-3K)	Neoprene Cord for No. 27D—4'6" (3 conductor)
211884-000	(WCR-4K)	Neoprene Cord for No. 27E—4'6" (4 conductor)
211969-000		Transmitter Assembly for No. 27C, 27D, 27E
211881-000		Receiver Assembly for No. 27C, 27D, 27E
210283-000		Ear Cap for No. 27C, 27D, 27E
210284-000		Mouthpiece for No. 27C, 27D, 27E

STOCK AND CODE NUMBERS OF NO. 26, 27, 28, 29 HANDSETS

Stock No.	Code	Standard Cord	Type Telephone Used On
211361-000	(26C)	WCR-3J 4'6"	1543, 1544, 2-1543, 1544B, 1544C
211362-000	(26D)	WCK-3J 4'6"	1573, 1575
211748-000	(26E)	WCR-4J 4'6"	1544-K, 1544-P
212714-000	(26G)	WCR-4J 4'6"	G1544
213240-000	(26H)	WCK-3J 4'6"	1573, 1573-W, 1575, 1575-W
213693-000	(26I)	WCK-3J 4'6"	Hands Free Telephone
216747-000	(26J)	WCK-3J 4'6"	G1573, G1575
211396-000	(27C)	WCR-3K 4'6"	1543-W, 2-1543-W
211397-000	(27D)	WCK-3K 4'6"	1543-W, 2-1543-W
211864-000	(27E)	WCR-4K 4'6"	1543-W
212550-000	(28A)	WCR-3J 4'6"	TC1543
212551-000	(28B)	WCR-4L 4'6"	PT1447
212552-000	(28C)	WCK-4J 4'6"	Special Service
216825-000	(29A)	WCK-3K 4'6"	PTT—Special Service
216826-000	(29B)	WCR-4J 4'6"	Special Service
216827-000	(29C)	WCK-4J 4'6"	Special Service
216960-000	(29D)	WCK-5A 4'6"	Special Service

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RINGERS

Used on Stromberg-Carlson 1200, 1400 and 1500 Series Common Battery Telephones and 1248-58-68 Magneto Telephones.

The 1500 and 1400 Series Telephones use a single coil, high impedance ringer which is particularly advantageous on heavily loaded or noisy lines. The ringer unit is separate from the gongs which have their own mounting; thus individual ringers may be easily shifted to take care of changed number assignments. The 1248-58-68 Magneto Telephones continue to use the two-coil ringers with the gong mounting as part of the ringer assembly. Gongs are not furnished unless specified on the order.

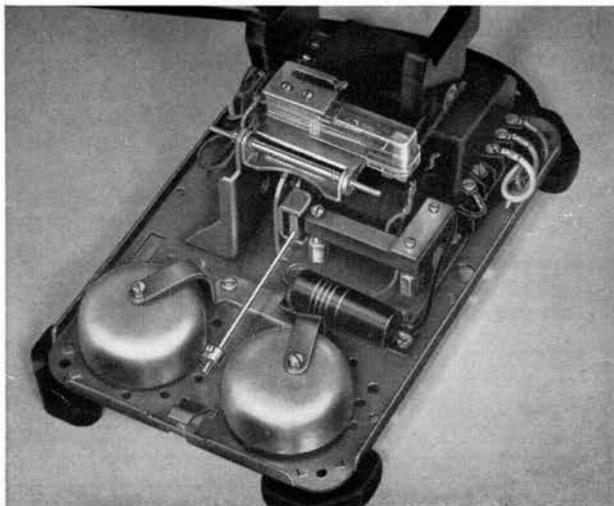
The two-toned (Hi-Lo) bells furnish a clear and pleasing tone which compels attention without being objectionable. All ringers are designed for ease in mounting; the only tool needed is a screwdriver.

Listed below are the ringers which are described in this section of the catalog. For older type ringers, used in earlier model telephones, see Section F—Coded Parts.

Ringer			
Code	Style	Handset Telephones	Desk Set Boxes
73	Tuned Frequency	1543	1560, 1561
74	Straight Line	1543	1560, 1561
71	Straight Line	1443A, 1447A, 1543BT	1560BT, 1561BT
72	Tuned Frequency	1443	
61	Straight Line	1243, 1247, 1248, 1250, 1258	1260, 1268
62	Tuned Frequency	1243, 1247, 1250	1260
65	Straight Line	1248, 1258	1268

Gongs and Mounting Hardware

Stock No.	Description	Ringer Code
207745-000	Gong (Lo)	71, 72, 73, 74
207744-000	Gong (Hi)	71, 72, 73, 74
207683-000	Screw and Lockwasher Assembly	71, 72, 73, 74
38569-000	Gong (Hi)	61, 62, 65
28570-000	Gong (Lo)	61, 62, 65
28433-000	Screw	61, 62, 65
526281-000	Washers	61, 62, 65



No. 73 Ringer used in 1543 Telephone

No. 74-A and -B Straight Line Ringer

These Ringers are used on Stromberg-Carlson 1543-A Telephones and 1560-A and 1561-A Desk Set Boxes.

Stock No.	Code No.	D.C. Resistance of Ringer Winding	Ringer Pkg. Assem. No.
210684-000	(74-A)	5900 Ohms, Straight Line	202100-188
210718-000	(74-B)	2050 Ohms, Straight Line	202100-117

Ringer Package Assembly includes No. 6-32 x 3/16" B.H.I.M. screws, coin envelope, sleeve and detail.

Miscellaneous Parts

Stock No.	Description
207684-000	Coil Assembly (74-A)
207668-000	Coil Assembly (74-B)
207754-000	Armature & Pivot Assembly (74-A & -B)
207766-000	Spring (74-A & -B)
210720-000	Capacitor Assembly (74-A)
210723-000	Capacitor Assembly (74-B)
44154-000	Cord (T.I.D) Black (74-A & -B)
44156-000	Cord (T.I.D) Red (74-A & -B)
216978-000	Conductor, Red (74-A & -B)

No. 73 Tuned Frequency Ringers

The No. 73 Ringers are used on the Stromberg-Carlson 1500 Series Telephones and Desk Set Boxes.

Stock No.	Code No.	D.C. Resist. of Ringer Winding	Frequency	Ringer Pkg. Assem. Stock No.
210676-000	(73-R)	5900 Ohms	16	202100-116
210671-000	(73-E)	5900 Ohms	16 3/4	202100-117
210681-000	(73-I)	5900 Ohms	20	202100-120
210672-000	(73-N)	5900 Ohms	25	202100-125
210677-000	(73-K)	5900 Ohms	30	202100-130
210673-000	(73-F)	5900 Ohms	33 1/2	202100-133
210682-000	(73-Q)	5900 Ohms	40	202100-140
210678-000	(73-L)	5900 Ohms	42	202100-142
210674-000	(73-G)	3670 Ohms	50	202100-150
210679-000	(73-M)	3670 Ohms	54	202100-154
210683-000	(73-J)	2050 Ohms	60	202100-160
210680-000	(73-P)	2050 Ohms	66	202100-166
210675-000	(73-H)	2050 Ohms	66 3/4	202100-167

Ringer Package Assembly includes No. 6-32 x 3/16" B.H.I.M. screws, coin envelope, sleeve and detail.

Miscellaneous Parts

Stock No.	Description
*207747-000	Reed Armature Assembly (16 3/4, 16, 20)
*207748-000	Reed Armature Assembly (25, 33 1/2, 30, 40, 42)
*207749-000	Reed Armature Assembly (50, 54, 60)
*211252-000	Reed Armature Assembly (66 3/4, 66)
*207684-000	Coil Assembly (66 3/4, 25, 33 1/2, 16, 30, 42, 20, 40)
*207668-000	Coil Assembly (66 3/4, 66, 60)
*209546-000	Coil Assembly (50, 54)
†210720-000	Capacitor Assembly .47 (25 cycles)
†210721-000	Capacitor Assembly .22 (33 1/2, 30)
†210722-000	Capacitor Assembly .15 (50, 66 3/4, 42, 54, 66, 40, 60)
†210723-000	Capacitor Assembly .94 (16 3/4, 16, 20)
44154-000	Cord (T.I.D) Black
44156-000	Cord (T.I.D) Red
216978-000	Conductor (Red)

*We do not recommend any disassembly for repair of these ringers unless adequate facilities are available for remagnetization. The high efficiency Alnico magnets used in Stromberg-Carlson ringers must be remagnetized for optimum performance if the magnetic circuit is disturbed in disassembly.

† See chart for ordering information.

RINGERS (Cont.)

CODE AND ORDERING INFORMATION FOR CAPACITOR ASSEMBLIES

Stock Number	Rating	Used on Ringer	Capacitor Color Code
210720-000	.47 MF (1 Capacitor)	73N 25 Cycle	Yellow-Violet-Yellow-White-Red
		74A S.L.	
210721-000	.22 MF (1 Capacitor)	73F 33 1/3 Cycle	Red-Red-Yellow-White-Yellow
		73K 30 Cycle	
		73G 50 Cycle	
		73H 66 2/3 Cycle	
210722-000	.15 MF (1 Capacitor)	73L 42 Cycle	Brown-Green-Yellow-White-Yellow
		73M 54 Cycle	
		73P 66 Cycle	
		73Q 40 Cycle	
		73J 60 Cycle	
		73E 16 2/3 Cycle	
210723-000	.94 MF (2 Capacitors in parallel)	73R 16 Cycle	Yellow-Violet-Yellow-White-Red
		73I 20 Cycle	
		74B S.L.	
		210671-000	
		210672-000	
		210673-000	
		210674-000	
		210675-000	
		210676-000	
		210677-000	
		210678-000	
		210679-000	
		210680-000	
		210681-000	
		210682-000	
		210683-000	
		210684-000	
		210685-000	
		210686-000	
		210687-000	
		210688-000	
		210689-000	
		210690-000	
		210691-000	
		210692-000	
		210693-000	
		210694-000	
		210695-000	
		210696-000	
		210697-000	
		210698-000	
		210699-000	

No. 72 Tuned Frequency Ringers

The No. 72 Tuned Frequency Ringers are used exclusively with the 1400 Series Telephones.

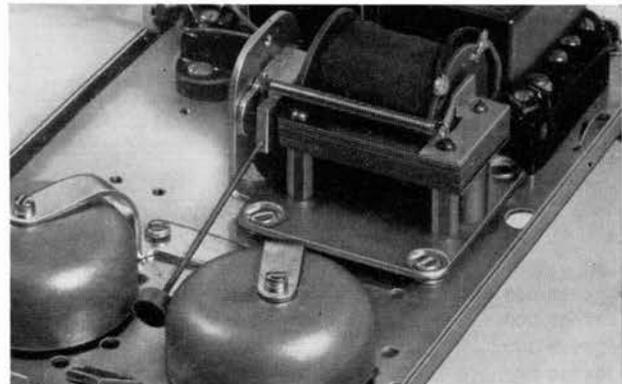
No. 72 Ringers

Stock No.	Code No.	D.C. Resistance of Ringer Winding	Frequency
207728-000	(72E)	5900 Ohms	16 2/3
207729-000	(72N)	5900 Ohms	25
207730-000	(72F)	5900 Ohms	33 1/3
207731-000	(72G)	3670 Ohms	50
207732-000	(72H)	2050 Ohms	66 2/3
207733-000	(72R)	5900 Ohms	16
207734-000	(72K)	5900 Ohms	30
207735-000	(72L)	5900 Ohms	42
207736-000	(72M)	3670 Ohms	54
207737-000	(72P)	2050 Ohms	66
207738-000	(72I)	5900 Ohms	20
207739-000	(72Q)	5900 Ohms	40
207740-000	(72J)	2050 Ohms	60

Miscellaneous Parts

Stock No.	Description
*207684-000	Coil Assembly (16 2/3, 25, 33 1/3, 16, 30, 42, 20, 40)
*207668-000	Coil Assembly (66 2/3, 66, 60)
*209546-000	Coil Assembly (50, 54)
*207747-000	Reed Armature Assembly (16 2/3, 16, 20)
*207748-000	Reed Armature Assembly (25, 33 1/3, 30, 42, 40)
*211252-000	Reed Armature Assembly (50, 54, 60, 66 2/3)
44154-000	Cord (T.I.D) Black
44156-000	Cord (T.I.D) Red

*We do not recommend any disassembly for repair of these ringers unless adequate facilities are available for remagnetization. The high efficiency Alnico magnets used in Stromberg-Carlson ringers must be remagnetized for optimum performance if the magnetic circuit is disturbed in disassembly.



No. 71A and 71B Straight Line Ringers

These ringers are used on the Stromberg-Carlson 1400 and 1500 Series Telephones. They are of the Straight Line type and are used on common battery telephones.

Stock No.	Code	D.C. Resistance of Ringer Winding	Telephone Used
207690-000	(71-A)	5900 ohms, Straight Line	1443, 1447, 1460
208722-000	(71-B)	2050 ohms, Straight Line	1543, 1560, 1561 1443, 1447, 1460

Ringer package assembly Stock No. 202100-122, includes (1) 71-B Ringer, (3) No. 6-32 x 3/16" B.H.I.M. screws, (1) coin envelope, and (1) sleeve and detail.

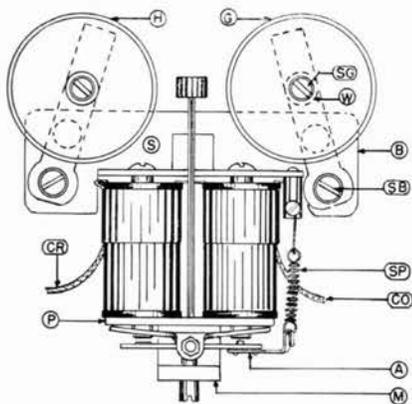
Miscellaneous Parts

Stock No.	Description
*207684-000	Coil Assembly (71-A)
*207754-000	Armature and Pivot Assembly
207766-000	Spring
*207663-000	Coil Assembly (71-B)
44154-000	Cord (T.I.D) Black
44156-000	Cord (T.I.D) Red

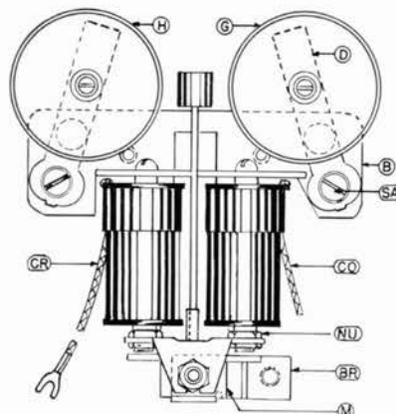
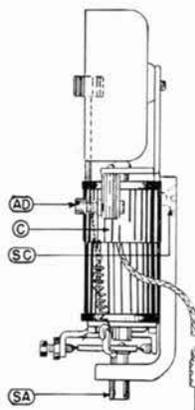
*See footnote in preceding column.

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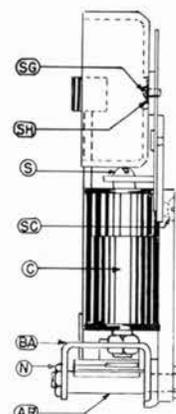
RINGERS (Cont.)



No. 61 Type Ringer



No. 62 Type Ringer



No. 61A and No. 61S Biased Type Ringer

The Nos. 61A and 61S ringers are of a straight line biased type and used principally on both magneto and common battery telephones and their allied desk set box.

Stock No.	Code	D.C. Resistance of Ringer Winding	Telephone or D.S. Box Used
801911-000	(61-A)	1800 ohms	1248, 1258, 1268
801912-000	(61-S)	4850 ohms	1248, 1258, 1268

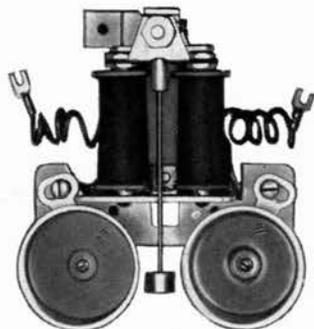
No. 61 Biased Type Straight Line Ringer

Miscellaneous Parts

Stock No.	Item	Name
* 34785-000	A	Armature Assembly
34668-000	AD	Adjusting Stud
* 27980-000	C	Coils (61-A Ringer)
* 34950-000		Coils (61-S Ringer)
44154-000	CO	Cord (Black)
28569-000	CR	Cord (Red)
* 62997-000	M	Magnet
503520-000	SB	Screws (Gong adjusting)
16060-000	SP	Spring (Biasing)

Gongs and mounting hardware shown on previous page.

*See footnote at bottom of adjacent column.



No. 62 Ringer

No. 62 Type Ringers—Tuned Frequencies

Stock No.	Code	D.C. Resistance of Ringer Winding	Frequency
803475-000	(62-E)	4320	16 2/3 cycles
803476-000	(62-F)	780	33 1/3 cycles
803477-000	(62-G)	780	50 cycles
803479-000	(62-H)	780	66 2/3 cycles
803480-000	(62-N)	4320	25 cycles
803481-000	(62-K)	780	30 cycles
803482-000	(62-L)	780	42 cycles
803483-000	(62-M)	780	54 cycles
803484-000	(62-P)	780	66 cycles
803485-000	(62-R)	4320	16 cycles
803474-000	(62-I)	4320	20 cycles
803478-000	(62-J)	780	60 cycles
205984-000	(62-Q)	780	40 cycles

No. 62 Tuned Frequency Ringer (Miscellaneous Parts)

Stock No.	Item	Name	Frequency
*210705-000	AR	Armature-Reed Assembly	16, 16 2/3, 20
*210706-000		Armature-Reed Assembly	25, 30, 33 1/3
*210707-000		Armature-Reed Assembly	42, 40
*210708-000		Armature-Reed Assembly	50, 54, 60, 66, 66 2/3
* 27981-000	C	Coil (No. 62F, G, H, J, K, L, M, P, Q)	
* 27982-000		Coil (No. 62I, E, N, R)	
44154-000	CO	Cord (T.I.D) Black	
44156-000	CR	Cord (T.I.D) Red	
* 28021-000	M	Magnet	
503520-000	SA	Screw (Gong Adjusting)	
204364-000		Setscrew (Armature Wt.)	

Gongs and mounting hardware shown on previous page.

*We do not recommend any disassembly for repair of these ringers unless adequate facilities are available for remagnetization. The high efficiency Alnico magnets used in Stromberg-Carlson ringers must be remagnetized for optimum performance if the magnetic circuit is disturbed in disassembly.

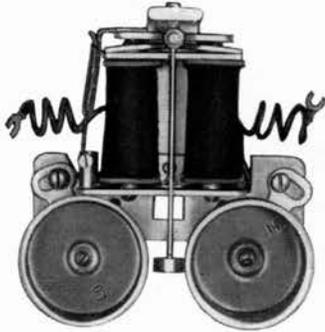
RINGERS (Cont.)

No. 65-C, 65-F Straight Line (Magneto) Type

Stock No.	Code	D.C. Resistance of Ringer Winding	Description
201754-000	(65-C)	3100 ohms	Straight Line
201755-000	(65-F)	4850 ohms	Straight Line

No. 65-B—Biased Type Ringer (Magneto)

Stock No.	Code	D.C. Resistance of Ringer Winding	Description
202880-000	(65-B)	3100 ohms	Biased Type



No. 65 Ringer With Biasing Spring

**No. 65-B Biased Ringer
(Miscellaneous Parts)**

Stock No.	Description
* 34785-000	Armature Assembly
*201751-000	Coils (2) 65-B Ringer
16060-000	Biasing Spring

Gongs and mounting hardware shown on previous page.

Other parts of the No. 65-B Ringer are the same as in the Nos. 65-C, and 65-F Ringers.

*We do not recommend any disassembly for repair of these ringers unless adequate facilities are available for remagnetization. The high efficiency Alnico magnets used in Stromberg-Carlson ringers must be remagnetized for optimum performance if the magnetic circuit is disturbed in disassembly.

Miscellaneous Parts of Nos. 65-C, and 65-F Ringers

Stock No.	Name
503520-000	Screws (2) Gong Adjustment
62997-000	Magnet
* 27973-000	Armature Assembly
*201751-000	Coil (2) 65-C Ringer
* 34950-000	Coil (2) 65-F Ringer
44154-000	Cord (T.I.D) 9" Black
44156-000	Cord (T.I.D) 9" Red

Gongs and mounting hardware shown on previous page.

*See footnote at bottom of adjacent column.

These pages have listed the Ringers currently in use on Stromberg-Carlson Telephones. Complete ringers and ringer parts are available for replacement in models preceding the 1243-1248 series. For descriptions, see Coded Parts (Section F) under Ringers.

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FORMER MODELS OF HANDSET TELEPHONES

(These models are no longer manufactured: parts only are available)

The 1400 Series Telephone

Parts for the 1443, 2-1443, 1444, 1444-P, 1447 and the 1460 Desk Box are available for replacement. The 1400 Series in most respects is the same as the 1500 Series. The most apparent difference is in the handset; the other variation is in the ringer assembly and associated coil-capacitor unit. Because of the almost complete similarity of the two series, manufacture of the 1400 Series as such has been discontinued. All necessary ordering information for replacements is given below.

Parts of The 1400 Series

Only those parts which differ from corresponding components of the 1500 Series are listed here. Reference should be made to preceding pages for the parts common to both series.

Handset

Stock No.	Code	Description
216945-000	(23-R)	3 Conductor Handset (complete with Neoprene cord)
216946-000	(24-R)	4 Conductor Handset (complete with Neoprene cord)
203397-000		Molded Handle, 3 conductor, complete with contact springs
203398-000		Molded Handle, 4 conductor, complete with contact springs
211305-000	(WCR-3J)	Handset Cord 4'6", 3 conductor
211745-000	(WCR-4J)	Handset Cord 4'6", 4 conductor
206424-000		Transmitter Capsule Unit
34230-000		Receiver Capsule Unit
32863-000		Mouthpiece
32864-000		Earcap
208359-000		Induction Coil and Capacitor Assembly
208358-000		Station Number Card Package Assembly
208675-000		Induction Coil and Conductor Assembly (1447 Telephone only) Ringers as required (No. 71 or No. 72)



The 1443 Desk Telephone with Extended Number Plate and Metropolitan style dial.



The same 1443 Telephone used as a wall mounted instrument.

The 1200 Series Telephones

Parts for the 1243, 1244, 1247, 1250 Telephones and the 1260 Desk Set Box are available for replacements. The 1243 is the standard desk telephone of this series, complete with ringers and coil-capacitor unit. The 1244 is a telephone, without ringers, that can be used as an extension telephone, or as part of a two-piece set. The 1247 Telephone has a common battery signaling and local battery talking circuit for greater efficiency on

long common battery rural lines. The 1250 Telephone is the equivalent of the 1243 series except that it is designed for wall installation. The 1260 Desk Set Box is the companion piece to the 1244 Telephone.

Small type dials, previously described, are used on these instruments.

Ringers appear on preceding pages.



1243 Telephone with Dial



1244 Telephone for Manual Operation

STROMBERG-CARLSON

FORMER MODELS (Cont.)

Parts of 1243-W, 1244-W and 1247-W

Telephone Parts
Used Commonly Unless Otherwise Specified

Stock No.	Description
32883-000	Housing
205670-000	Base Plate
41563-000	Screws (2) (Housing to plate)
35808-000	Feet (4)
35709-000	Dial Blank
28479-000	Card
25404-000	Protector
23766-000	Cap

Line Cords and Terminal Block

Stock No.	Description
211304-000	(WDR-3J), 6' Cord (1243-W, 1247)
211747-000	(WDR-4K), 6'0" Cord (1244-W)
205106-000	Terminal Block

Handset Parts

Stock No.	Description
216945-000	(23-R) Handset with Waterproof Cord (1243-W-1244-W)
216946-000	(24-R) Handset with Waterproof Cord (1247-W)
211305-000	WCR-3J, Cord (Blk), 3 Cond. Used with 23-R Handset
211745-000	WCR-4J, Cord (Blk), 4 Cond. Used with 24-R Handset
203397-000	Handle Replacement Assembly (3 Cond.)
203398-000	Handle Replacement Assembly (4 Cond.)
206424-000	Transmitter (Capsule)
34230-000	Receiver (Capsule)
32863-000	Mouthpiece
32864-000	Ear Cap

Ringer Parts (1243-W and 1247 Only)

Stock No.	Description
801911-000	(61-A) Ringer—1800 Ohms Less Gongs (S. L. Biased)
801912-000	(61-S) Ringer—4850 Ohms Less Gongs (S. L. Biased) (optional on all telephones) No. 62 Type Ringer—(Tuned Frequency)
25869-000	Gong
25870-000	Gong
28433-000	Screws (2)
526281-000	Washers (2)

For other ringer parts see No. 61 and 62 Ringers on preceding pages in this section.

Induction Coil and Capacitor

Stock No.	Description
200595-000	Ind. Coil-Cap Unit (In casing) 1243-W, 1247
35824-000	Screws (4) To mount casing (1243-W, 1247)
200604-000	Induction Coil (1247 Only) (In local battery talking circuit)

Rare Gas Relay and Ringing Tube

Stock No.	Description
35825-000	Package Assembly (Vincent Relay)
35827-000	Package Assembly (W. E. No. 333-A Tube)
*208120-000	Package Assembly (W. E. No. 426-A Tube)

*On all reference to tube package assembly W. E. 426-A ask for 214159-000.

Dial Cables

Stock No.	Description
35861-000	Dial Cable (1243-W, 1247-W, 1250-W)
37002-000	Dial Cable (1244)
207037-000	Dial Cable (5 Conductor)

NOTE—These telephones use small dials, described before.

Parts of the 1250-W Wall Type Telephone



1250 Wall Telephone

Telephone Parts

Stock No.	Description
41561-000	Housing (Plastic)
35809-000	Base Plate
35808-000	Feet (4)
208073-000	Plungers (2)

Hookswitch Parts

Stock No.	Description
42158-000	Complete Spring Combination
35860-000	Cable, Hookswitch

Ringer Parts

Stock No.	Description
801911-000	(61-A) Ringer (Less Gongs) 1800 Ohms S. L. Biased
801912-000	(61-S) Ringer (Less Gongs) 4850 Ohms S. L. Biased No. 62 Type Ringer (Tuned Frequency)
25869-000	Gong
25870-000	Gong
28433-000	Screws (2)
526281-000	Washers (2)

For harmonic frequencies and additional parts see No. 61 and 62 Type Ringers on preceding pages of this section.

FORMER MODELS (Cont.)

Parts of the 1250-W Wall Type Telephone (Cont.)

Induction Coil and Capacitor

Stock No.	Description
200595-000	Ind. Coil-Cap. Unit (In plastic casing)
35824-000	Screws (4) to mount casing

Handset Parts

Stock No.	Description
216945-000	(23-R) Handset complete, with waterproof Cord
211305-000	Cord (Black) WCR-3J, 4'6"
203397-000	Handle Replacement Assembly (3 Cond.)
206424-000	Transmitter (Capsule)
32863-000	Mouthpiece
34230-000	Receiver (Capsule)
32864-000	Ear Cap

Dial and Dial Blank Parts

Stock No.	Description
35709-000	Dial Blank
28479-000	Card
25404-000	Protector
23766-000	Cap
35861-000	Dial Cable
515423-000	Screw (Dial)

NOTE—See description of small dials used with these telephones on preceding pages.

Optional Features

Stock No.	Description
35825-000	Package Assembly (Vincent Rare Gas Relay)
35827-000	Package Assembly (W. E. No. 333-A Tube)
*208120-000	Package Assembly (W. E. No. 426-A Tube)

*On all reference to tube package assembly W. E. No. 426-A ask for 214159-000.

Parts of 1260 Desk Set Box

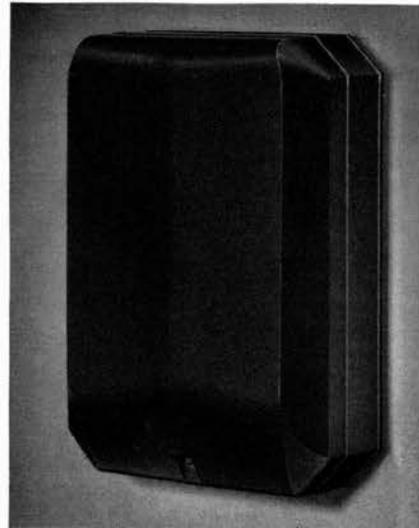
Housing Assembly Parts

Stock No.	Description
41562-000	Housing
41710-000	Retaining Screw
35809-000	Base Plate
35808-000	Feet (4)
200595-000	Coil and Capacitor Assembly
35814-000	Connectors (3) Terminal block
41566-000	Connectors (4) Terminal block

Ringer Parts

Stock No.	Description
801911-000	(61-A) Ringer (Less Gongs) 1800 Ohms S. L. Biased
801912-000	(61-S) Ringer (Less Gongs) 4850 Ohms S. L. Biased
	No. 62 Type Ringer (Tuned Frequency)
25869-000	Gong | Pair
25870-000	Gong |
28433-000	Screws (2)
526281-000	Washers (2)

For harmonic frequencies and additional parts see No. 61 and 62 Type Ringers on preceding pages of this section.



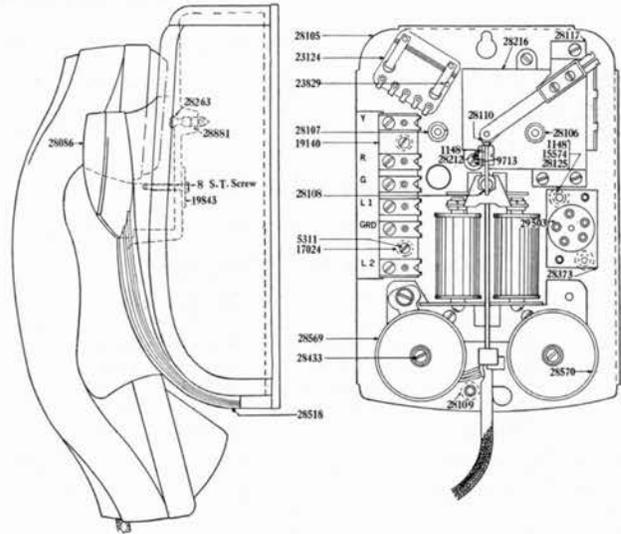
1260 Desk Set Box

FORMER TELEPHONE MODELS (Cont.)

No. 1211 Handset Wall Telephone

All Telephones shown on this page are no longer manufactured and all stocks have been exhausted. They are shown here for the convenience of present users in order to buy parts as needed for service. In ordering please specify the model, as well as the name and number of the part, in case a substitution is necessary.

The old No. 1210 Wall Telephone has been replaced by No. 1211-M. This series was for manual service and had a blank which covered the dial case mounting holes. Cases ordered for manual service should so state in the order. To convert from manual to dial, order Package Assembly 29617.



Stock No.	Description	Stock No.	Description
19140	Term. Strip	28505	Dial Case Cover
23124	Ind. Coil	28518	Case (1211)
35010	Comp. Hooksw. Asm.	28569	Gong
28086	Holder	28570	Gong
28108	Lever	28542	Cord with Plug
28373	Plug	29503	Plug
28476	Dial Case		

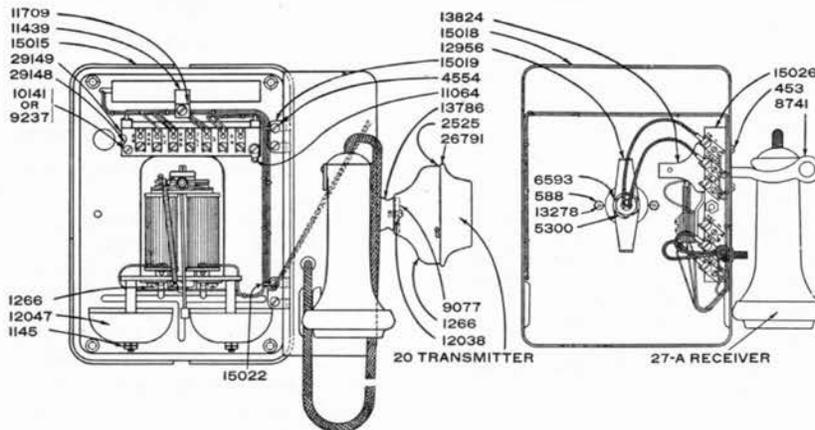
Parts of No. 1182 and No. 1208 Desk Stand Telephones

Formerly Used with No. 1156 Desk Set Boxes

Stock No.	Code	Description	Stock No.	Code	Description
22322		Cover, Base	*13370		Shell (No. 27-A Receiver)
800600 (MD-3F), 6' 6"		3 Cond. Cord (Booster)	*13371		Ear Cap (No. 27-A Receiver)
800602 (MD-4F), 6' 6"		4 Cond. Cord (Anti-Sidetone)	* 9924		Diaphragm (No. 27-A Receiver)
800652 (MR-2G), 36"		Receiver Cord	802522 (20)		Transmitter (with back)
801594 (30-A)		Receiver for complete replacement	26791		Transmitter (less back)
34230		Capsule (No 30-A Receiver)			
32864		Earcap (No. 30-A Receiver)			
33179		Shell (No. 30-A Receiver)			
19725		Hook (Receiver)			

* These Telephones were originally equipped with No. 27-A Receivers with "U" type magnets. When complete new receivers are required, specify 801594 (30-A) Receivers, which are capsule type.

No. 1155 and 1157 Steel Wall Telephones



Stock No.	Code	Description	Stock No.	Code	Description
12047		Gong for Ringer	800652 (MR-2-G, 3')		Cord for No. 30-A or 27-A Rec.
13824		Hookswitch Assem. less Hook	13370		Shell for No. 27-A Receiver
8741		Hook for Hookswitch	13371		Ear Cap for 27-A Receiver
800425 (44-B)		Induction Coil (Booster)	9924		Diaphragm for 27-A Receiver
800427 (44-D)		Induction Coil (Anti-Sidetone)	801830 (46-A)		Ringer, Straight Line
801594 (30A)		Receiver for Complete Replace.	801856 (49-A)		Ringer, Biased Straight Line
34230		Capsule for No. 30-A Receiver	(47)		Ringer, Harmonic, Specify Frequency
32864		Ear Cap for No. 30-A Receiver	802522 (20)		Transmitter
33179		Shell for No. 30-A Receiver	12038		Transmitter Back

FORMER TELEPHONE MODELS (Cont.)

No. 1230 Steel Desk Set Box

(No longer manufactured—Parts only are obtainable)

The No. 1230 Desk Set Box is replaced by the No. 1260 Desk Set Box which is standard for use with all current two-piece telephones for manual or dial service.

No. 1230 Steel Desk Set Box

(Anti-Sidetone Circuit)

Replaced by No. 1260 Type

(1230-C)	Str. Line Bias	801911	61-A
*(1230-S)	Str. Line Bias	801912	61-S
(1230-E)	16 2/3 Harmonic	801891	59-E
(1230-F)	33 1/3 Harmonic	801892	59-F
(1230-G)	50 Cyc. Harmonic	801893	59-G
(1230-H)	66 2/3 Harmonic	801894	59-H
(1230-N)	25 Cyc. Tuned	801898	59-N

* Has 4850 Ohm ringer for use on long rural common battery lines. The No. 1230-C is equipped with 1800 Ohm ringer.

No. 1230 Part Numbers

Stock No.	Description
33396	Base Assembly
34977	Cover Assembly
32943 (46-A)	Induction Coil
33970 (48)	Condenser
801911 (61-A)	Ringer — See Above
801912 (61-S)	Ringer — See Above
(59)	Ringer — See Above
28569	Gong
28570	Gong
28433	Screws (2) For Gongs
526281	Washers (2) For gongs
* 34534	Mounting Bracket
* 33967	Screw (Mtg. Bracket)
* 21099	Screw (Mtg. Bracket)
* 1210 (526293)	Washer (Mtg. Bracket)

* These items should be specified for mounting when ringers are replaced.

No. 1156 Steel Desk Set Box

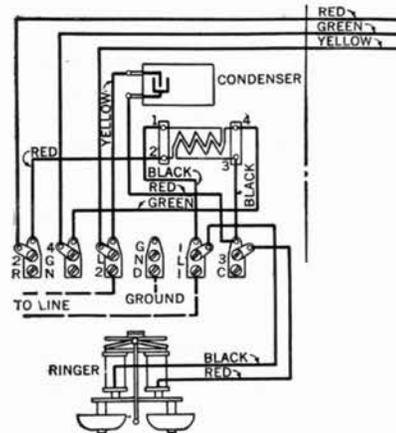
The No. 1156 Desk Set Box is also replaced by the No. 1260 which is standard.

Metallic Ringing

Booster Code No.	Anti-Side Tone Description	Description	No. of Ringer Stock	Code
1156-BY	1156-ADB	Straight Line	801830	46-A
1156-BYZ	1156-ADBZ	Straight — Bias	801856	49-A
1156-EY	1156-ADEY	16 2/3 Harmonic	801845	47-E
1156-FY	1156-ADFY	33 1/3 Harmonic	801846	47-F
1156-GY	1156-ADGY	50 Cyc. Harmonic	801847	47-G
1156-HY	1156-ADHY	66 2/3 Harmonic	801848	47-H
1156-NY	1156-ADNY	25 Cyc. Tuned	801854	47-N

Parts of No. 1156 Desk Set Box

The ringers, induction coils, condensers, terminal blocks and their parts are the same as for No. 1155 and No. 1157 Telephones.



Wiring Diagram of 1156 Desk Set Box

No. 1158 Steel Desk Set Box

This desk set box does not have an induction coil but in other respects it is the same as No. 1156.

Code No.	Description	No. of Ringer Stock	Code
*1158-B	Straight Line	801830	(46-A)
*1158-BZ	Straight Line Biased	801856	(49-A)
1158-E	Harmonic — 16 2/3 Cycle	801845	(47-E)
1158-F	Harmonic — 33 1/3 Cycle	801846	(47-F)
1158-G	Harmonic — 50 Cycle	801847	(47-G)
1158-H	Harmonic — 66 2/3 Cycle	801848	(47-H)

Parts: — No induction coil, but otherwise the parts of the No. 1158 are the same as No. 1156 Desk Set Box.

* Replaced by No. 1261-B and No. 1261-BZ respectively.

No. 1167 Steel Desk Set Box

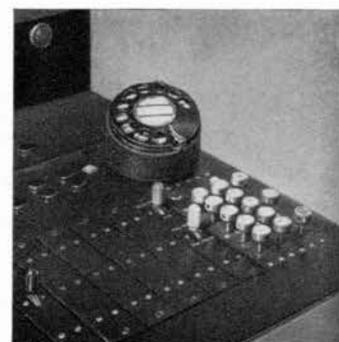
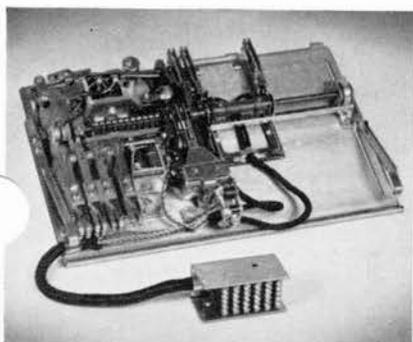
Divided Ringing — Booster Circuit

Booster Code No.	Description	No. of Ringer Stock	Code
1167-BY	Straight Line	801830	(46-A)
1167-EY	16 2/3 Cyc. Harmonic	801845	(47-E)
1167-FY	33 1/3 Cyc. Harmonic	801846	(47-F)
1167-GY	50 Cyc. Harmonic	801847	(47-G)
1167-HY	66 2/3 Cyc. Harmonic	801848	(47-H)
1167-NY	25 Cyc. Harmonic	801854	(47-N)

The ringers, induction coils, condensers, terminal blocks and their parts are the same as for No. 1155 and No. 1157 Telephones.

STROMBERG-CARLSON

Central Office Equipment



XY Dial Systems offer the most versatile and easily expanded method of modern dial telephony for city or village. XY Toll Ticketing makes short-haul toll operation profitable. No. 3 Toll Switchboards are geared to nationwide service.

CENTRAL OFFICE EQUIPMENT

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STROMBERG-CARLSON CENTRAL OFFICE EQUIPMENT

Flexibility

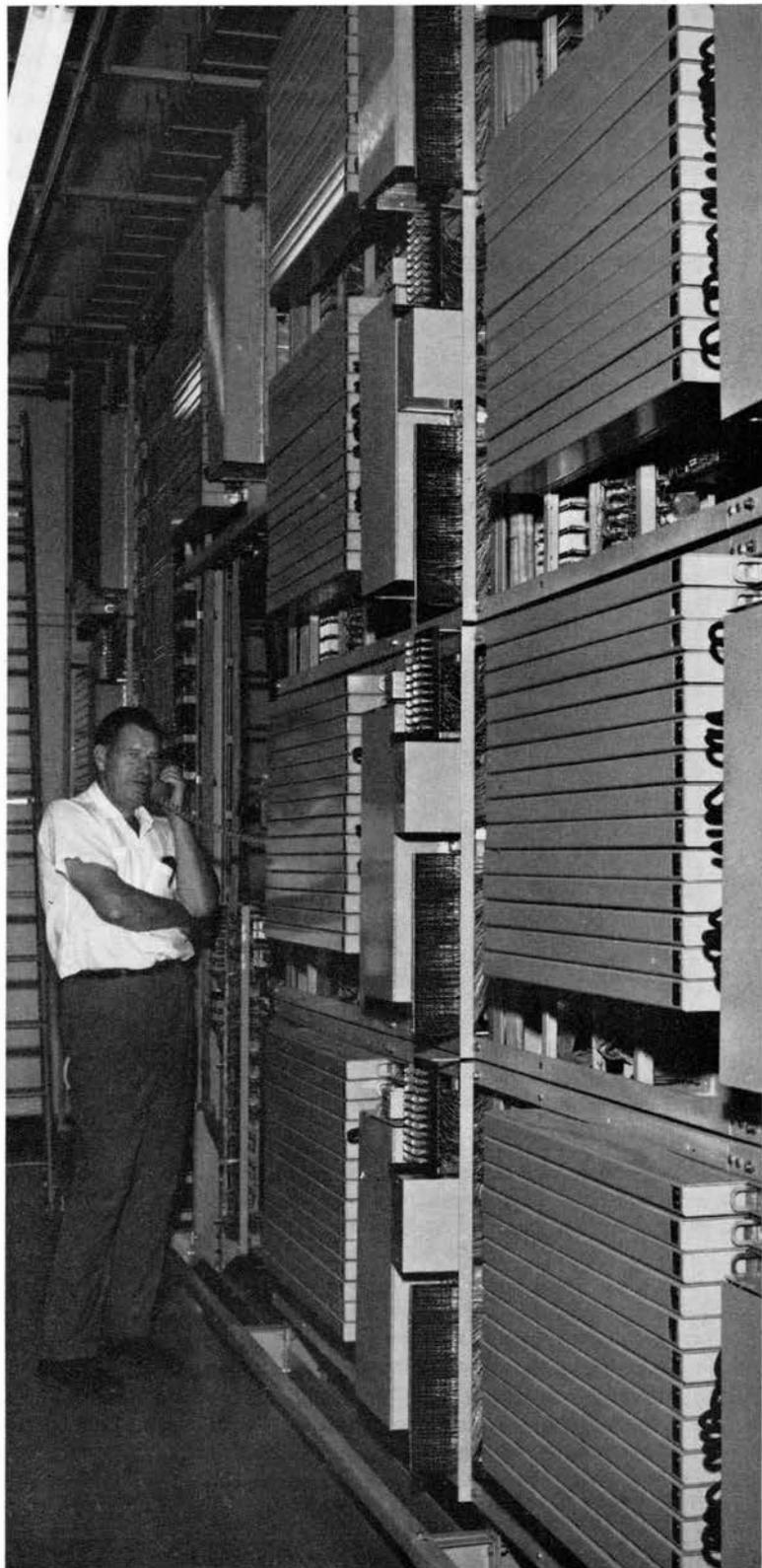
XY Dial Systems employ a universal switching mechanism serving in any capacity—line finder, selector or connector. Both switches and circuit plates are ready-for-use, jack-in-place units.

Economy

Twin wiper contacts engage smooth wire banks, eliminating customary replacement due to wear. Wire bank units save hundreds of costly soldering operations, lowering installation and service costs.

Reliability

Dual precious metal contacts on all switch wipers and relay springs extend life—make connections doubly sure. Vertical wire banks do not collect dust, improve transmission.



Revised 1-1-61

XY[®] DIAL SYSTEMS

To meet today's increasing demand for speedy, dependable dial service, Stromberg-Carlson offers a modern and extremely versatile switch-operated system which has fully met the test of service under a variety of operating conditions in the many installations all over the country.

The basic principle of XY* Dial Systems has been proven in operation over the years. It is suited to the demands of the multi-office exchanges, where its inherent economies are multiplied; yet so simple in its basic design that it is equally practical for the small operating company. The "know-how" which Stromberg-Carlson has accumulated since it began serving the telephone industry in 1894, skilled workmanship and the best materials result in a dial system which is as trouble-free as can be devised.



Typical XY Installation in a Large City

Older types of automatic telephone systems require a considerable field maintenance program and frequent repairs and adjustments are necessary to keep the exchange in first class working order. Most of this "after-installation" adjustment has been eliminated in the XY step-by-step system.

Some of the outstanding features incorporated in the XY system of dial telephony are shown below:

1. **XY TYPE OF SWITCHING IS MORE ECONOMICAL** for the customer than any other type of switching now developed.
2. **XY UNIVERSAL SWITCH SYSTEMS ARE MORE READILY ADAPT-ABLE** to large installations than an all-relay system.
3. **MULTIPLE USE OF THE XY UNIVERSAL SWITCH.** The same switch can be used as a linefinder, selector or connector.
4. **XY UNIVERSAL SWITCH IS THE SMALLEST AND LIGHTEST** available, permitting space economy within the exchange building.
5. **XY SYSTEM INTERCHANGEABILITY** lends itself to unit-type construction of frames and circuit plates.
6. **XY UNIVERSAL SWITCHES AND RELAY STRIPS PLUG IN.**
7. **BARE WIRE MULTIPLE BANKS** are removable as individual units; save countless soldered joints.
8. **READILY ADAPTABLE** for terminal per line or terminal per station systems.

*"XY" is a registered United States trade mark. Wherever it appears in this catalog, the term is used in the trade mark sense.

STROMBERG-CARLSON

XY DIAL SYSTEMS (Cont.)

Versatility of XY System

The XY Dial Telephone System includes refinements for which the need has only become apparent in the industry in the last few years. Systems which were adequate for the conditions which existed many years ago are not always adaptable to the needs of today, with the trend toward nation-wide toll dialing, toll ticketing and similar developments.

Modern methods incorporated in the design of the XY system include the general use of plug-in units, both switches and circuit plates. Other important features can be had with no additional expense. For example, the operator of several exchanges of a similar pattern can easily and quickly move switching units from one exchange to another, or from a central store to an exchange, to cater to sudden traffic changes; and additions to and rearrangements of equipment are likewise quickly effected. Thus again has the viewpoint of the exchange operator been kept uppermost in mind during design of the XY system.

Regarding operating and circuit features, all modern requirements are provided for in the most economical manner. The problems of both local and toll switching have been exhaustively studied and solutions to all of these problems are readily available in the various XY systems. In particular, methods to meet the requirements of the recently developed system of nation-wide toll dialing have been incorporated in all XY exchanges. Even if the necessity for toll dialing is not present at the time of the initial installation of an exchange, such toll dialing features can be added at any future date without complicated or extensive additions or rearrangements.

For local switching, various types of line conditions can be easily met, and many restrictions can be made for local or inter-exchange dialing, where such restrictions are desirable. All types of well-known party line services are available and various types of ringing are included; bridged or divided ringers — harmonic, synchronic, decimonic code or superimposed. Trunking facilities are designed for adaptability, because it is often necessary to work into other exchanges of various types of manufacture, but all of these requirements can be fulfilled with one or two way loop or composite trunks. In addition, special services including intercept, paystation, information and various other special facilities are available.

Basic XY Switching Scheme

The XY Universal Switch operates on the order of 25 steps per second—a complete cycle of X and Y motion is finished before the mind can register the start. This makes the operation of hunting both practical and low in cost. When the calling subscriber lifts his handset, the switches find the calling party's line and connect him through to an associated idle first selector or, in connector systems, an idle connector. This connection causes dial tone to be heard by the subscriber who now proceeds to dial the desired number.

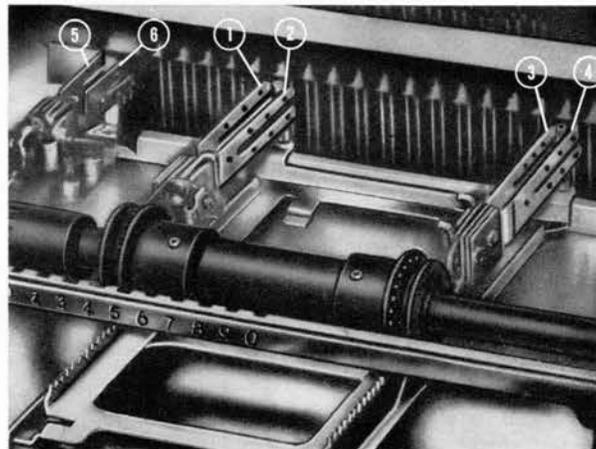
Dialing of the first digit sets the wipers of the first selector opposite the level (X motion) of the digit dialed, whereupon a hunting action (Y motion) takes place to locate a trunk to an idle second selector or to the next unit in the switch train. This procedure is repeated as the second digit is dialed and continues until all digits of the directory number have been selected except those of the individual line (and his ringing code if a party line).

Since the XY Universal Switch is 100-point (10 positions in both X and Y directions), the first two digits dialed into the connector in a terminal per line system are the means of connecting through to the called line. An additional digit is dialed to select the proper ringing frequency or code to cause the proper station bell to be rung.

In the Stromberg-Carlson terminal per station system this additional digit is not required and only two digits are dialed into the connector. With this system any frequency may be assigned to any terminal, and consequently any terminals may be combined to form a party line. This provides for maximum efficiency in loading party lines and in the number of connector terminals required. This arrangement is possible in Stromberg-Carlson equipment without any extra cost because of the Fourth Wire.

By means of the Fourth Wire an operating company can effect real economies by maintaining 100 per cent fill on all lines without the expense of changing directory numbers. When a subscriber moves to a different line, where a different frequency is open, his former directory number can be re-assigned without change and the new frequency taken care of by changing the jumper to the Fourth Wire.

Wipers (1) (2) (3) are Tip, Ring, and Sleeve Conductor.



XY Universal Switch in Wire Bank, after "x" travel

Wiper (4), Hunt Sleeve, is the famous Fourth Wire which solves party-line and many other problems. Wipers (5) and (6) are XX and X respectively.

Revised 1-1-61

XY DIAL SYSTEMS (Cont.)

Basic Shelf Equipment

XY systems are built with the equipment arranged as shelf units, which in turn will mount on standard frames. In general there are the following types of shelf units:

Linefinder and Line Relay Shelf Units

These units mount 100 line circuits either lock-out or non lock-out and the associated line finder relays and switches. These shelf units are normally wired for 14 or 18 linefinders per shelf and equipped as required to carry the traffic. Any specified percentage of lines can be arranged for lock-out.

The finder switches are in one common group, and any finder may be assigned from either of two allotments depending on whether the call comes from odd or even level lines. This arrangement provides for more even distribution of originating traffic over all finders and associated selectors in a particular group.

Selector Shelf Units

These units are normally arranged for mounting 20 selectors with their associated switches and wire banks. The wire banks are normally split into 2 groups in order to provide flexibility in trunking. On equipment for smaller offices the wire banks will be wired to terminal blocks on the shelf, and on larger installations the wire banks will be wired directly to terminals on the grading bay. There is one grading bay located between each of two selector bays and serving both. In either case, the selector shelf will have its own common equipment and be a complete unit. These shelves mount all types of selectors (local, incoming or toll).

Multiple digit adding selector circuits have been designed for use in XY Dial offices to provide for 2-5 numbering without the addition of any ranks of selectors to meet the requirements of nationwide intertoll dialing. These selectors make use of the XY Universal Switch with its auxiliary wipers and banks used for level marking.

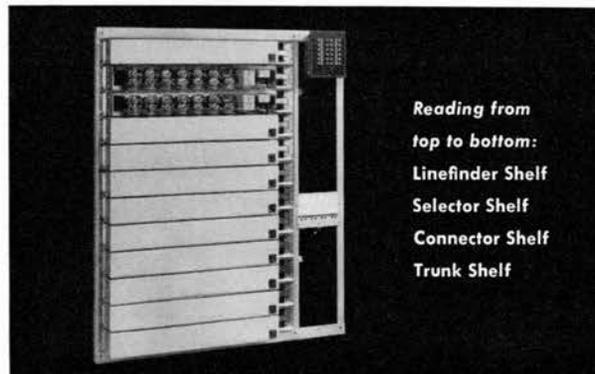
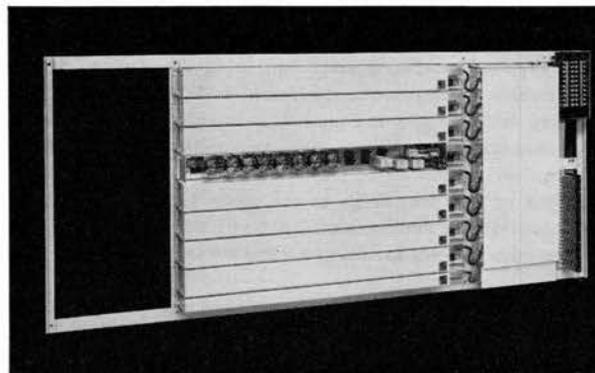
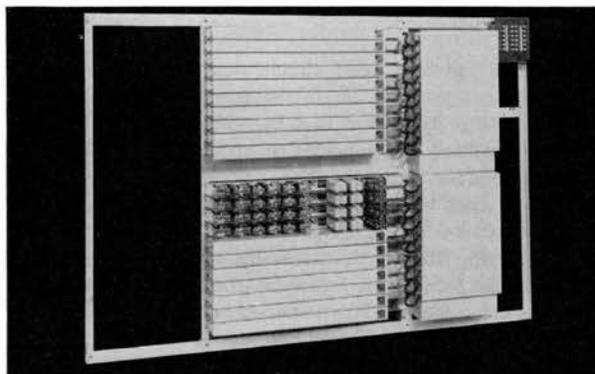
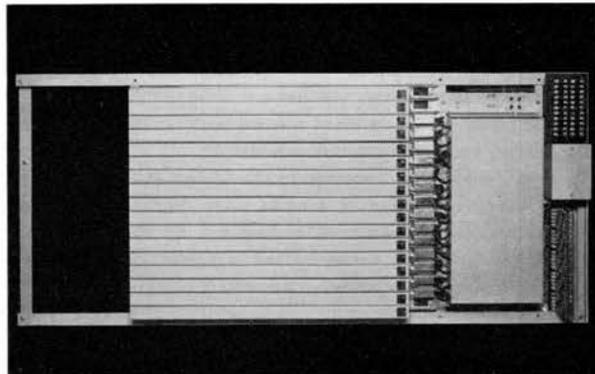
Each shelf has its own fuse panel, signal equipment and alarm lamps.

Connector Shelf Units

These units are arranged for mounting either 11, 16, or 21 connectors, one of which is the test connector. There is space for mounting 10, 15, or 20 local connectors on a shelf, depending on the trunking requirements. These shelves are also complete units in that each shelf has its own fuse panel, common alarm circuit and alarm lamps. The connector wire banks are wired to a terminal block mounted on the shelf. Peg Count meters are connected to the shelf when desired. The Shelf Supervisory Circuit can be mounted directly beneath the regular connectors.

Trunk Shelves

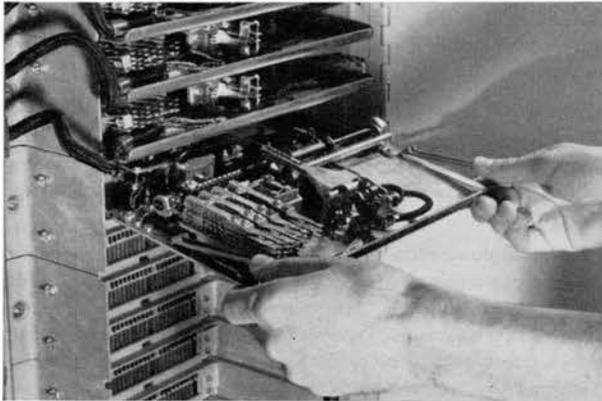
Trunk circuits, reverting call circuits and all miscellaneous circuits (pay station, information, intercepting, etc.) not requiring switches will be mounted on trunk shelves. These shelves are made in two standard sizes, one with a capacity for 20 mounting plates, and the other for 10 mounting plates. The number of circuits which will mount on these shelves will depend on the amount of equipment required for each circuit. These shelves are also complete units in that fuses, alarm circuits, and alarm lamps, are all individual to each shelf.



Reading from
top to bottom:
Linefinder Shelf
Selector Shelf
Connector Shelf
Trunk Shelf

THE XY UNIVERSAL SWITCH

The XY Universal Switch is the heart of the Stromberg-Carlson dial telephone system. The Switch is a masterpiece of mechanical and electrical design, providing fast and accurate stepping in two directions to find and connect to any one of 100 circuits.



Outstanding Features

1. Switches interchangeable for use as Line Finders, Selectors, and Connectors.
2. "Plug-In" construction facilitates routine inspection and tests.
3. Flat Plate construction facilitates cleaning and adjusting.
4. All parts subject to wear are of case-hardened steel.
5. Positive action interrupters are built into the Switch.
6. High speed operation.
7. Off-normal and overflow contacts are built in.
8. Release magnet is self-holding until Switch returns to "normal."
9. Operating principles thoroughly proven in many progressive exchanges operating for many years.
10. Occupies 20 sq. ins. of mounting space on equipment frame per Switch ($12\frac{1}{2} \times 1\frac{3}{8}$ cell dimensions).
11. 100 point Switch.
12. Not sensitive to reasonable voltage fluctuations.
13. Can operate at temperatures from 0° to 120° F.
14. Twin contacts used throughout on spring pile-ups and wipers.
15. Tip, Ring, Sleeve, and Hunting Sleeve are all separate wipers.

Description and Operation

This Switch is manufactured in a modern factory by skilled workmen using the finest modern production tools and gages. Each Switch is subjected to rigid inspection and must pass exacting performance tests before it is approved for shipment.

It is the function of this Switch to step contact wipers into an associated wire bank, establishing connection with the circuit selected, in response to the supervisory circuits, or to the subscriber's dial impulses. Wipers are provided for the usual Tip, Ring, Sleeve and Hunting Sleeve circuits, and also for two additional circuits used for supervisory purposes and known as the 'X' and 'XX' circuits.

The Switch carriage bearing the T, R, S, and HS wipers moves first across in front of the wire bank, and then steps into the wire bank. The Switch performs this stepping rapidly, accurately and reliably. Stepping speeds of 25 pulses per second and higher are realized when the Switch is trunk-hunting.

In the assembly of the XY Universal Switch we see the carriage bearing the wipers on the upper right hand side. There are two pairs of bifurcated wipers, for the T, R, S, HS functions, mounted on the carriage. The carriage is controlled by the cog roller, which slides on the tubular shaft, (extending across the mechanism plate), and rotates with it. As the cog roller slides along the tubular shaft, the carriage is moved in the 'X' direction, and as the cog roller rotates, the carriage is stepped forward in the 'Y' direction.

Sliding of the cog roller in the 'X' direction is effected by rotation of the 'X' Gear Assembly, whose sprocket engages annular rings in the cog roller. The 'X' Gear Assembly is advanced by the driving pawl of the 'X' Magnet which appears at the upper left in illustration. The 'X' Gear is prevented from over-running by the tip of the 'X' Magnet armature which engages the adjacent sprocket tooth at the end of the armature stroke. After the stroke of the armature the 'X' Gear is held in position by 'X' Retaining Pawl which drops into mesh with the ratchet wheel. As a positive assurance that the armature driving pawl will not interfere with the release function, an ejector is mounted on the 'X' Gear Assembly.

The 'X' Gear Assembly also controls the 'XX' carriage which meshes by rack and pinion directly with it. The 'XX' carriage carries the 'XX' and 'X' wipers previously mentioned.

The 'X' and 'Y' magnet frames are built of the highest quality magnetic iron. The coils are wound to exacting standards with close tolerances on resistance and the number of turns. Armature bearings are case hardened for long service. The magnets are normally wound to operate on 48 volts D.C.

Mounted on the 'X' and 'Y' Magnets, and operated directly by the armature is the Stromberg-Carlson type of integral Interrupter switch. Adjustments are provided for setting and for timing the switch to its best performance.

The rotation of the cog roller in the 'Y' direction is effected by engagement of the driving pawl on the Y Magnet armature with the cog roller teeth.

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THE XY UNIVERSAL SWITCH (Cont.)

The 'Y' Magnet appears in the lower center of illustration. Overrunning is prevented by the stop bar (which appears just below the cog roller) moving in to engage the teeth of the ratchet on the left hand end of the cog roller. The stop bar is positively operated by a cam on the 'Y' Magnet armature. An ejector is provided to positively disengage the driving pawl from the cog roller upon release.

The cog roller is held firmly in position by the 'Y' Retaining Pawl at the conclusion of each stroke of armature.

The release magnet appears just to the left of the 'Y' Magnet. The release magnet disengages the X and Y retaining pawls and also operates the release spring pile-up. A circuit is provided in conjunction with the off-normal contacts to operate a release magnet once it has been actuated until the cog roller has completely returned to the normal position. The release spring pile-up is usually used to busy out the Switch, preventing its seizure until it is restored to normal.

The spring combination appearing to the left of the release magnet provides three functions; the 'X' off-normal, the overflow and the 'Y' off-normal contact positions. The 'X' off-normal spring pile-up appearing just to the left of the release pile-up is actuated by a toggle which derives its motion from a switching lever underneath the cog roller. The contacts of this pile-up are used as previously mentioned to provide a path to operate the release magnet and also for supervisory circuit functions.

At the center appears the overflow pile-up which is actuated from two sources. Should the cog roller run into 'X' overflow,

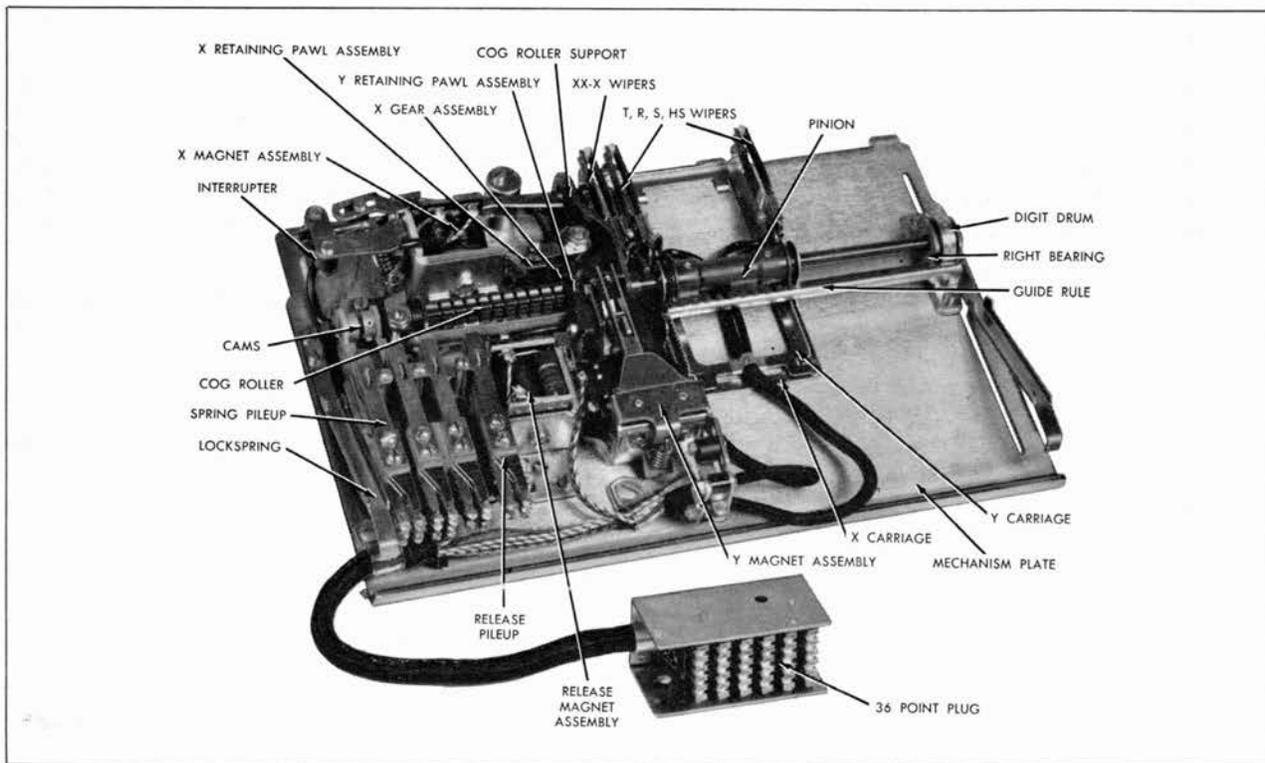
the switching lever is moved to the right hand limit of its travel, operating the toggle previously mentioned. This depresses the pusher spring of the overflow pile-up. This pusher spring may also be actuated by the cam mounted on the tubular shaft in event that the cog roller rotates to the 'Y' overflow position. The contacts of the overflow pile-up are used to interrupt the battery feed to the 'X' and 'Y' magnets and also for supervisory purposes.

On the left hand side of the spring combination appears the 'Y' off-normal pile-up. This pile-up is actuated by the cam mounted at the left hand end of the tubular shaft. The contacts of this pile-up have similar functions to those of the 'X' off-normal pile-up.

Electrical connection to the XY Universal Switch is made by means of the cable attached at the lower left hand corner. This cable terminates in a multi-point plug in which 36 terminals are mounted in a minimum of space. This terminal plug is arranged to lock into a mating piece on the equipment frame providing quick and positive connection.

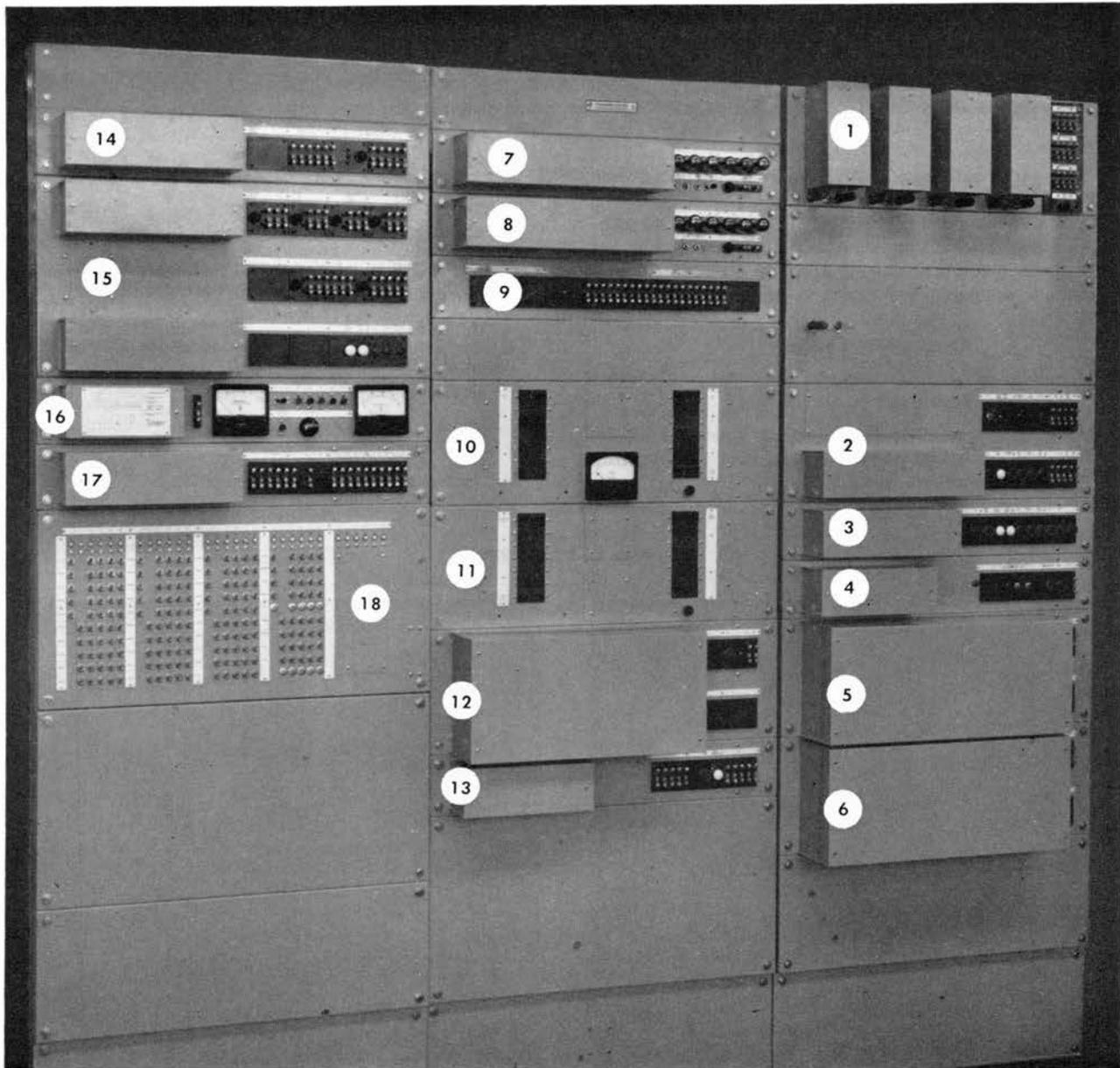
As an aid in adjusting and checking the Switch, a numbered drum is mounted at the right hand end of the tubular shaft, providing ready indication of the 'Y' position of the Switch. The guide rule mounted under the tubular shaft on the right hand side is numbered to indicate the 'X' positions on the carriage.

Any dial system is only as efficient as its switching element. The Stromberg-Carlson XY Universal Switch offers a reliable, versatile, thoroughly tested instrument which the company is proud to include in its established line of the finest telephone products.



XY Universal Switch Assembly

STROMBERG-CARLSON



A Typical Power and Supervisory Panel

LEGEND

- | | |
|--|--------------------------------|
| 1. Group Supervisory Panel | 10. Battery Distribution Panel |
| 2. Common Supervisory Panel | 11. Battery Distribution Panel |
| 3. Miscellaneous Supervisory Panel | 12. Vibrator Panel |
| 4. Mark & Common Alarm Panel | 13. Coin Control Panel |
| 5. A-C Interrupter Control and Machine | 14. Ring & Relay Panel |
| 6. D-C Interrupter Control and Machine | 15. Ringing Control Panel |
| 7. #1 Tone Generator Panel | 16. Frequency Indicator Panel |
| 8. #2 Tone Generator Panel | 17. Ring & Relay Panel |
| 9. P.B.X. Ringing Panel | 18. Frequency Marking Panel |

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Revised 1-1-61

POWER AND SUPERVISORY EQUIPMENT

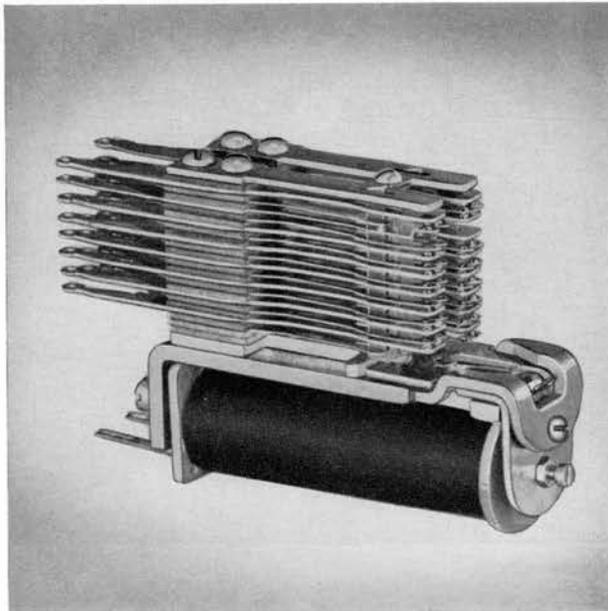
Stromberg-Carlson Power Boards match the switching equipment in appearance and complete flexibility. All controls are placed where they can be easily identified and operated. Panel wiring separates outside power source from local power. All connections between panels are by means of cable.

The essentially new feature of the Stromberg-Carlson Power Board is its flexibility. In assembly, in operation and in future expansion, changes and enlargement of service are not a problem of complete rebuilding, but a simple matter of sliding out one unit and sliding in another. Units can be provided to fit any type of dial equipment, method of charging or type of ringing.

Outstanding Features

1. Frame construction, with identical uprights arranged for mounting any basic unit in any position.
2. The "Unit Control Panel" of functional operations will be selected for individual needs; other panels will then be built up around basic control unit.
3. Motor-Generator or dry disc rectifier for charging batteries may be used.
4. End cell or counter cell battery control may be used.
5. The interrupter machine provides "jacked in" springs and motor. These parts can be readily removed from face of machine without disturbing any wiring.
6. Tone Generator panel provides basic tones for Dial, Busy and Tick. Provision is made for adding the second tone panel when needed.
7. Common Supervisory control panel provides common alarm signals in one location.
8. Locates and types service interruptions.

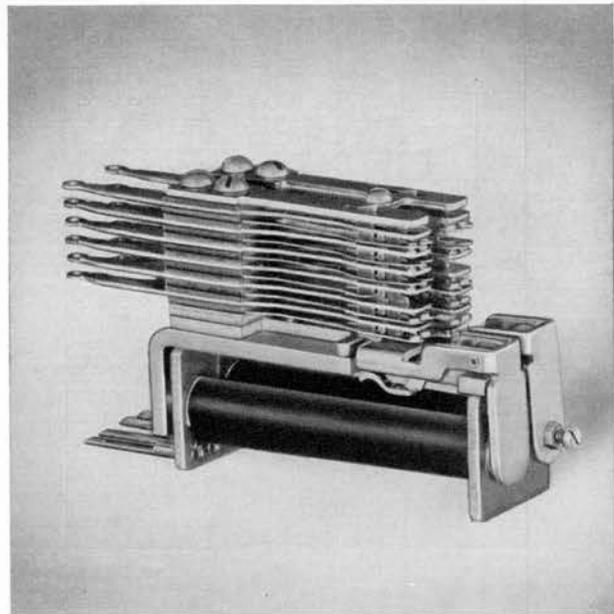
A AND C TYPE RELAYS



Stromberg-Carlson A Type Relay

The Stromberg-Carlson "A" Type Relay was designed to meet the exacting requirements of dial switching systems. This relay, because of its construction and carefully selected materials, will give reliable service under adverse conditions where many other relays fail. An outstanding feature of this relay is the use of twin precious metal contacts—positive insurance for reliable operation and long life.

The adjustable armature support simplifies adjusting the armature travel when necessary. Residual Screws or welded residual discs furnished as required. A continuous single piece pusher



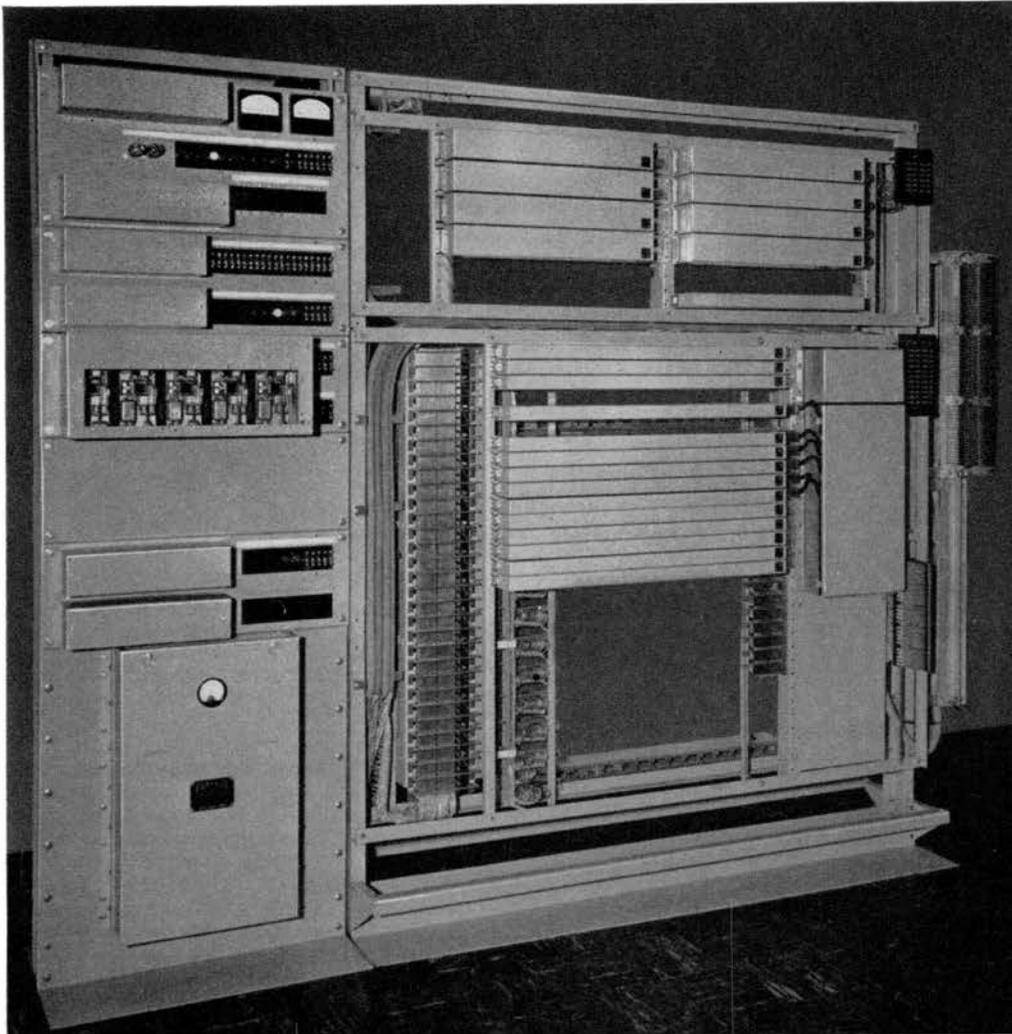
Stromberg-Carlson C Type Relay

permits each moving spring to operate individually, assuring long life with very little spring adjustment. The spring combination can be unscrewed as a unit. Coils, with integral terminals, are easily removed.

The Twin "C" Relay (actually two relays on one frame) is designed to mount in the same space and on same mounting as one standard "A" Relay. Developed for use in line circuits where space limitations were a major factor, it may be used wherever the economy of small size is an advantage and where extremely high resistance coils are not required.

STROMBERG-CARLSON

THE XY "B" SYSTEM 100-LINE C.D.O.



There has been an increasing demand for XY dial equipment designed expressly for the small community office, not initially requiring selectors. The "B" System 100-Line XY C.D.O. is the answer to this demand.

The inherent flexibility of the XY dial system permits the same features which have given larger XY installations the enthusiastic approval of the industry, to be built into these smaller systems. In addition, the design incorporates several new features which simplify installation and ease of maintenance:

The main distributing frame is normally mounted directly on the end of the equipment frame, shown on right side of the illustration above. Thus all wiring between the M.D.F. and the equipment frame can be completed prior to shipment; the installer has only to connect the leads to outside plant, greatly reducing installation costs.

The power board, shown at left in illustration, is built up in standard size demountable panel sections — each a complete working unit which can be selected to meet individual requirements, yet all match each other. Mounting and appearance duplicate the switching equipment.

Services which in other systems are provided as extras — conversation timing, line lock-out, restricted service, pay station service, PBX or consecutive line hunting, reverting calls and national intertoll service — are all included in standard equipment and can be utilized as required.

This system is designed for an ultimate capacity of 100 lines, including trunks and 14 finder-connectors. Unused line facilities in a line group that is used for non-restricted trunks, may be used for local lines. One terminal between the trunk group and the local lines must be left vacant. A maximum of 10 inter-office trunks can be provided.

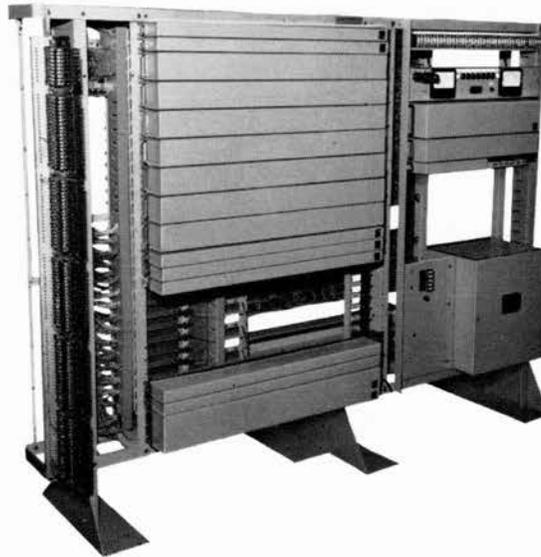
Operating power for the "B" System is obtained from a storage battery and associated battery charging equipment which operates from a commercial electrical power source.

This system is arranged so that it can be used as a tributary office out of a terminating toll center in an inter-toll dialing network. Stop and start-dialing signals are provided as well as 60 IPM tone and flash-busy indications for line busy as required in the general plan for Nation-Wide Inter-toll Dialing. This system is also adaptable to Toll-Ticketing when desired.

STROMBERG-CARLSON

Revised 1-1-61

COMPAK I



The Compak I is a low cost, universal package — an assembled and fully wired "off the shelf" XY System. You order equipment according to desired requirements.

This "off the shelf" system offers full C.D.O. features:

1. 2-5 numbering.
2. Normal access to outgoing toll.
3. Universal numbering with E.A.S. (Extended Area Service) exchanges.
4. No "stop-dial" necessary on incoming toll calls.
5. No "second-dial tone" necessary on incoming E.A.S. calls.
6. Multi-frequency ringing.
7. Intercept service.
8. Transistorized ringer source.
9. Integrated power and switching equipment.
10. "A type" frame included.

Capacity:

This switchboard provides facilities for 100 lines, 15 links including a maximum of 10 trunk lines. The maximum number of trunk groups is two (2) and unused line facilities in a line group used for trunks may be used for local lines.

Operating Range:

- a. Battery voltage — 44-54 volts.
- b. Dial Speed — 8-12 pulses per second.
- c. Ringing Voltage — The ringing voltage does not drop below a minimum value of 65 volts with maximum ringing load.
- d. Subscriber Lines —
 - (1) Loop Resistance — 1200 ohms maximum.
 - (2) Insulation Resistance — 15,000 ohms minimum.
 - (3) Ringer Load — Not to exceed 10 bridged low-impedance ringers per line.
- e. Inter-Office Trunks —
 - (1) Loop Operation —
 - (a) Loop Resistance — 2000 ohms maximum with battery and ground pulsing.
 - (b) Insulation Resistance — 30,000 ohms min.

- (2) Composite or Simplex Operation with Polar Duplex Signaling and Supervision. For this type of operation, polar duplex signaling equipment is used, and trunk limits are determined by the signaling set used.

Power:

The common power equipment (with the exception of the secondary cells and charging equipment) is an integral part of the switchboard.

- a. Batteries — Power for the switching equipment and the transmission circuits is supplied from a 100 AH, 23-cell storage battery.
- b. Charging Equipment — Charging equipment for charging the battery is supplied for operation from 110V 60 cps commercial power. It is of the constant-voltage type for charging batteries on a full float basis. Charger capacity is 6 amps. Charge failure alarm is provided.
- c. Metering and Control — A 20 amp circuit breaker distributes the switchboard current drain via a 50 amp interval shunt ammeter to a series of alarm type fuses feeding the individual circuits. The voltage is monitored with a 100V 1000 ohm/volt meter.

Ringng and Interrupter:

- a. Ringing — The ringing source is a five-frequency transistorized ringing machine with an output of 25 watts per frequency. It is DC operated, therefore a standby machine is not necessary.
- b. Interrupter — A relay type interrupter, comprising standard fast operate, fast release "A" type relays driven from a transistorized ¼ second pulse source is used to supply ringing interruption cycles, PU, ECP, 60 and 120 IPM pulses.

Physical Features:

The over-all dimensions of the switchboard are:

- a. Height — 5 ft. 2 in.
- b. Width — 7 ft.
- c. Depth — 1 ft. 6 in.

All supervisory, power distribution, interruption and metering equipment is built into the basic unit.

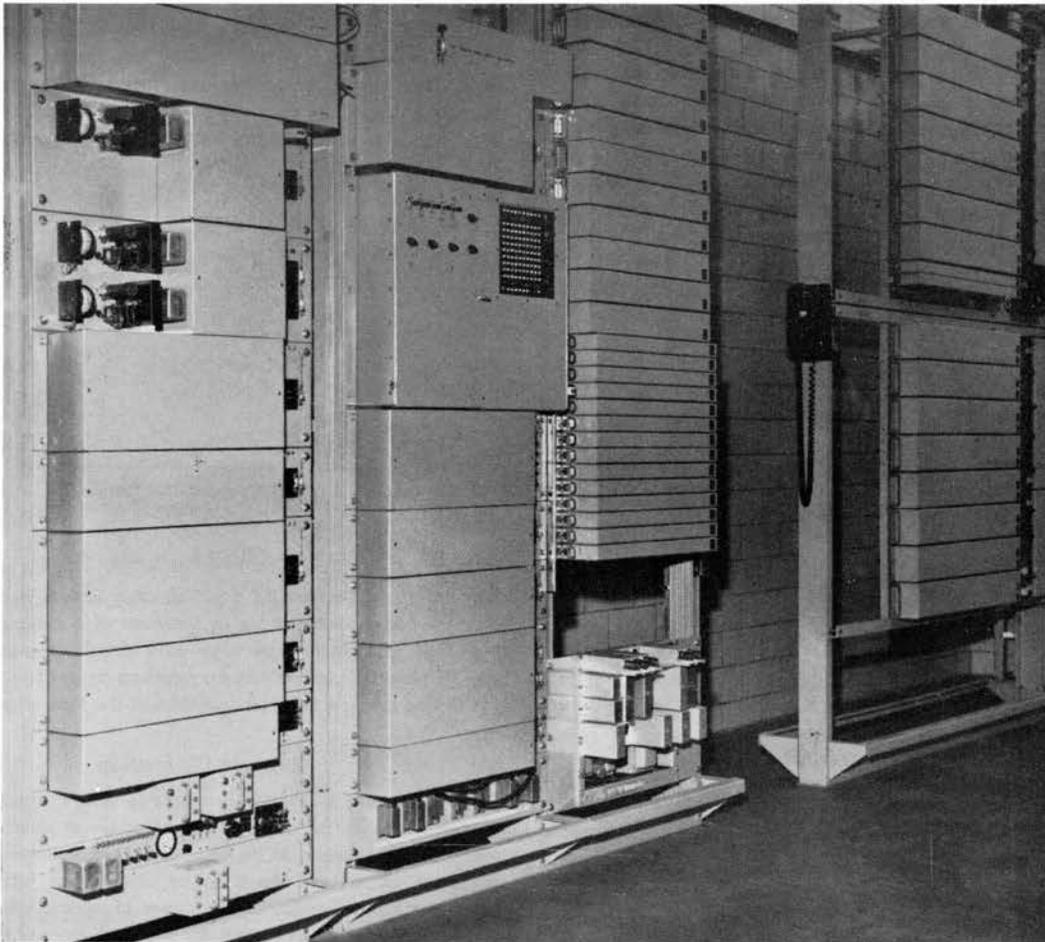
STROMBERG-CARLSON

XY TOLL TICKETING

XY Toll Ticketing is tailored to the specific problems of convenience and finance, and engineered for each specific application so as to yield the maximum operating economies. XY Toll Ticketing is automatic not only in its recording function, but also in the subsequent steps necessary to arrive at a permanent record of the toll calls.

The Stromberg-Carlson Toll Ticketing System is compatible with any direct response dialing system. It will also conform with the 2-5 numbering scheme used by the telephone operating companies to facilitate Nationwide Direct Distance Dialing. In the Stromberg-Carlson Toll Ticketing System, line identification is automatically accomplished and it is not limited as to the type of permanent record that can be printed or punched.

XY Toll Ticketing is high speed in operation, thus eliminating the need for duplication of many pieces of equipment. The recording, identification, playback and ticketing equipment are completely flexible and can be arranged for the most economical means of equipping remote or central offices.



Typical XY Toll Ticketing Installation

Nationwide Direct Distance Dialing

The XY Toll Ticketing system is arranged to be compatible with the Nationwide Direct Distance Dialing plan. It conforms to all requirements of pulsing and supervision. Common register-senders are standard equipment. Register-senders provide the necessary route interpretations and code conversions, provide for alternative routing and stop and start dial features.

Modern Techniques

Electronic techniques involving the use of transistors, cold cathode gas tubes, hot cathode vacuum tubes and solid state and neon diodes have been used wherever feasible to achieve high speed, high reliability and low maintenance. Electronic equipment does not have to be adjusted, lubricated or cleaned.

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Revised 1-1-61

XY TOLL TICKETING (Cont.)

The Long Play Magnetic Tape Recorder

One of the important functions which must be performed automatically is the recording of pertinent called data so that charges can be made. The XY recorder shown below is the mechanism which records this information. The recorder is similar in appearance to the XY Universal Switch, mounts in similar cells and uses some of the same parts.

The data is recorded on a magnetic tape which is in the form of an endless reel capable of storing the information for many calls. Magnetic storage has been chosen as being preferable to other means of temporary storage because it provides the unique facility of erasing and reusing the tape. Thus the operation becomes truly automatic for unlimited periods.

The tape passes over a twin-track head which is used for both recording and playback. This is followed by a double width erase head which erases both tracks simultaneously on playback.

The upper half of the twin-track head transforms electrical impulses, that are fed into it, into magnetic impressions (called "Mark" pulses) indicating the subscriber's telephone number, the called station, time, date and conversation time.

Magnetic impressions are made on the lower half of the tape by the lower half of the same head, serving to separate the groups of "Mark" pulses. These impressions are called "Space" pulses.

The end of the call, whether it is completed or not, is indicated by a third signal, consisting of a simultaneous "Mark" and "Space" pulses, which is followed by several advances of the tape to provide a blank section between calls.



Long Play Recorder

Identification of Calling Party

After dialing a code to gain access to the Toll Ticketing Equipment, the subscriber dials his party digit and then the required station number. Later, when the call is answered, identification takes place and the pulses representing the calling number are recorded on the magnetic tape.

The Playback Operation

It is unnecessary to produce a ticket individually as each call is completed because of the large storage capacity of the XY recorder. Under normal circumstances, the playback process will be initiated automatically at a time when toll traffic is low. Convenient strapping on the Clock-Calendar circuit can start the playback process at any of the 24 hours in the day.

When initiated the Playback Control Circuit will seize each idle recorder in rotation until a complete cycle of the circuits in the office has been made. A second and third cycle is then made to pick up those circuits which were busy during the previous cycles.

The tapes are advanced by a motor which is common to all recorders on one bay side. The tape is driven at a continuous rate of speed and the information stored on the tape for each call is converted into a permanent record, under the direction of the Readout Control circuitry. Pulses representing digits of the call are counted by chains of cold cathode gas tubes that have been chosen for their reliability and economy. When the "end-of-call" signal is received, the tape becomes stationary until the tube information has been interpreted and printed. Rate interpreting and computing equipment can be provided to produce the charges, in dollars and cents, for approximately 95% or more of the total toll traffic. With the tubes cleared, the tape advances and the process is repeated until all information on the tape is used. The tape is erased as the data is being converted to permanent record so that, when cleared, the recorder is immediately ready to accept and record more call data.

DATE		CLOCK TIME		CALLING NUMBER				CALLING NUMBER				ELAPSED TIME		DAY																
MO.	DAY	PRE	TERM	AREA	PRE	TERM	PRE	TERM	AREA	PRE	TERM	TIME	PRE	TERM	NOT															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29		
R																														
X																														

XY Toll Ticketing IBM Punched Card Format (No Charge Computation)

Printed Records

The Stromberg-Carlson XY Toll Ticketing system is arranged to produce permanent records in the form of 5 channel, common language perforated paper tape; IBM 80 column punched cards and Remington Rand 90 column punched cards. The type of output device desired must be specified at the time of ordering.

Remote Operation

The XY recorder is admirably suited to remote operation in unattended offices. Its ability to store a large number of calls makes it unnecessary to tie up a trunk facility permanently for playback purposes if the ticketing of the information is to be done at a central point. Any number of remote offices can be served by a single ticketing point at which most of the common equipment and printer would be located. If the recorders are located in the remote offices, the recorded pulses can be carried over any existing voice frequency channel on a data link. Carrier and/or microwave transmission may be used where conditions warrant.

If the system trunking permits all recorders to be located in a central tandem point, the remote offices need contain only the identifying equipment. All the recorders and other recording common equipment are located in the central tandem point.

TOLL SWITCHBOARDS

Stromberg-Carlson Toll Switchboards are designed to meet the exacting requirements of local and long distance toll service. Every toll board is custom-engineered to meet individual requirements in the best manner consistent with the nation-wide character of long distance operation. Stromberg-Carlson switchboards are now serving the toll needs of scattered agricultural areas, growing suburban communities, and busy metropolitan centers. Talk with your Stromberg-Carlson representative about the many new developments in toll switchboard engineering. He will be glad to cooperate in developing a layout which is suited to your needs, both for the present and for the foreseeable future.



80 Positions of Stromberg-Carlson No. 3 Toll Switchboard in a large toll center.

The entire arrangement of the No. 3 Toll Switchboard reduces the cost per position, which is an important factor in modern toll offices where the number of cords often exceeds the number of lines and trunks by 60% or even more.

Stromberg-Carlson engineers are giving continuous study to the problems of toll operation, both present and anticipated. As new problems arise and the method for handling them has been devised and thoroughly tested, these additions will be incorporated into the No. 3 Toll board.

Features of the No. 3 Toll Switchboard

The Stromberg-Carlson No. 3 Toll Switchboard is the best answer to meet the exacting requirements of operator intertoll dialing over long distances. This board is also used to supply service to local subscribers.

Some of the more important features of this switchboard are listed below.

1. Supervisory and signaling functions are in the line or trunk circuits instead of in the cord circuit. This is more economical when there is a large number of cords in respect to trunks, and provides better means of adjusting to individual line conditions.

2. The cord circuit has zero loss.
3. This board can be supplied with keysenders for use with dial type equipment. Keysenders greatly increase the sending rate, giving higher operating efficiency.
4. No signaling generator is carried into the section.
5. AC operation is available for line and/or busy lamps.
6. Idle lamp indications may be used for trunk groups.
7. No auxiliary contacts are used on jacks. This simplifies maintenance.
8. Jack sleeves can be removed from the front without disturbing operation of the switchboard.
9. All equipment for cord circuits, position circuit, operator circuit, etc., is mounted in the switchboard and has been wired and thoroughly tested at the factory.
10. Line and trunk circuit relay equipment is assembled on circuit plates which have been wired and tested before shipment.
11. This board is easily adaptable to CLR, Inward and TX operator positions where services are normally used in large central offices.

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Revised 3-15-57

TOLL SWITCHBOARDS (Cont.)

Circuit Features of No. 3 Toll Switchboard

CORD AND POSITION CIRCUITS

1. Cord and Position circuits have zero loss.
2. Intentional overlap is possible so as to permit monitoring one cord and listening on the other. However, it is impossible to accidentally connect two toll calls by false operation of the talk keys.
3. Splitting and control features such as dialing and coin control are always associated with the talk key, never the monitor key.
4. Ringing control—Ringing is under direct control of the operator. She can delay ringing when desired. If the board is equipped with a Non-Ring (NR) key, delayed ringing is accomplished by depressing this key during dialing or key-sending. If the board is equipped with a Ring key, automatic ringing is accomplished by depressing this key during dialing or key-sending.

TRUNK CIRCUITS

1. Trunks are designed to fit into the latest intertoll requirements established by telephone operating companies to facilitate nation-wide toll dialing.
2. Trunks will work into manual as well as into dial type exchanges.
3. Trunks are available for many types of special services.
4. Trunks include all signaling and supervisory functions, so that individual line conditions can be met by making an adjustment within the trunk instead of making an adjustment to each individual cord circuit.

Adjustable cable pins are provided supporting the switchboard multiple.

Keyboard Features

The key shelves are low, with the top only 30" from the floor. This allows the operator to rest her feet comfortably on the

floor. Keyboards are extra wide with removable glass bulletin holders. Each keyboard is arranged for mounting both a dial and a key sender set. It has a capacity of fourteen cord circuits, with common keys for splitting, coin control, dial, "wipe out" and "send rear."

An unusual feature which has met with great favor is the provision for mounting individual ticket slots associated with each cord circuit.

Terminal Power Equipment

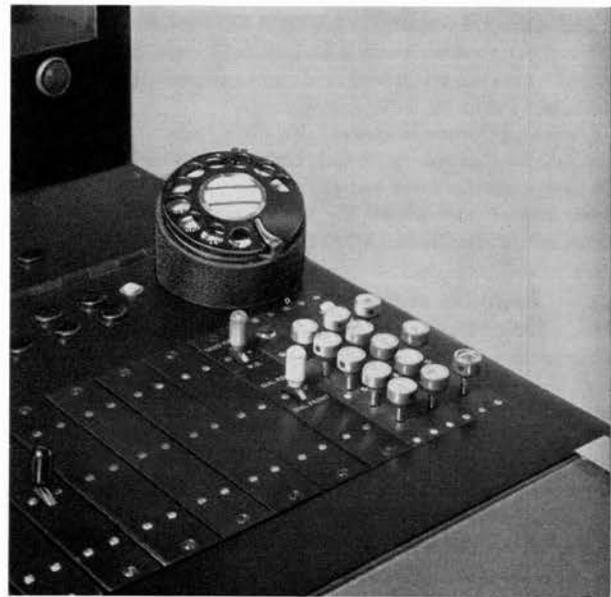
Switchboard multiple cables are terminated on the horizontal side of the IDF and the relay equipments are terminated on the vertical side, so that all circuit assignments are made with jumpers at the frame. Jack circuits and composite equipments for toll testing are terminated at the IDF, thus providing maximum flexibility.

A separate bay is available for mounting power panel, fuse panels, generator lamp panels, and auxiliary control equipment. Other power equipment, such as power control panel, emergency converters, and emergency switching circuits are available. Operating current is supplied from 24 cells of storage battery.

Description of No. 200 Type Section

The No. 203 or 204 Section is of steel frame construction with removable end panels, roof, front and rear doors.

The sections are of single position, two panel type for easy handling. A single panel calculagraph section of the same construction is furnished with each two operating sections for use of both operators. Cable turning sections are available for either right or left end, depending on the direction of growth. Dimensions of a standard section (less end panels) are: height 51", (or 56"), width 23½", depth at floor 20", depth at keyboard 38½". The calculagraph section is the same except for the width which is 12½". The jack opening in the face of the switchboard is 15" high (or 20" on the higher section).



STROMBERG-CARLSON

INFORMATION AND SPECIAL SERVICE DESKS

With the advance of telephony in the direction of customer dialing the need for Information and Special Service Desks becomes more apparent. Stromberg-Carlson offers three designs, each having its own advantages in application: the Turret Type, the Flat-Top Type, and the Sloping-Front Type Information Desks. The type of desk necessary for your office depends upon the size and traffic conditions.

The Turret Type Information Desk

The simplest of the Information Desks, this type is ideal for small dial exchanges. Using a standard Model 121 PBX cabinet, the Turret desk provides for terminating 20 Information, Intercept or other Special Service Trunks. The desk provides all the facilities required in small offices and can be mounted on any convenient desk or table which will permit the operator to perform other duties when traffic warrants.

Features of the Turret Type Information Desk:

1. **INTERCEPT**, local and toll information, rate and route, repair and other special answering services can be accomplished through the use of the Turret Type Information Desk.
2. **HOLDING**. It is possible for the operator to hold an incoming call in order to look up information, verify the line, or perform other duties relative to the incoming call.
3. **SWITCHING POSITION**. Ideal for small offices during light duty hours. The operator can transfer all incoming calls to a toll board. This feature will not reduce the number of possible trunks that can be assigned to this turret.
4. **VERIFICATION**. By using the dial, the operator can verify an incoming local call.
5. **TRUNK LINES** can be directed from the turret to a toll board and to a test board if desired.

Flat-Top Type Information Desk

Larger offices prefer more complete desk facilities such as found in the Flat-Top Type Information Desks. These desks provide space for terminating more trunks and also offer a table surface for using information or other files. If more than one position is required, they are normally placed in a staggered line with adjacent operators facing in opposite directions.

A maximum of 36 Information, Intercept, or other Special Service trunks together with Supervisor's, Verification and Miscellaneous trunks can be equipped. Any number of positions can be multiplied together.

Originally designed for use in XY Dial equipment, the Flat-Top Type Information Desk is also adaptable to work with other types of dial equipment. In this desk, the trunk relay equipment is mounted on racks outside the desk. The relays used are the same twin contact relays used in XY Dial Systems.

FEATURES. All features are identical with those of the Turret Type Information Desk; the principal difference, other than the physical construction is in the larger capacity.



Flat-top information desks (3 positions shown here).

Sloping-Front Type Information Desk

This type of information desk is a recent development of Stromberg-Carlson. The Sloping Front model is intended for use with book type Information files, whereas its companion model, the Flat-Top type, is intended for use with rotary files. Equipment and operation is the same for either type desk.

This desk has a capacity of 100 Special Service Trunks and up to 20 operator positions may be installed in one group. It is intended for use in large offices or multi-office areas.

Special Features of this Sloping-Front Information Desk:

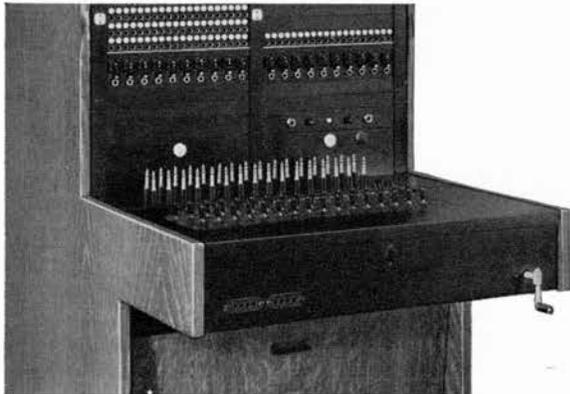
1. **LINK CIRCUITS**. Two such circuits are provided for each position. The operator can hold one call, and answer a second call while looking up information on the first call.
2. **RELEASE KEY**. Permits release of a call by the operator when call is completed.
3. **CALL FINDER**. Utilizing standard XY Universal Switches, this arrangement "finds" an incoming call and connects it to an idle Information Desk operator. A spurt of tone signals the operator that she is connected to a calling party. A row of lamps indicate the type of call, such as Toll Information, Local Information, Intercept, etc., and she answers accordingly.
4. **LOCAL CALLS** can be made by the operator when necessary.
5. **FLASHING DISTANT OPERATORS**, verification, transferring calls to supervisor, and "Call Splitting" can be accomplished

CLASSIFICATION OF CALLS. As many as ten different classes of service may be provided on these Information and Special Service Desks. The preferential classes of calls are picked up first. The rest are held until used. To guard against excessive waiting time for the less preferential calls during busy periods, a simple "gate" system is used which filters the calls without harrying the operator. This insures that all calls are answered within a reasonable period of time.

Revised 1-1-61

COMMON BATTERY SWITCHBOARDS

Stromberg-Carlson continues to make a diversified line of common battery switchboards, both for additions to present manual offices and for new installations where local conditions will indicate use of this type of service. New developments in the industry at large have been carefully studied, and modifications to the equipment made as a result of these findings. The manual switchboards shown here provide simplified circuits giving faster, more economical and accurate service than was heretofore possible.



Keyshelf showing Non-Multiple Switchboard, Drop Signal Magneto and Signal Common Battery Lines.

THE NON-MULTIPLE SWITCHBOARD

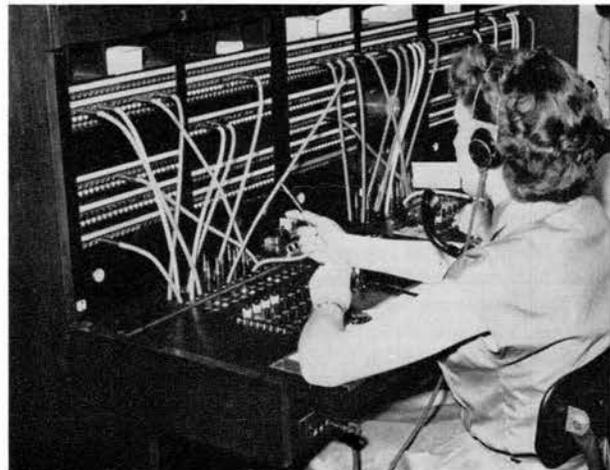
The Stromberg-Carlson Non-Multiple Switchboard compares favorably in price and simplicity of circuits with a good magneto switchboard. It is often furnished with drop-ended magneto jack strips for rural lines, and with common battery operation on town lines, making an easy transition from a single wire to a fully metallic system.

The Non-Multiple Switchboard is placed in stock wired for 200 local lines, 30 drop or lamp ended toll or rural lines, 16 manual ringing cord circuits, and 5 dial trunks either jack or key ended. Common battery lines should always be ordered in groups of 20, and ringdown lines in groups of 10.

THE MULTIPLE SWITCHBOARD

Multiple switchboards for additions to manual central offices or for attendant's cabinets in hotels or large business offices where operator assistance is desired will be furnished to specification on an engineered basis. Larger boards are built up in sections, using standard welded steel frames. Two-level plug boards, making it easier to select the correct cord, are a feature of these sections. When sections are placed together the installation has a continuous-face appearance.

The No. 17 Section is $22\frac{1}{32}$ " wide, $5'-4\frac{1}{2}"$ high, $3'-6\frac{3}{4}"$ deep, $2'-10\frac{7}{8}"$ from floor to keyshelf, and has a 20" jack face opening. The No. 18 Section is wider— $25\frac{1}{8}"$, higher— $5'-10\frac{3}{16}"$, and has a larger jack face opening— $24\frac{1}{16}"$; other dimensions and all construction features are the same.



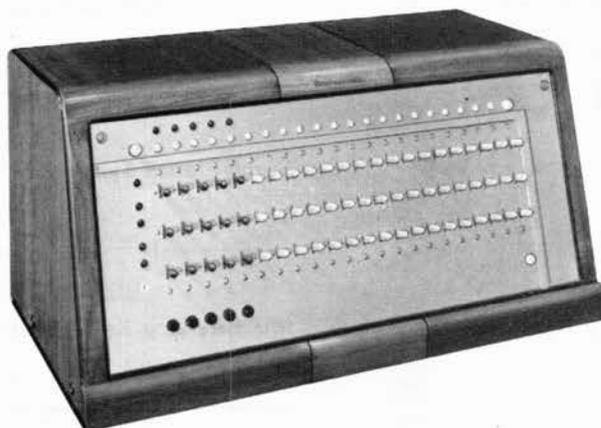
Recent installation of Multiple Switchboard.

NO. 125 MAGNETO SWITCHBOARD

The Stromberg-Carlson No. 125 Magneto Switchboards, designed for dependable and reliable service in Magneto Exchanges, are still available. For further information contact your nearest Stromberg-Carlson representative.

STROMBERG-CARLSON

PBX and Interior Systems



To meet the varied requirements of interior communication, Stromberg-Carlson presents PBX Switchboards, Convenience Systems, Multiple Line Key Turrets, and Inter-communicating Telephones for modern and efficient personal service.

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PBX AND INTERIOR SYSTEMS

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Convenience Systems	15d
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Multiple Line Key Turret Systems	21d
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Inter-Communicating Systems	23d
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SYSTEMS FOR INDIVIDUAL CONVENIENCE

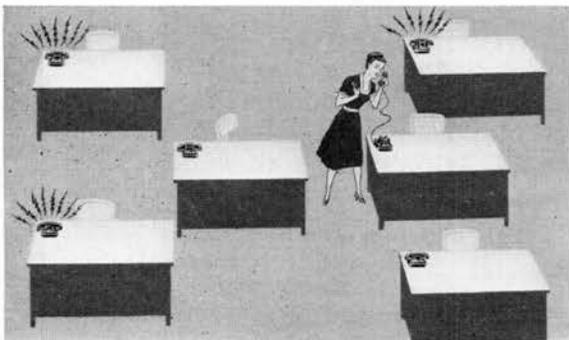
Service to the community is but one of the requisites of good telephone operation. The individual, with his many varying needs, must have available the special type of equipment which fits his own requirements. With this in mind, Stromberg-Carlson has long pioneered in the development of the smaller systems featured in this section.

PBX SWITCHBOARDS In both cordless and floor models, Stromberg-Carlson has a switchboard which is up to the minute in operation and styling. This equipment is admirably suited to the medium-sized office, with operator-receptionist in attendance during office hours.

MULTIPLE LINE KEY TURRET The small office with several extension telephones is amply served by the Stromberg-Carlson Multiple-Line Key Turret. Calls can be held while answering or originating others. "Now I can answer 9 telephones and never move from my desk!"

CONVENIENCE SYSTEMS "Too large for a single trunk? . . . too small for PBX?" The Stromberg-Carlson convenience systems provide both intercommunicating and central office service 24 hours a day without requiring an operator in attendance. Matching the latest desk telephones in style.

INTER-COMMUNICATING TELEPHONES To relieve your present switchboard and telephone facilities of the burden of strictly inter-office or inter-plant calls, install a Stromberg-Carlson Inter-Communicating system. Privacy when necessary, multiple conversations if desired, speed and efficiency at all times.



THIS ↑ OR THIS ↓



STROMBERG-CARLSON

4d • PBX AND INTERIOR SYSTEMS

PBX SWITCHBOARDS

In keeping with its long established policy of making telephone apparatus which is not only most serviceable, but also most attractive, Stromberg-Carlson offers the companion PBX switchboards No. 120 and No. 121. Subscribers will appreciate the styling, which complements the appearance of the finest, most modern office. Operating companies will welcome the many circuit advancements which are outlined in the general description.

NO. 121 CORDLESS SWITCHBOARD



944.25

No. 121 Cordless Switchboard

Appearance, utility and fine operating qualities make this board ideal for business offices or locations where the switchboard is installed open to public view.

Here are some of the reasons why the No. 121 Switchboard is the outstanding cordless PBX for both today and tomorrow:

1. Beauty which is a source of pride.
2. Manual or dial service for the present needs.
3. Through or non-through supervision.
4. "Instantaneous busy" indications on trunks from central office when toll operator takes up trunk.
5. Operator or station dialing.
6. Wired for relay lamp lines and relay (std.) or repeating coil type trunks (for longer loops)
7. Night through-service.
8. Bridged or divided-circuit ringing from central office.
9. "Common-talking" feature that enables Stromberg-Carlson PBX operator to answer another call when all five connecting circuits are in use.
10. Inclined key panel to improve visibility and operating ease.

The finish used is walnut. Correct application of overstain produces artistic banding of light and dark, so that the finish harmonizes with modern office furniture and room decoration. Key mountings are made of Sun Tan phenol fibre veneers, while the key handles are of plastic, colored in pleasing shades. Chassis construction is provided for mounting the apparatus, so that the cabinet cover can be removed and still maintain switchboard operation.

The armatures of the relays are at the rear of the board to allow for easy servicing.

The dimensions of the No. 121 Switchboard are:

Length—2'2 3/4" Height—1'2"
 Depth—1'2 3/4"

Approximate Shipping Weight 150 lbs.

Capacity

Stock No.	Wired for			Equipped with		
	Lines	Trunks	Conn.	Lines	Trunks	Conn.
200763	16	5	5	12	3	5
200764	16	5	5	16	5	5

Local Cable

The cable and all other wiring consists of copper conductors insulated with a 50% to 60% overlapped serving of cellulose acetate Butyrate clear tape. Over this an outside serving of cotton is applied to the cable conductors, battery leads, and pilot circuit wiring, and a cotton braid to generator leads.

Line Equipment

Each line circuit includes:

Stock No.	Code	Description	Stock No.	Code	Description
802755	(343-EZ)	Keys (2)	801420	(12)	Lamp Socket
		(connecting)	801392	(27A)	Lamp Cap
802713	(342-CXZ)	Key (connecting and ringing)	801369	(24-B-2)	Lamp
801331	(131)	Key Mtg.	802777	(195-A)	Relay (when equipped)

Connecting Equipment

Stromberg-Carlson No. 121 Cordless Switchboards are equipped with the single lamp supervisory type of connecting circuit.

Each connecting circuit includes:

Stock No.	Code	Description	Stock No.	Code	Description
802755	(343-EZ)	Key	801369	(24-B-2)	Lamp
801331	(131)	Key Mtg.	801610	(25)	Relay Casing
801420	(12)	Lamp Socket	802888	(222Z-B)	Relay
801393	(27-B)	Lamp Cap			

STROMBERG-CARLSON

NO. 121 SWITCHBOARD (Cont.)

The features of these connecting circuits are as follows:

KEY CONTROL—All connections between either PBX stations or trunks and PBX stations are made by means of keys.

BALANCED TRANSMISSION—Both the tip and the ring battery transmission coils to each station are placed on the same relay, and are carefully balanced for resistance and inductance.

BATTERY ECONOMY—The transmission battery not only supplies talking current, but also furnishes energy to operate the supervisory relays.

SIMPLICITY—The supervisory relays each have only one break contact; that contact controls the supervisory lamps. There are no other electrically controlled contacts in the connecting circuit.

TRANSMISSION EFFICIENCY—Both the tip and the ring talking conductors are entirely free from either series resistances or series retardation coils that contribute undesirable and appreciable losses.

Trunk Equipment

The series-relay type trunks for central office connections include:

Stock No.	Code	Description	Stock No.	Code	Description
802749	(343-CZ)	Keys	801420	(12)	Lamp Sockets (2)
		(connecting) (2)	202463	(66)	Condenser (1/2)
802750	(342-DZ)	Key	201981	(298ZW-	Relay
		(connect and dial)		AYCY)	
801331	(131)	Key Mtg.	201980	(279Z-MN)	Relay
201121	—	Key	201978	(277Z-LMN)	Relay
201243	—	Key	—	(266Z-CY)	Relay
801369	(24-B-2)	Lamps (2)	201982	(254-1-AY)	Relay
801392	(27-A)	Lamp Cap	201979	(278Z-A)	Relay
801394	(27-C)	Lamp Cap	801610	(25)	Relay Casing

These trunks have the following characteristics:

THREE LAMP SUPERVISION—A white call lamp indicates that the Central Office operator is calling the PBX, a green hold lamp indicates that the trunk is being held by the PBX operator, and a red disconnect lamp indicates when the connected PBX subscriber hangs up. This disconnect lamp is associated with the connecting circuit equipment.

KEY CONTROL—All connections between PBX stations or between trunks and PBX stations are made by means of keys.

VERTIBLE—Provision for connecting with a Dial Central Office is already in the board. All that is necessary is to install one dial common to all the converted trunks. Switchboards are wired so that repeating coil (long line) trunks or magneto trunks may be installed readily when the proper equipment is ordered.

Operator's Telephone Equipment

The No. 1244-T (201139) Handset Telephone is used for operator's telephone equipment in the No. 121 PBX Switchboard (see catalogue pages describing Common Battery Telephones.)

This telephone takes an MD-6-D 5'3" Cord. Other equipment—mounted in the switchboard—includes:

Stock No.	Code	Description	Stock No.	Code	Description
800433	(47-A)	Induction Coil	48346	(57)	Condenser
800281	(21-A)	Impedance Coil	29636	(6A)	Terminal Block
202464	(67)	Condenser			

The use of the desk handset type of telephone assures uniform efficiency, as the relative position of transmitter and receiver is fixed. It also relieves the operator by eliminating the headband, and assures economical operation as no battery is used when the handset is replaced.

Battery Switch Equipment

A switch is provided to cut the battery from the switchboard when no operator is in attendance. This equipment is:

201120	Key (Bat)
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Generator Equipment

REGULAR RINGING is accomplished by means of 20-cycle current which is brought into the PBX switchboard either from the main exchange or from a Stromberg-Carlson No. 5 Converter, which is of the vibrating type (see Accessories). This converter when connected with the No. 121 Cordless Switchboard runs only during the periods in which it is required for ringing.

EMERGENCY RINGING is accomplished by means of the hand generator. A key (Gen) is provided for switching from the hand generator to the power generator or vice versa. Terminals also are provided for connecting to the outside source of power ringing current.

The operator's facilities for emergency ringing of station instruments includes:

Stock No.	Description	Stock No.	Code	Description
201119	Key (White)	201678	(64)	Generator
33761	Crank			

Night Alarm Equipment

Each No. 121 Cordless PBX Switchboard is furnished with a night alarm. The apparatus for this purpose includes:

Stock No.	Code	Description	Stock No.	Code	Description
801861	(50-LL)	Buzzer	803103	(381-A)	Relay
201119	—	Key (NA)	801610	(25)	Relay Casing
42376	(62)	Condenser	800289	(202)	Imp. Coil

The night alarm buzzer sounds not only on the incoming line calls and the incoming trunk calls, but also on the connecting circuit's disconnect signals.

The operation of the night alarm is controlled by a switch. Two types of night alarm circuits are available:

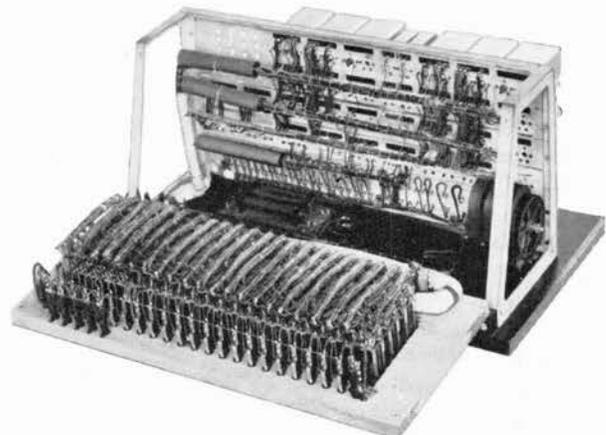
THE REGULAR NIGHT ALARM EQUIPMENT operates off direct current from the battery terminals within the switchboard, and includes noise-suppressing components to prevent disturbances being carried into the talking circuit.

AC OPERATION OF NIGHT ALARMS is possible by relocating two terminal straps and disconnecting the No. 62 Condenser and the No. 202 Impedance Coil.

Common Listening Key

This is also known as Common Talking Circuit. When all five connecting circuits are busy, the attendant can answer further calls with the lower listening key in the "down" position. Equipment for this feature:

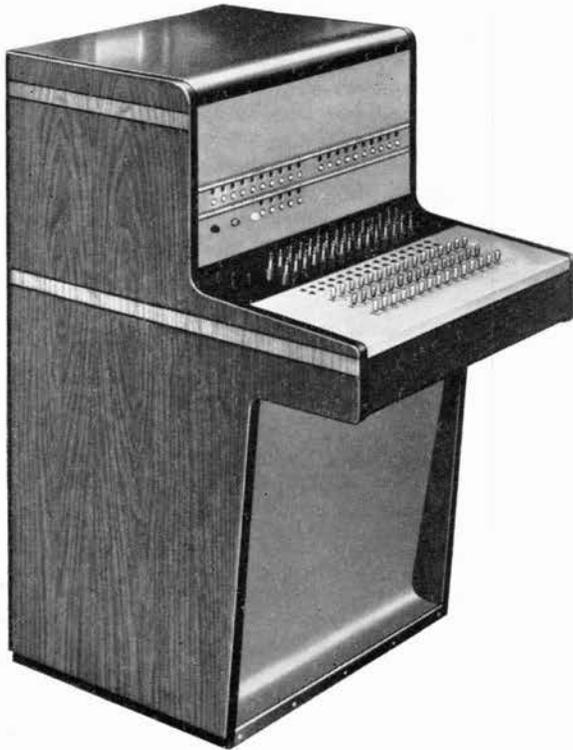
802755	(343-EZ)	Key (Same key as in Connecting Circuit 5)
800289	(202)	Impedance Coil



No. 121 Cordless Switchboard with cabinet removed—showing accessibility of wiring and equipment

6d • PBX AND INTERIOR SYSTEMS

NO. 120 TYPE SWITCHBOARD



No. 120 Switchboard, front perspective

This switchboard is a companion piece to the No. 121 Cordless Switchboard just described. With its large capacity, adaptability, and striking beauty, it is the choice for those installations where the finest in PBX equipment is expected.

Some of the exceptional circuit features and operating facilities are summarized below.

Connects with any Central Energy Exchange—either manual or dial—through jack-ended trunks without change or addition.

PBX station after hanging-up is protected against direct re-rings from the central operator.

Cord splitting makes it possible to talk on the back cord and not be heard on the front cord, or vice versa.

Instantaneous Busy feature warns the PBX operator that a given trunk has been taken up by the central office to call the PBX or to hold for toll service.

Each cord circuit is equipped with ringing key, ring-back key, listening key, dialing key when required, through dialing and night connection key.

Reverting Ringing Tone informs the calling party that the operator is ringing.

Individual jacks are used in all line and trunk circuits. Keyboard is hinged at the left end so as to permit full operation while raised.

Coils, relays and capacitors are on a relay gate which swings horizontally from a rigid self-supported steel frame. Operator's Breast Telephone is employed, with concealed jack.

Cabinet

The equipment is mounted on steel frame members housed in an attractive veneered walnut cabinet so designed that it is in keeping with any type of office furniture, and therefore, requires only one kind of finish. Judicious use of stain, overstain and varnish provides a pleasing two-tone banded effect. The sun tan finish of the face mounting, contrasted with the dark brown plugboard and polished brass fittings, adds to the overall appearance. The surfaces are all smooth with rounded corners so that cleaning is a rapid and simple matter and the possibility of damage to wearing apparel is remote. The rear door is flush and is removed by means of a finger notch.

Light colored paint covers the inside of the cabinet, harmonizing with the apparatus and providing a brighter background when servicing. The operator's plug is recessed and concealed while ample knee and foot room is found beneath the key pocket.

The dimensions of the No. 120 Switchboard are:

Width—2'1 $\frac{1}{8}$ " Height—3'9 $\frac{5}{8}$ " Depth—2'8"

Circuits

The circuits for the No. 120 Switchboard have been designed to provide fundamental wiring for all normal operating conditions. This means that a variety of exchange requirements can be met with little or no change.

The circuits will operate satisfactorily under the following conditions:

1. When the operating voltage does not drop below 16 volts or rise above 26 volts.
2. When the wire circuit loop resistance is 700 ohms or less in an eleven cell system.
3. When the wire circuit loop resistance is 1500 ohms or less in a twenty-two cell system.
4. When the minimum line insulation resistance is 10,000 ohms.

The local cable form is arranged so that by making simple wiring shifts in the cord circuit, the following classes of supervision and battery source become available.

- A. Through Supervision, with talking battery fed from the Central Office Trunk, with Trunk Splitting.
- B. Through Supervision, with talking battery fed from the PBX cord circuit, with Trunk Splitting.
- C. Non-through Supervision, with no Trunk Splitting.
- D. Non-through Supervision, with talking battery fed from the PBX cord circuit, with no Trunk Splitting.

The choice of Supervision is usually governed by the following general telephone practices:

If a PBX is connected to a Central Office, working from an eleven cell battery, talking battery is fed from the PBX cord circuit.

When the PBX is connected to a Central Office, working from a twenty-two cell battery, talking battery is fed from the trunk, provided the trunk line loop does not exceed 350 ohms and provided the longest PBX station line does not exceed the loop resistance of the trunk. In cases when the trunk line loop exceeds 350 ohms, transmitter battery should be fed from the PBX cord circuit.

If it is desirable to transfer trunk calls from one PBX station to another, or when the Conference Circuit is used, Non-through Supervision is essential.

NO. 120 TYPE SWITCHBOARD (Cont.)

Circuit Features

Wiring of the No. 120 Switchboard permits four combinations of Supervision, Battery Control and Trunk Splitting as described previously.

CLASS "A"—Standard stock boards are wired for this condition, in which the PBX station, upon hanging up after a trunk connection, gives a disconnect signal to the Central Office and also lights the PBX supervisory back cord light, at the same time "splitting" the trunk.

In case another call is made by the Central Office operator or Dial Exchange before the PBX operator has removed her plugs, the signal will appear on the trunk line lamp. As the trunk is "split" the connected PBX station telephone bells will not be rung. To answer this type of recall, the operator simply needs to operate the listening key of the cord circuit associated with the trunk.

If the PBX station should recall before the PBX operator has removed the plugs on a previous connection, the calling party will again signal the Central Office.

CLASS "B"—Under wiring condition "B", through supervision or Central Office disconnect on trunk connections is controlled by the PBX station to which the trunk is connected. The signals to the PBX and Central Office Operator are in all respects similar to those under wiring conditions "A".

CLASS "C"—When the cord circuit is wired for "C" condition, the supervisory signals operate as follow: When the PBX station hangs up, the back supervisory lamp is lighted at the PBX. However, the Central Office does not receive a disconnect until the front cord at the PBX is removed from the trunk jack. This arrangement is particularly adaptable to Central Office service wherein subscribers find it necessary to transfer calls.

If a trunk is connected to a Dial Office, the trunk is held busy until the front cord is removed.

If the PBX operator is slow in taking down a connection, the station concerned can signal on the back cord supervisory lamp as it will flash in unison with the movement of the telephone hookswitch.

CLASS "D"—Under set-up "D", supervision is similar to that described under "C".

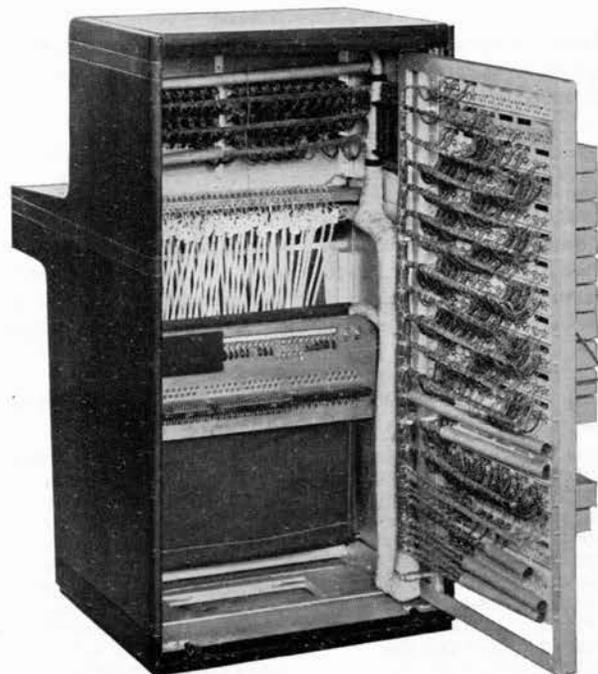
DOUBLE LAMP SUPERVISION gives the operator definite information as to the condition of connections between local stations.

FRONT CORD TRUNK CONNECTION requires all trunk calls to be answered or connected by means of the front cord. Supervision is maintained on the back cord supervisory lamp only when the back cord is plugged into the local line.

BRIDGED LISTENING KEY enables operator to listen across cord circuit. An attendant answers an incoming call from a PBX station using an idle cord.

COMBINED INDIVIDUAL DIALING AND LISTENING KEY enables operator to dial over the front cord of any cord circuit. During dialing, the operator's circuit is opened, but returns to normal immediately afterward for further conversation.

THROUGH DIAL AND NIGHT SWITCHING KEY enables the PBX subscriber to dial or signal a central office over the trunk direct, when the cord pair is set up for this type of service. It is used principally for through night service, when the battery is cut off the board or for through service during the day when a party wishes to make a series of consecutive calls.



No. 120 Switchboard, rear perspective, with open relay gate

SEPARATE RINGING KEYS enable operator to ring over either front or back cord without taking the connection down.

REVERTING RINGING TONE—Listening party hears reverting tone when either front or back ringing keys are operated.

TOLL RECALL (furnished only when specified) provides recall on front cord supervisory lamp, when front cord is plugged in on a trunk being held for toll service.

BOOSTER BATTERY SUPPLY may readily be applied to the battery feed coils of the cord circuits for long PBX lines by means of a simple battery terminal arrangement. This feature provides adequate transmission current for those zones beyond the limitations of the standard battery supply.

CONFERENCE CIRCUIT—When this feature is installed, as many as five lines may be set up for simultaneous conversation connections between PBX stations or as many as four simultaneous conversations between PBX stations and trunks.

FULL-TALK CIRCUIT—See Trunk Equipment.

Capacities

Standard No. 120 Switchboards are carried in stock with the following wiring and equipment:

Description	No. 120-B		No. 122-A	
	Wired	Equip'd	Wired	Equip'd
Relay line Cct. less relays	80	20	40	10
Jack ended Trunks	15	3	10	2
Cord Circuit	15	5	10	5
Dial Circuit, less dial	1	1	1	1
Operator's Circuit	1	1	1	1
Generator Circuit	1	1	1	1
Battery Switch	1	1	1	1
Night Alarm Cct. A.C.	1	1	1	1
Conference Circuit	1	0	1	0
Insulated Generator	1	0	1	0

NO. 120 TYPE SWITCHBOARD (Cont.)

Line Equipment

Stock switchboards are wired for line relays, although relays are provided only when specified. Standard equipment consists of series lamp signals.

Each line circuit includes:

Stock No.	Code	Description	Stock No.	Code	Description
802600	(160)	Jack	801369	(24-B-2)	Lamp
801421	(13)	Lamp Socket	802775	(194-A)	Relay
801412	(31-A)	Lamp Cap			(in relay line only)

Balanced talking conditions prevail as both battery and ground are cut off the line jack when the operator plugs in to answer. Reliable signals and battery economy are assured by the use of high grade line lamps and high wound efficient relays.

Cord Equipment—B-37950

Each Cord Circuit contains the following standardized equipment.

Stock No.	Code	Description	Stock No.	Code	Description
202080	(65-X)	Plugs (2)	802939	(242-1-MNN)	Relay
35298		Shell only (Gray)	802996	(254Z-NO)	Relay
202226	(S-32P)	Cords (2)	42487	(293Z-MYNY)	Relay
800707	(6)	Cord Weights (2)	802890	(222Z-AB)	Relay
801421	(13)	Lamp Sockets (2)	802888	(222Z-B)	Relay
801413	(31-B)	Lamp Caps (2)	802945	(243-1-GG)	Relay
801369	(24-B-2)	Lamps (2)	38308	(WEB-42)	Relay
42375	(61)	Condenser	28177		Resistors (4)
802737	(342-AAXZ)	Key			For Toll Recall, add—
802738	(342-CCXZ)	Key	42598	(251-1-AYAY)	Relay
801329	(129)	Key Mounting	42372	(58)	Condenser

Trunk Equipment

The trunk circuits are of the jack and lamp ended type. Each trunk circuit used in connection with a common battery central office, or dial office, includes the following equipment:

Stock No.	Code	Description	Stock No.	Code	Description
802601	(161)	Jack	802937	(241-1-DBG)	Relay
801421	(13)	Lamp Socket	803009	(257ZW-AA)	Relay
801412	(31-A)	Lamp Cap	28153		Resistor
801369	(24-B-2)	Lamp	42375	(61)	Condenser (½ used)

When the PBX is connected for twenty-four hours a day or part time leased toll service (known as Full-Talk Circuit) the following equipment is connected between the PBX trunk terminals and the leased Toll Line and installed outside the PBX cabinet.

The same equipment is used and installed outside the cabinet when the PBX is connected to magneto exchange.

Trunk Equipment Added for Full Talk Circuit or for Magneto Service

Stock No.	Code	Description	Stock No.	Code	Description
800300	(222)	Impedance Coil	42375	(61)	Condenser
800453	(18-AL)	Repeating Coil			

Dial Circuit Equipment

The common dial circuit is completely equipped with the exception of the dial and dial mounting. It contains:

Stock No.	Code	Description	Stock No.	Code	Description
42375	(61)	Condenser	801328	(128)	Key Mtg.
42376	(62)	Condenser	800300	(222)	Imp. Coil
802695	(341-AZ)	Key with Red Handle	42597	(252Z-HC)	Relay
					*S-C E104-01 Dial
11052	(4-A)	Terminal Block	*202527	(1-E)	Dial Mtg.
800436	(11-AL)	Repeating Coil	*34572		Dial Mtg. Block for No. 120 Swbd.
803032	(263Z-BL)	Relay (2)			
800471	(10-H)	Resistance Coil	*34571		Dial Mtg. Block for No. 122 Swbd.

*Furnished only when specified

Operator's Telephone Equipment

The operator's telephone equipment that is regularly furnished with the No. 120 Type Switchboard is of the breast plate type and includes:

Stock No.	Code	Description	Stock No.	Code	Description
800433	(47-A)	Induction Coil	42370	(55)	Condenser
800292	(205)	Impedance Coil	801082	(93)	Jack
42374	(60)	Condenser	66241	(3-A)	Varistor
42376	(62)	Condenser	801453	(4)	Op'ator's Tel. set

Anti-Side tone qualities are provided wherein outgoing transmission, including the effect of local noises, is prevented from reaching the operator's receiver, but does not affect high quality incoming transmission.

Generator

The operator's facilities for the emergency ringing of station instruments consist of a generator circuit which includes:

Stock No.	Code	Description	Stock No.	Description
201678	(64)	Generator	201119	Key (White)
33759		Shaft	42792	Lamp (110V, 40 Watt)
33760		Crank (ox. bronze)	42798	Socket

REGULAR RINGING is accomplished by means of a 20 cycle alternating current derived from some type of power generator such as the Sub-Cycle, or Rotary Converter.

EMERGENCY RINGING is accomplished by means of the hand generator furnished with the switchboard. A key is provided to switch from hand to power generator or the opposite.

Night Alarm Equipment

To assist the operator in performing her duties, each switchboard is provided with a night alarm. The apparatus for this purpose includes:

Stock No.	Code	Description	Stock No.	Code	Description
201119		Key (White)	801861	(50-LL)	Buzzer
803103	(381-A)	Relay (Line)	*800289	(202)	Impedance Coil
803103	(381-A)	Relay (Supv.)	*42376	(62)	Condenser

*Used when D.C. specified

The night alarm is controlled by the Push Button Key. When this key is operated the night alarm sounds simultaneously with incoming line calls, incoming trunk calls and on cord circuit supervision.

CONVERTIBLE—Regular night alarm equipment is furnished to operate from the generator current source of supply, but wiring is arranged so that the night alarm may readily be operated from direct current when this method of operation is desired.

Battery Switch

A switch is provided to cut the battery from the switchboard when no operator is at the switchboard. The equipment provided is:

201120	Key (red)	800751	(1-A)	Distributing Bar (3)
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Conference Circuit Equipment

When the conference circuit is equipped, the following apparatus is required:

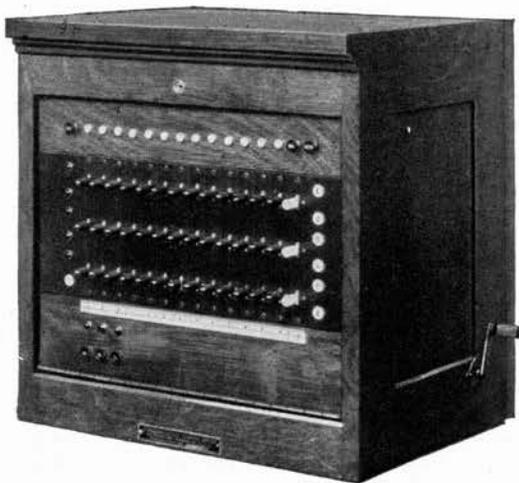
Stock No.	Code	Description
802600	(160)	Jack For trunk or originating line
802600	(160)	Jack For each conference station
200968	(95)	Mounting For above Jacks
800293	(206)	Impedance Coil
41578	(206Z-AA)	Relay For each conference station
42375	(61)	Condenser For each conference station

Insulated Generator

Insulated generator is provided when magneto or toll trunks are installed in the switchboard. The following equipment is required:

42372	(58)	Condensers (5)
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NO. 104-C CORDLESS—10 LINES CAPACITY



Front View of No. 104-C Cordless Switchboard

This Switchboard is recommended for Private Exchange Systems of not more than 10 lines; also for Private Branch Exchange Systems of not more than 10 local lines and three trunk lines to the main exchange.

Both the apparatus and the circuits are arranged to operate either as an isolated system independent of any commercial telephone exchange or as a branch system in conjunction with any commercial type of telephone exchange. The standard equipment is provided with trunking facilities for connecting with a common battery central office, but is arranged so that it requires only slight changes to adapt it for connecting with a Dial System. Such changes are made without sacrificing any of the essential operating features.

The compact design of the No. 104-C Cordless Switchboard makes it particularly desirable for office use. It may be placed on a desk or table for ease of operation by a clerk, stenographer, or any other person who has other office duties.

The routine of operations for these switchboards is similar to the routine of the No. 102 and the No. 106 types of PBX Switchboards. The exception of course is, that the connections on this switchboard are made by means of keys instead of by means of the plugs and cords that are used on the No. 102 and the No. 106 PBX Switchboards. Obviously, this standardization of operating routine is another important advantage to every telephone company that uses PBX equipment—it means maximum efficiency of the operating force with minimum schooling.

Cabinet Design

The cabinet for the No. 104-C PBX Switchboard is of a more conventional type than the No. 121 Switchboard, and is very compact. The principal overall dimensions are as follows: Height—16 inches. Width—16 inches. Depth at base—12¼ inches. Depth at top—13⅞ inches. Shipping weight—105 lbs.

Standard woodwork is quarter-sawed oak, finished in dull golden oak, or birch with walnut finish. In ordering specify type required.

The front panel is hinged and the rear panel is entirely removable. This construction provides for the quick inspecting and testing of all apparatus and circuits. A terminal board is

furnished in the upper portion of the cabinet, accessible from the rear. The terminal board carries all line, trunk, battery and generator terminals. Each group of these terminals is plainly designated so as to avoid mistakes when installing the apparatus.

General Operation and Equipment

The general operation of the No. 104 Switchboard is the same as that described for the No. 121 Switchboard, but without the feature which allows the operator to answer a call when all connecting circuits are busy. The equipment is listed below:

Line Equipment

Each line circuit includes:

Stock No.	Code	Description	Stock No.	Code	Description
802777	(195-A)	Relay	802755	(343-EZ)	Connecting Keys (2)
801421	(13)	Lamp Socket	801412	(31-A)	Lamp Cap
802713	(342-GZ)	Ring and Listening Key	801369	(24-B-2)	Lamp

The line circuit features for this switchboard are identical to those described in the catalogue pages for No. 102 and the No. 106 types of PBX Switchboards.

Connecting Equipment

Stromberg-Carlson No. 104-C Cordless Switchboards are equipped with the single lamp supervisory type of connecting circuit. Each connecting circuit includes:

Stock No.	Code	Description	Stock No.	Code	Description
802888	(222Z-B)	Relay	802685	(340-C)	Listening Key
801421	(13)	Lamp Socket	801369	(24-B-2)	Lamp

Trunk Equipment

Each main trunk line for connection with a common battery manual exchange includes the following apparatus:

Stock No.	Code	Description	Stock No.	Code	Description
803088	(306-X)	Relay	41239	(34-D)	Key, "RL"
201033	(263Z-X-CBC)	Relay (3)	802749	(343-CZ)	Keys (2)
201032	(263Z-BBC)	Relay (4)	802750	(343-DZ)	Key
—	(266Z-AY)	Relay	801421	(13)	Lamp Sockets (2)
800293	(206)	Imp. Coil	801412	(31-A)	Lamp Cap
42371	(56)	Condenser	801414	(31-C)	Lamp Cap
801369	(24-B-2)	Lamp	800522	(22)	Condenser (3)

Operator's Telephone Equipment

The No. 1244-T (201139) Handset Telephone is used for operator's telephone equipment in the No. 104-C PBX Switchboard (see catalogue pages describing common battery telephones). This telephone takes an MD-6-D 5'3" Cord. Other equipment—mounted in the switchboard—includes:

Stock No.	Code	Description	Stock No.	Code	Description
800433	(47-A)	Induction Coil	42370	(55)	Condenser
800281	(21-A)	Impedance Coil	48346	(57)	Condenser

Generator Equipment

Regular ringing is provided in the same manner as for the No. 121 PBX Switchboard previously described.

The operator's facilities for emergency ringing of station instruments include:

Stock No.	Code	Description	Stock No.	Code	Description
11730		Crank	201975	(334-C)	Key, Engraved Gen.
201678	(64)	Generator			

Night Alarm Equipment

Each No. 104-C Cordless PBX Switchboard is furnished with a night alarm. The apparatus for this purpose includes:

Stock No.	Code	Description	Stock No.	Code	Description
801861	(50-LL)	Buzzer	201973	(334-C)	Key, Engraved N A
803103	(381-A)	Relay			

NOS. 102 AND 106 PBX SWITCHBOARDS



Front Perspective of No. 102 Switchboard

Many telephone companies have adopted Stromberg-Carlson Standard PBX Switchboards with plug-ended trunks because they have met the practical requirements of general service. They are designed for connecting with common battery, magneto, or dial exchanges up to capacities above which Multiple PBX Switchboards would be more economical.

Capacity

No. 102	100 lines
No. 106	180 lines (10 Jacks per strip)
	300 lines (20 Jacks per strip)

Cabinet Design

Since its introduction by Stromberg-Carlson several years ago, this cabinet design has provided a combination of those features most desired by the users:

The operator appreciates being able to look over the top of the cabinet; the low keyboard means that she can rest her feet comfortably on the floor; the dull black keyboard and plugboard combining excellent visibility with long wear.

Maintenance men approve the removable front and rear panels; the full length keyboard hinge; the horizontally swinging relay gate making all relays, condensers and coils readily accessible.

The manager likes the straight-forward lines of the woodwork in oak or birch, finished in golden or limed oak, walnut, or mahogany to match office furnishings; the flush sides which give a continuous face to matched sections; the well-constructed cable forms which eliminate danger of cross-talk or cross-ringing within the switchboard.

The cabinets of these Switchboards are of two panel construction. They are compact but have large capacities. The height of the No. 102 is 45½"; width 25¼"; depth over keyboard 35" and depth at base 24¾". The height of the No. 106 is 51"; other dimensions are the same.

Identical Characteristics

The No. 102 and No. 106 Switchboards with plug-ended trunks have identical operating characteristics—the same circuits are used in both. This means that an operator who is accustomed to handling one of these boards can readily handle the other. These boards also have identical apparatus, such as: relays, jacks, lamp sockets, lamps, plugs, cords, receivers and keys. Therefore, the parts are interchangeable and this enables an operating company to stock a minimum of apparatus parts for extensions or repairs.

Line Equipment

Line equipment is furnished in either the relay or lamp series type.

Each line circuit in either the No. 102 or No. 106 Switchboard includes:

Stock No.	Code	Description	Stock No.	Code	Description
801161	(135)	Jack, 80 Mounting	801369	(24-B-2)	Lamp
801424	(121)	Lamp Socket, on 80 Mounting	801392	(27-A)	Lamp Cap
			*802775	(194-A)	Relay

*Used in relay type only

Some of the line equipment features are:

BALANCED TALKING CONDITIONS—both battery and ground are cut off the line jack when the operator plugs up to answer.

UNIFORM SIGNAL ON RELAY LINES—the line lamp is in a local relay-controlled circuit; therefore, line length does not affect signal strength.

BATTERY ECONOMY—the high winding of the line relay requires a minimum of current on relay lines.

RELIABLE SIGNAL—the line lamps are equipped with highly evacuated, tipless bulbs, rugged filaments and bakelite bases.

Cord Equipment

The PBX cord circuits are of the double lamp supervisory type with three conductor plugs and three conductor cords. Each cord circuit includes:

Stock No.	Code	Description	Stock No.	Code	Description
202080	(65-X)	Plugs (2)	801369	(24-B-2)	Lamps (2)
202226	(5-32-P)	Cords 5 ft. (2)	802705	(342-BX)	Key
800707	(6)	Cord Weights (2)	802888	(222-B)	Relays (2)
801421	(113)	Lamp Sockets (2)	42375	(61)	Condenser
801413	(31-B)	Lamp Caps (2)			

The following equipment and circuit features are found in the PBX cord circuits:

CORRECT BATTERY FEED—the cord circuit is of the condenser type, thereby assuring both answering and calling stations their proper proportion of current.

BALANCED TRANSMISSION AND ECONOMY—the double-wound transmission coils provide a balanced circuit. They not only supply the talking circuit, but also supply the energy for the supervisory relays.

SIMPLICITY—each supervisory relay has only one break contact for controlling the supervisory lamp.

NEAT AND SERVICEABLE KEYBOARD EQUIPMENT—the keys mount flush and are neatly covered with a dull black insulating material. The lamp caps are of the non-breakable type without guards.

TRANSMISSION EFFICIENCY—both tip and ring talking conductors are free from series resistance or impedance coils.

STROMBERG-CARLSON

NOS. 102 AND 106 PBX SWITCHBOARDS (Cont.)

Trunk Equipment

The trunks furnished in the No. 102 and No. 106 PBX Switchboards are provided with basic wiring, so that it is unnecessary to modify the key cable when adapting the PBX trunking apparatus to connect with any of the following types of central offices:

- A. Common battery manual office through a normal loop resistance.
- B. Common battery manual office though an abnormally high loop resistance.
- C. Automatic central office through a normal loop resistance.
- D. Automatic central office through an abnormally high loop resistance.
- E. Magneto central office through any practical loop resistance.

Stromberg-Carlson PBX Switchboards will be furnished equipped with trunks for service in accordance with paragraph (A) unless modifications are requested to conform with the requirements as outlined in paragraphs (B), (C), (D), and (E).

(A) MANUAL EXCHANGE STANDARD—Each common battery manual exchange circuit, which is arranged for operating through a normal loop resistance includes at the PBX Switchboards:

Stock No.	Code	Description	Stock No.	Code	Description
202080	(65-X)	Plug	801414	(31-C)	Lamp Cap
202226	(5-32-P)	5 ft. Cord	801369	(24-B-2)	Lamps (3)
800707	(6)	Cord Weight	802709	(342-DX)	Key (RL)
801421	(13)	Lamp Sockets (3)	802698	(342-H)	Key
801412	(31-A)	Lamp Cap	800249	(16-L)	Trunk Circuit Plate
801413	(31-B)	Lamp Cap			

These trunks have the following characteristics:

PLUG TERMINATION AT THE SWITCHBOARD permits the use of all the cord circuits on the PBX switchboard for local to local service, the convenient connection of local lines to trunk lines for through-night service and the simplification of apparatus in the PBX cord circuits. The plug ending of the PBX trunks also has the advantage that the central office and the PBX operators simultaneously receive disconnect signals.

TRIPLE SUPERVISION—facilitates fast and accurate operating. A white calling lamp lights when the central office operator rings out on a PBX trunk line. A green hold lamp lights when the PBX operator throws her listening key to answer a call coming through the central office operator. The presence of this signal always indicates that the trunk is being held by some act of the operator and signifies an off-normal condition, for example: it relights when the PBX party hangs up provided that the trunk listening key is accidentally left in the operated position; it also will flash under the same conditions if the PBX party moves the plunger switch of his telephone up and down, but it will not light when the operator monitors a connection.

A red disconnect lamp lights when the PBX party hangs up after completing a connection.

A FLASHING KEY provides an effective means for signaling the central office operator by flashing either the line or the answering supervisory signal before that operator.

THE TRUNK CIRCUIT PLATES furnish facilities for quickly changing trunks as necessary to connect with any type of central office [see paragraphs (A), (B), (C), (D) and (E).] The ease with which trunks may be added, omitted or modified by means of these trunk circuit plates makes it possible to hold PBX investment to a minimum. This economy of investment may be accom-

plished not only by carrying just one type of PBX switchboard in stock for connecting with any type of central office, but also by equipping each switchboard as it goes into service with only the exact number of trunks needed for present traffic.

(B) MANUAL EXCHANGE, ABNORMALLY HIGH RESISTANCE—Same as standard apparatus (A) except that No. 17-L Circuit Plate replaces No. 16-L.

Night Switching Keys are recommended with this type of trunk—to cut the repeating coils and the associated apparatus in the No. 17-L Trunk Circuit Plate out of circuit for night service.

(C) DIAL EXCHANGE, NORMAL RESISTANCE—Same as standard apparatus (A), except that 802742 (343-D) Key replaces 802698 (342-H) Key.

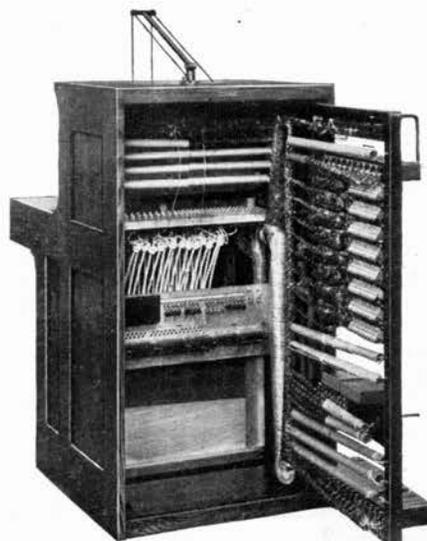
Common to all these trunks on each PBX switchboard, there will be required one dial.

(D) DIAL EXCHANGE, ABNORMALLY HIGH RESISTANCE—Same as (C) above, except that No. 17-L Circuit Plate replaces No. 16-L. Night Switching Keys are standard with this type of trunk—to cut the repeating coil and the associated apparatus in the No. 17-L Trunk Circuit Plate out of the circuit for night service.

(E) MAGNETO EXCHANGE—Same as standard apparatus (A) except that 802716 (342-JX) Key replaces 802698 (342-H) Key, and No. 17-L Circuit Plate replaces No. 16-L.

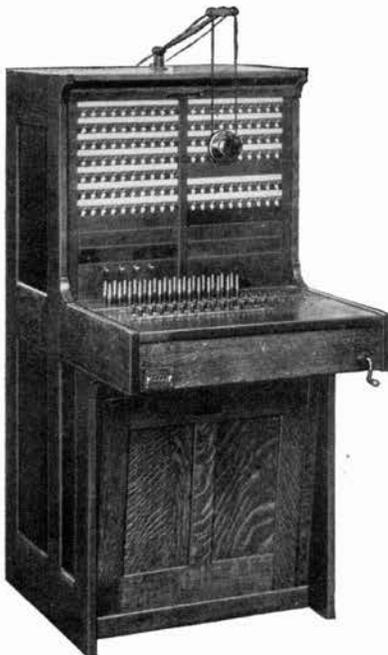
Circuit Plate Parts

No. 16-L			No. 17-L		
Stock No.	Code	Description	Stock No.	Code	Description
800249	(16-L)	Circuit Plate	800250	(17-L)	Circuit Plate
801700	(119-L)	Relay Mtg. Strip	801700	(119-L)	Relay Mtg. Strip
802839	(207Z-BC)	Relay	802839	(207Z-BC)	Relay
803039	(263Z-XCAC)	Relay	803039	(263Z-XCAC)	Relay
803088	(306-X)	Relay	803088	(306-X)	Relay
12706		Terminal Strip	12706		Terminal Strip
27053		Shell Asm. (Casing)	27053		Shell Asm. (Casing)
42371	(56)	Condenser	42375	(61)	Condenser
800293	(206)	Impedance Coil			
		Repeating Coil	800436	(11-AL)	Repeating Coil
802857	(212Z-CY)	Relay	802798	(204Z-CY)	Relay



Rear Perspective of No. 102 Switchboard

NOS. 102 AND 106 PBX SWITCHBOARDS (Cont.)



Front Perspective No. 106 Switchboard

Generator Equipment

REGULAR RINGING is accomplished by means of 20 cycles alternating current which is brought into the PBX switchboard from a power generator. However, the greatest ringing economy is accomplished by using a Stromberg-Carlson No. 9 Converter, which is of the vibrating type (see Accessories). This converter, when connected with a Stromberg-Carlson PBX switchboard, runs only during the periods in which it is required for ringing, such as from the moment when a calling cord is plugged up until the called subscriber answers; also from the moment when a trunk listening key is thrown until the called PBX subscriber answers. Each switchboard which will receive its ringing current from the No. 9 Converter requires one 803103 (381-A) Relay. This relay is known as the converter-starting relay. It is provided for in the wiring of the No. 102 and No. 106 PBX Switchboards.

EMERGENCY RINGING is accomplished by means of a hand generator. A Key is furnished for switching from hand to power generator or vice versa.

The operator's facilities for the emergency ringing of station instruments consists of a generator circuit which includes:

Stock No.	Code	Description	Stock No.	Code	Description
*201678	(64)	Generator	41868		Crank
201740	(334-C)	Key, En-graved Gen.	13968		Crank Shaft
			801822	(28-H)	Ringer

*If used to replace a No. 53 Generator, also order No. 202517 Adapter and an Extension Shaft of appropriate length.

SIGNALLING INDICATION is one of the features of Stromberg-Carlson PBX Switchboards. This is a great help to operators because through its use the operator knows with reasonable certainty, not only when she is ringing out on a line, but also whether the line is in proper condition for signalling purposes. This "signalling indication" is accomplished by means of a ringer in the generator circuit which responds to the flow of signalling current.

Operator's Telephone Equipment

The operator's telephone equipment that is regularly furnished with either the No. 102 or the No. 106 PBX Switchboard is of the suspended transmitter type and includes:

Stock No.	Code	Description	Stock No.	Code	Description
802527	(15)	Transmitter Arm	800433	(47-A)	Induction Coil
802525	(22)	Transmitter	800281	(21-A)	Impedance Coil
800632	(MO-1-A)	5' Cords (2)	42370	(55)	Condenser
801592	(29)	Receiver	48346	(57)	Condenser
201839	(66)	Plug	42375	(61)	Condenser
202926	(MO-2-J)	4' Cord	801082	(93)	Operator's Jack
			66241	(3-A)	Varistor

This operator's equipment has the following features:

NOISELESS—Flexible cords are used to suspend the transmitter so that it will not render the operator's circuit noisy by picking up floor vibrations. As a further means of protecting the operator from the influence of extraneous noises an anti-side-tone induction coil is provided. Sharp clicks and the effect of ringing current are prevented from reaching the operator's ear without reducing the reception level.

SANITARY—The operator's receiver is provided with a wire head band which is not only light in weight, but free from either dust-collecting or moisture-absorbing surfaces. The transmitter is provided with a non-porous, removeable mouth-piece.

FOOLPROOF—Condensers in the operator's leads to the trunk circuits make it impossible to cross central office battery with that of the cord circuits by an overlapping operation of the listening keys in those circuits.

CONVENIENT—The suspended type of transmitter as regularly furnished, with its quickly removed head receiver, is convenient for the attendant who has various duties to perform other than those of a PBX operator and who frequently has occasion to leave the switchboard.

CONVERTIBLE—It is a simple matter to change from suspended type transmitter to breast plate type or vice versa—the wiring is all in place for either type of transmitter. If a breast plate type transmitter is desired, the 801453 (No. 4) Operator's Telephone Set will be furnished in place of the regular suspended transmitter.

Night Alarm Equipment

To assist the operator in performing her duties each Stromberg-Carlson PBX Switchboard is provided with a night alarm. The apparatus for this purpose includes:

Stock No.	Code	Description	Stock No.	Code	Description
803103	(381-A)	Relay	201738	(334-C)	Key, Engraved N. A.
801861	(50-LL)	Buzzer			

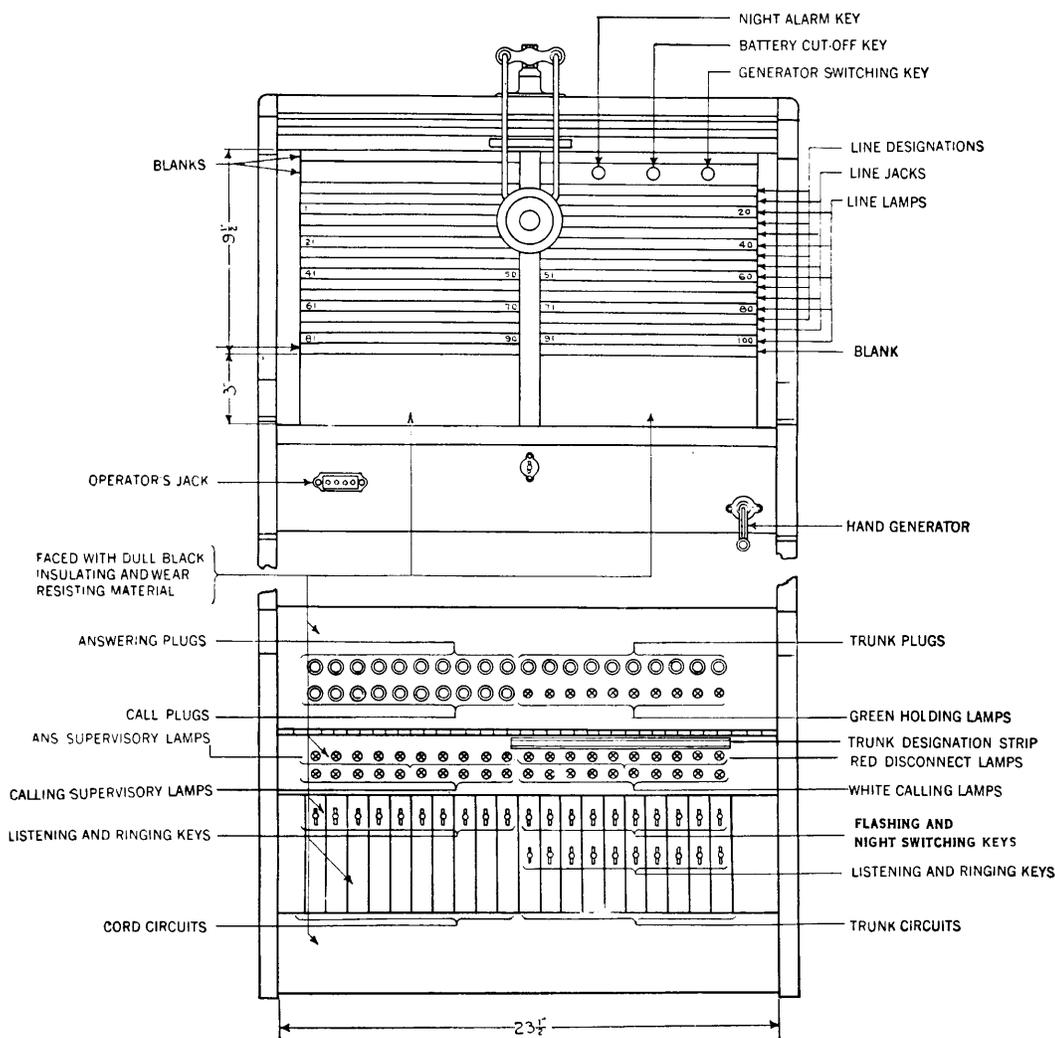
The night alarm is controlled by the Push Button Key, which is mounted near the top of the switchboard. When this key is fully operated the night alarm sounds simultaneously with incoming line calls, with incoming trunk calls, with the answering cord's disconnect signals and with the trunks's disconnect signals.

The following two types of night alarm circuits are available: **THE REGULAR NIGHT ALARM EQUIPMENT** which is arranged to operate from the switchboard's source of power ringing current. This type of night alarm will be furnished unless the Special Night Alarm Equipment is requested.

SPECIAL NIGHT ALARM EQUIPMENT. This is necessary when the power ringing current is derived from an intermittently operated Stromberg-Carlson No. 5 Converter. This type of night alarm is arranged to operate from the switchboard's source of battery supply and requires the following additional apparatus:

Stock No.	Code	Description	Stock No.	Code	Description
800289	(202)	Impedance Coil	42376	(62)	Condenser

NOS. 102 AND 106 PBX SWITCHBOARDS (Cont.)



Face and Keyboard Equipment—No. 102 PBX Switchboard

No. 102 Type PBX

Ultimate Wiring	Line Jacks 10 per Strip with Associated Designation				
	Code Letter	Lines Equip'd	Cords Equip'd	Trunks Equip'd	Shipping Weight
100 lines 10 Cord Prs. 10 Trunks	A	10	4	2	390 lbs.
	B	20	4	3	400 lbs.
	C	30	5	3	410 lbs.
	D	40	6	3	420 lbs.
	E	50	8	3	430 lbs.
	F	60	8	3	440 lbs.
	G	70	8	4	450 lbs.
	H	80	10	4	460 lbs.
	I	90	10	4	470 lbs.
	J	100	10	5	480 lbs.

No. 106 Type PBX

Ultimate Wiring	Line Jacks 10 per Strip with Associated Designation				
	Code Letter	Lines Equip'd	Cords Equip'd	Trunks Equip'd	Shipping Weight
180 Lines 8 Cord Prs. 11 Trunks	A	100	8	5	500 lbs.
	B	150	8	6	550 lbs.
	C	180	8	7	580 lbs.
Ultimate Wiring	Line Jacks 20 per Strip with Associated Designation—Hotel Type				
	Code Letter	Lines Equip'd	Cords Equip'd	Trunks Equip'd	Shipping Weight
	D	200	6	5	560 lbs.
	E	240	7	6	600 lbs.
300 Lines 8 Cord Prs. 7 Trunks	F	280	8	7	675 lbs.

NOTE—On Hotel Type boards more or fewer trunks and cords may be figured to meet requirements but the sum total of such cords and trunks must never exceed the ultimate of 19 circuits.

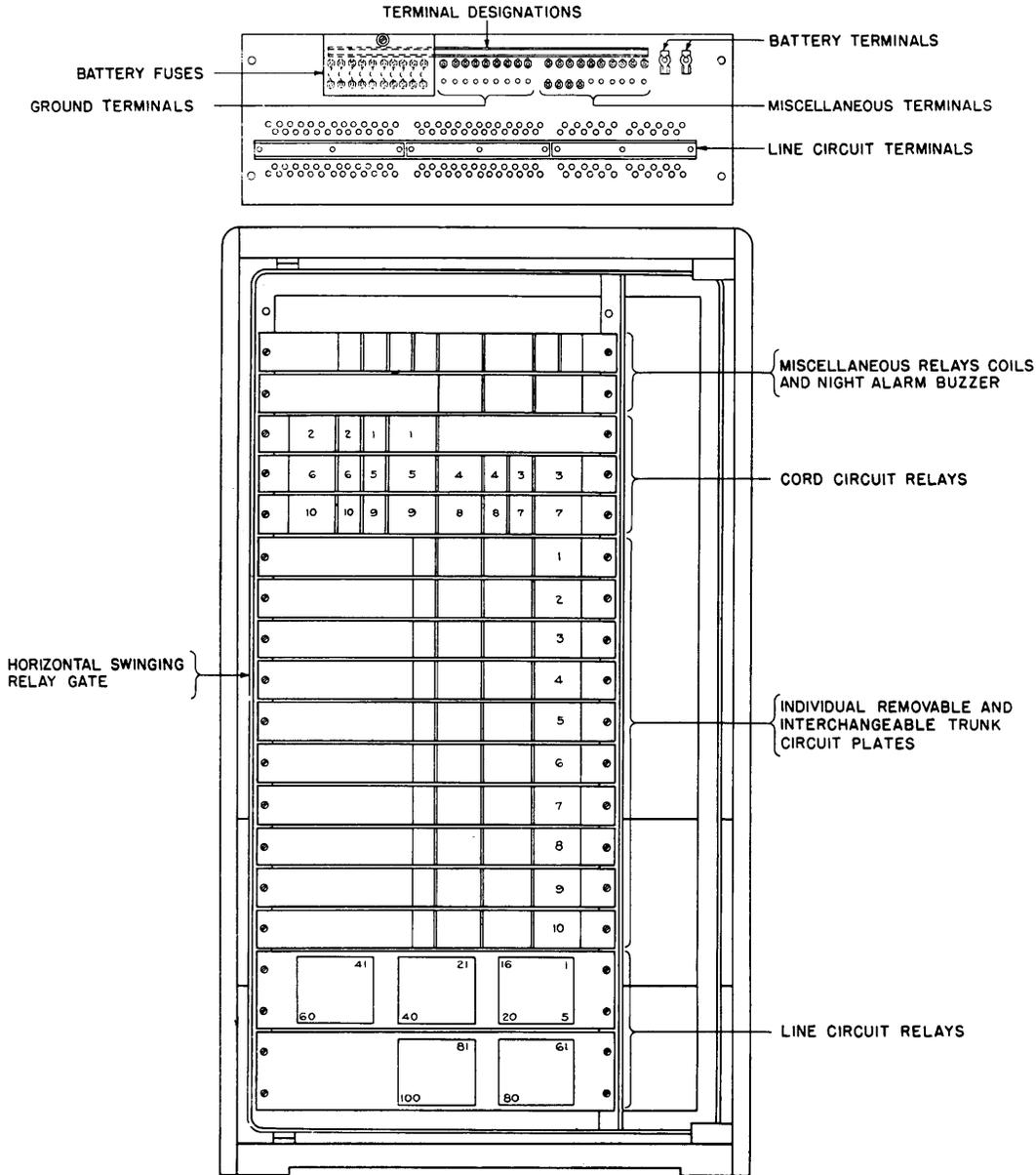
NOS. 102 AND 106 PBX SWITCHBOARDS (Cont.)

In the operation of series lamp line circuits the proper performance of night alarm relay equipment, due to line leakage conditions is an important factor. If the amount of line leakage exceeds the operating value of the night alarm relay it will result in the false operation of the night alarm circuit.

It is also important that the line leakage should not exceed the release value of the night alarm relay, since it will be held operated after it is once energized by an incoming signal.

In a system in which all lines are confined to an interior wiring installation, one night alarm relay, not to exceed 100 lines, will operate satisfactorily under the average normal conditions.

For systems with outside line construction it is recommended that the line circuit should be of the line relay control type, or if series lamp line circuits are employed to equip one night alarm relay circuit equipment for each group of twenty lines furnished.



Rear Equipment No. 102 PBX Switchboard

CONVENIENCE SYSTEMS

Stromberg-Carlson Convenience Systems make ideal installations for small business or professional offices. They offer trunk and inter-communicating service day and night, without the service of an attendant. Banks, architect's offices, clubs, large residences, country estates, and especially the large modern farm can use this type of service with great convenience to themselves and bring an additional source of revenue to the operating company. Stromberg-Carlson will be glad to help introduce this system in your community.

No. 2-6 Telephone System

The Stromberg-Carlson No. 2-6 System meets the demand for efficient telephone service in places where the requirements are not great enough for use of a PBX Switchboard and too large for a single city trunk with one or two extension telephones.

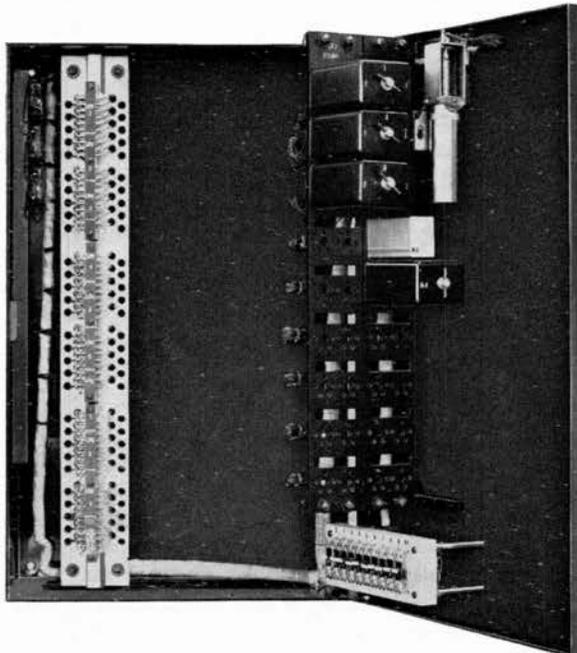
The 2-6 System provides common talking, selective ringing service for an ultimate of six local lines and has a capacity of two trunk lines. These trunks are available to all telephones for connection to any central office exchange, manual or dial, without the services of regular operator.

Central office calls can be originated, answered, held and transferred to any station of the system.

One station can be arranged for secret service on both central office trunks, or two stations can be arranged with secret service on one trunk each. Standard No. 2-6 Systems as they leave the factory have station No. 1 arranged for secret service on Trunk 1. All other central office trunk conversations are common to all telephones. The equipment is designed to operate from 22 volts D.C.

Capacity

The maximum capacity is 2 central office trunks and 6 local stations. Secret service may be applied to both trunks. Any station may be arranged for code call. If desired, any station can be restricted to local inter-communication only.



Steel Relay Cabinet for relays, fuses, and terminals. Finished in olive green to match office furniture.



No. 1270 Telephone for Convenience Systems

Telephones

The new 1270 Series Telephones used with Convenience Systems are the latest self-contained desk type, matching the No. 1243 common battery instruments in appearance and in essential components. The same rugged zinc die-cast housing with its simple flowing lines, and the same No. 23-W Handset with capsule transmitter and receiver units is used; also the 200595 Induction Coil-Capacitor unit embedded in a moisture-proof plastic case with terminals for the necessary wiring connections. All telephones are equipped with a high grade buzzer for local inter-communication signalling.

Each telephone is equipped with non-locking push buttons for selectively ringing any local telephone and for answering, holding and transferring, or originating central office calls.

The different telephones in this series are:

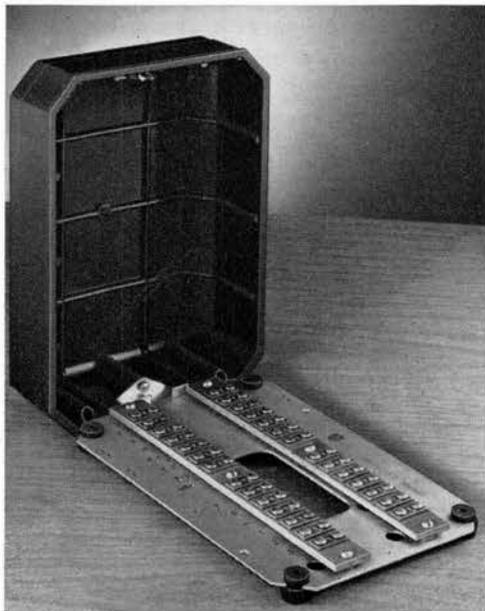
Telephone	Replaces	Buttons	Line Cord	Used with
No. 1270	No. 1195	8	WD-14C	2-6 Type Systems
No. 1271	No. 1215	12	WD-18C	2-10 Type Systems
No. 1272	No. 1216	12	WD-18C	3-9 Type Systems

They are described in more detail in connection with the various systems where they are used.

Relay Cabinet

The relay switching and terminal equipment used is housed in a surface-mounting steel wall cabinet. Dimensions are approximately: Height 18 7/16", width 10 3/16" and depth 6 5/16". The relays are arranged so that they may be easily inspected for adjustment or tests. The terminals are of the standard telephone type making use of soldered connections.

CONVENIENCE SYSTEMS (Cont.)



No. 1261-B Desk Set Box
Shown at right

No. 90-A Terminal Box
Shown at left



NO. 90-A TERMINAL BOX is used with the current 1270 series telephones for Convenience Systems. This also matches the common battery instruments. The cover is similar to the black plastic box which houses the No. 1260 Desk Set Box. It has a removable base of cadmium plated steel on which screw type terminals are mounted for making all necessary connections.

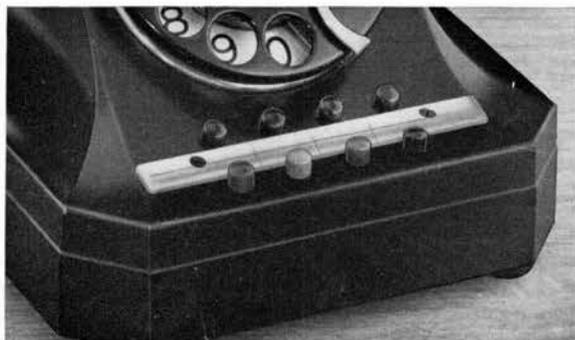
The No. 90-A Terminal Box replaces the No. 89-A and 89-B Terminal Boxes which were used with the old style Nos. 1195, 1196, 1215 and 1216 Telephones for Convenience Systems.

NO. 1261-B DESK SET BOX is recommended for the trunk signalling device in Convenience Systems. These boxes are the same in outward appearance as the No. 90-A Terminal Box and the No. 1260 Desk Set Box. The same interchangeable base is used for mounting the ringer and other components. They may be placed at any point within the hearing of the persons designated to take incoming trunk calls. Desk set boxes with chime tones may be ordered if this type of signal is preferred.

The No. 1261-BZ is the same instrument with biased ringer.

Local Calls—Inter-Communication

Local inter-communicating calls are made by removing the receiver and pushing the non-locking push button opposite the name or number of the person desired, thereby ringing the station call bell. All local conversations are common talking. When the called station answers, no push button operation is necessary.



Close-up of Push Buttons—No. 1270 Telephone

Operation

Central Office Calls—Incoming

Incoming central office calls are signalled by a bell operated from the central office ringing equipment. To answer an incoming call remove the receiver of any telephone and operate the blue or green non-locking push button to complete the connection. The incoming central office signalling bells should be of two different tones, one associated with the blue and the other with the green trunk push buttons; the tone of the signal bell signifies which trunk is to be answered.

Code Call

Code ringing service, when specified, can be furnished as an extra feature with either 2-6 or 2-10 Convenience Systems without any change in system equipment or wiring. Any station can be arranged for originating code call signals by the installation of a Stromberg-Carlson 53350 Code Call Key Box. A cord of proper size and length is furnished with each key box.

A separate bell is necessary at each station that is equipped for code call service. This call bell rings at the station originating the signal so that a means of checking the code is provided.

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CONVENIENCE SYSTEMS (Cont.)

**No. 2-6 Telephone System (Cont.)
Operation (Cont.)**

Holding and Transferring Central Office Calls

In a telephone system of this kind, in which any station can answer incoming central office calls, it is obvious that a call being answered by a certain station is not always for the party that does the answering. In this case the central office call must be held at the answering station by operating the non-locking red hold button. This operation causes the station circuit to connect with the common talking circuit.

By means of the proper ringing button, the answering station now calls the desired local station. When this local station responds, instructions are given to cut in on the proper trunk line and the outside call is completed. Should this party desire later to transfer the central office call to some other station, the same procedure as above should be followed.

To discontinue the use of any station that is cut in on central office trunk, that station's receiver is hung up. This releases the station trunk cut-in equipment. In event that a trunk held by a station is to be released, operate the cut-in button and hang up the receiver.

Central Office Calls—Outgoing

Outgoing calls to the central office are made by pressing either the blue or green trunk button which makes connections with the central office. To flash the central office operator, press the button associated with the trunk that has been selected and operate the hookswitch.

The equipment is so arranged that if more than one trunk button is pressed at one time, only one trunk to the central office will be selected. This is accomplished by electrical interlocking arrangement of the trunk cut-in relays.

No inter-communicating equipment is used when making or receiving central office calls.

**Variations of the No. 2-6
Telephone System**

No. 1-7 Telephone System

The Stromberg-Carlson No. 1-7 Telephone System is a modification of the No. 2-6 to serve those places where only one trunk is required but where more inter-communicating service is needed. This system resembles the 2-6 System in appearance and operation, but uses only one button for central office trunk and seven buttons for local and hold connections. It makes use of the same telephone, No. 1270, and the No. 2-6 Relay Cabinet, to which is added one No. 252-MM Line Relay and one No. 25 Relay Casing. The local cable is wired for either a No. 2-6 or a No. 1-7 System. No. 1-7 Relay Cabinets are not carried in stock, therefore the purchaser is required to modify the No. 2-6 Cabinet for this service.

No. 3-5 Telephone System

This system operates similarly to the No. 2-6 System. It fits requirements when three central office trunks are necessary and when five local stations suffice. The same telephone (No. 1270) is used. A No. 3-5 Relay Cabinet is available for this system.



Operation of Push Buttons to Transfer a Call
Buttons 1-5 Operate Station Signals for Inter-Communicating
Buttons 6-7 Connect Telephone with an Outside Line
Button 8 Holds an Outside Call while Ringing Another Station

No. 7-6 Telephone System

The No. 7-6 Telephone System provides a specialized type of service; it is a satellite system working into a PBX Switchboard. The eight buttons on each telephone have the following functions: one button which controls an individual private trunk from each local station to the PBX; one button that controls a trunk which is common to all six stations also terminating at the PBX; one hold button to hold either trunk; and five buttons controlling the individual six stations for inter-communication between themselves, wholly independent of the PBX Switchboard. The No. 1270 Telephone is used in this system. This arrangement requires a steel relay cabinet with dimensions approximately as follows: height 24 7/16", width 15 3/16", depth 6 1/4".

**No. 2-M-6 Telephone Systems
(For Magneto Exchange)**

These systems have the same general appearance and the same operating characteristics as the No. 2-6 System, but are designed to operate in connection with magneto central offices.

The relay cabinet is somewhat larger than the one used in the Standard No. 2-6, having the following approximate dimensions: height 24 7/16", width 21 3/16", and depth 6 5/16".

When a subscriber wishes to call the magneto exchange, he removes his subscriber from the hookswitch and presses one of the trunk buttons. This causes a momentary flow of direct current to operate the magneto signal at the magneto switchboard. This current is furnished from the eleven cells of storage battery ordinarily provided for the operation of the system.

When the telephone is returned to the hookswitch, a disconnect signal is produced in a manner similar to that previously described. The uses of the hold, trunk and inter-communicating buttons are the same as in the No. 2-6 System. The same No. 1270 Telephone is employed.

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CONVENIENCE SYSTEMS (Cont.)

Nos. 2-10, 1-11 and 3-9 Telephone Systems



No. 1271 Telephone for Convenience Systems

These systems have the same general operating characteristics as the No. 2-6 System. They are arranged for secret service on one or more trunks, and may be used with dial or manual exchange connections. The systems differ in the number of trunks and local connecting circuits. In the case of the No. 2-10 System, There are two central office trunks and capacity for ten local stations; in the No. 1-11 there is one trunk and eleven local stations, while in the No. 3-9 there are three trunks and nine local stations. The No. 2-10 and No. 1-11 use the same relay cabinet; a different cabinet is provided for the 3-9 System. The dimensions of the cabinets are approximately: height 24", width 15" and depth 6".

With these systems a telephone with a larger key or button capacity is necessary. The No. 1271 Handset Telephone equipped with 12 push buttons is used with the No. 2-10 System, and the No. 1272 is used with the No. 3-9 System. In other respects these telephones are the same as the No. 1270 which is used with the No. 2-6 Systems.

No. 2-M-10 Telephone Systems

These systems operate and have the same general use as the No. 2-M-6 type for magneto central office exchanges, but with increased capacity. The No. 1271 Telephone is employed.

SELECTIVE TALKING CONVENIENCE SYSTEMS

No. 2-10 ST and No. 3-9 ST Telephone Systems

The No. 2-10 ST and No. 3-9 ST Systems operate from the subscriber's standpoint much the same as the No. 2-10 and the No. 3-9 Systems. The chief point of difference is that the No. 2-10 ST and No. 3-9 ST Systems provide selective talking, as well as selective ringing for local connections. Other refinements are also added to make these systems function with speed and accuracy.

Relay, condenser and coil equipment is mounted on steel frame work approximately 30" high, 32½" wide, and 12" deep. As this type of equipment is usually mounted in basements or closets, the outside casing is made of plain sheet steel .050" with readily removable panels. Case dimensions are approximately 30 11/64" high, 32 11/16" wide, and 12 1/8" deep.

Operation

The following features and facilities are afforded:

LOCAL CALLS—STATION TO STATION are made by removing the handset from the cradle and depressing the button designated as the party wanted. The called party only is signalled as long as the button is depressed. A tone indication is heard if the called station is not busy. If the station is busy, no tone will be heard. When the called station answers, no push button operation is necessary. Simply removing the handset from the cradle completes the connection and the conversation takes place over a selected talking pair—not common talking. Other local telephones are barred from this line, so that a secret talking circuit is provided.

LOCAL TO TRUNK CALL—OUTGOING. Removing the handset from the cradle and then depressing one of the trunk buttons is the first step to secure the PBX or central office operator. When the trunk button is released after being depressed, a tone will be heard if the trunk is not busy. This indicates that the call has been completed. If no tone is heard the trunk is busy. It is then necessary to press another trunk button until a non-busy trunk is found. If the subscriber accidentally presses more than one button at once, the action will not tie up more than one trunk.

TRUNK TO LOCAL—INCOMING. When the incoming trunk signal is heard the party receiving the call depresses the trunk button corresponding with the tone associated with its particular signal. This connects the answering party with the party calling over the trunk line.

TRANSFER OF TRUNK CALL TO ANOTHER LOCAL STATION. After answering a trunk call, it may become necessary to transfer it to another local party. This is accomplished by operating the (Red) hold button, which holds the line so that the connection will not be taken down at the PBX or central office. Then the station desired is called in the usual manner and told it is wanted on (for example) trunk No. 1. In order for the desired party to cut in on Trunk No. 1, it will be necessary for him to depress the trunk button No. 1 twice. After the party originally answering the trunk has given the instructions to the party desired, the telephone is returned to the cradle in the usual manner. A trunk call may be transferred back and forth as many times as required if the hold button is operated in the prescribed manner. It is highly important to operate the hold button before replacing the handset.

REGAINING OPERATOR'S ATTENTION. On trunk calls to PBX or central office operator, when the subscriber wishes to regain the operator's attention, it may be accomplished by holding the trunk button down and operating the hookswitch plunger in the telephone cradle. It is necessary to remember that the handset should be removed from the cradle before the trunk button is released.

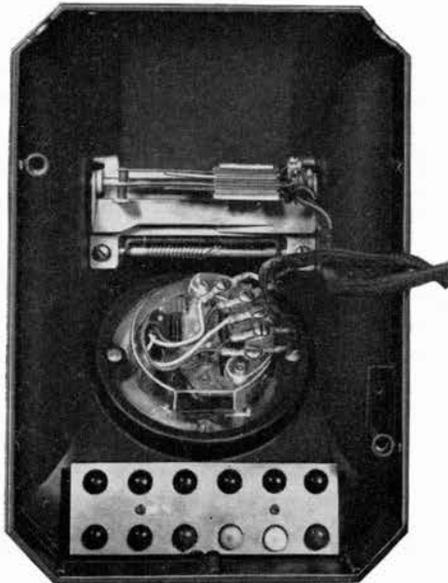
SECRET SERVICE. When used with dial central offices, all trunk wiring is arranged for secret service, so that an established trunk call cannot be mutilated by another station if it attempts to use the same trunk. A slight change in wiring, however, allows systems used with manually operated central offices to have certain stations arranged for secret service and others open to all stations. One station may also be arranged to take all

CONVENIENCE SYSTEMS (Cont.)

Selective Talking Systems (Cont.)

incoming calls and to supervise such connections after they have been established.

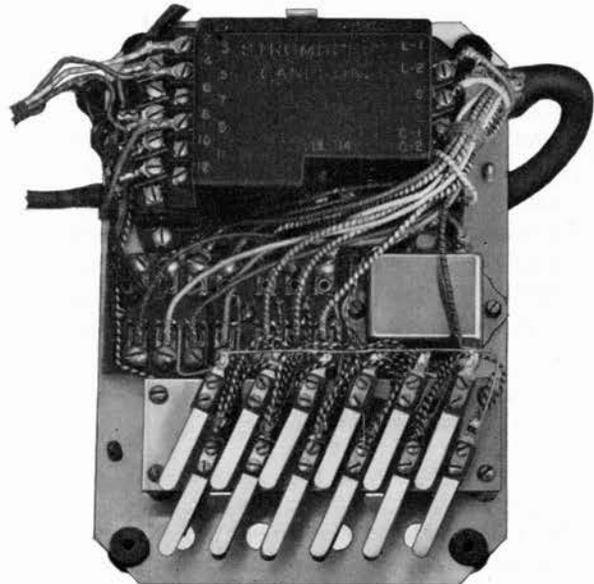
The Nos. 1271 and 1272 Telephones are used in connection with these systems in a manner similar to the No. 2-10 and No. 3-9 Systems.



View into Housing—No. 1271 Telephone

No. 2-M-10ST and No. 3-M-9ST Telephone Systems

These systems operate and have the same general functions as the No. 2-M-6 Systems except they provide selective talking as well as selective ringing features. They make use of the No. 1271 and No. 1272 Handset Telephones. Prices on relay cabinets quoted upon application.



View into Base—No. 1271 Telephone

Parts for Convenience System Apparatus

Parts of Telephones

(Used commonly unless otherwise specified)

Stock No.	Description
803486	No. 23-W Handset (3 Cond.)
35808	Rubber Foot
200595	Coil and Capacitor Unit
35824	Screw, Coil and Capacitor mtg.
202301	Terminal Block Assembly
503703	Screw, Terminal Block mtg.
12456	Nut, Terminal Block mtg.
801757	Edwards Lungen Buzzer
501203	Screw, Buzzer mtg.
202304	Push Button Spring Group (1270)
202305	Push Button Spring Group (1271)
202306	Push Button Spring Group (1272)
202321	Housing, 8 Button (1270)
202309	Housing, 12 Button (1271, 1272)
41563	Screw, Housing to Base
202310	Retaining Plate, Push Button
502433	Screw, Retaining Plate to Housing
202311	Spacer, Retaining Plate
202312	Push Button, Black
202313	Push Button, Red
202314	Push Button, Green
202315	Push Button, White (1271)
202316	Push Button, Blue
202318	Holder, Station Designation Strip
25829	Screw, Holder to Housing
42158	Complete Hookswitch Spring Comb.
32882	Plunger, Hookswitch
45410	Screen, Base Plate
202319	Base Plate
202325	Cord, WD-14C 14 Cond. (1270)
202326	Cord, WD-18C 18 Cond. (1271, 1272)

Parts of No. 90-A Terminal Box

Stock No.	Description
201985	Housing, Black Plastic
201986	Base Plate
201987	Terminal Block Assembly
17024	Spacer, Terminal Block mtg.
503823	Screw, Terminal Block mtg.
35808	Rubber Foot
41685	Bracket, Housing to Base
41710	Screw, Housing to Base
521431	Screw, wall mounting
200787	Washer, wall mounting

Parts of No. 1261 Desk Set Box

Stock No.	Description
41562	Housing, Black Plastic
35809	Base Plate
35808	Rubber Foot
41685	Bracket, Housing to Base
41710	Screw, Housing to Base
41560	Cover, Ringer window
201753	No. 65-A Ringer, Used on No. 1261-B
801911	No. 61-A Ringer (Biased) Used on No. 1261-BZ
32949	Terminal Strip Assembly
35547	Spacer, Terminal Strip mtg.
201942	Capacitor Assembly
521431	Screw, wall mounting
200787	Washer, wall mounting

See next page for ordering information on major elements of Convenience Systems and necessary Accessories.

CONVENIENCE SYSTEMS (Cont.)

STOCK AND CODE NUMBERS

No. 2-6 Type Systems

Stock No.	Code	Description
*801714	(2-6) (1-7)	Relay Cabinet Common Battery Manual or Dial
801715	(2-M-6)	Relay Cabinet Magneto
801716	(3-5)	Relay Cabinet Common Battery Manual or Dial
801717	(7-6)	Relay Cabinet Common Battery Manual or Dial
202298	(1270)	Telephone (8-button desk type handset)
202325	(WD-14-C)	Cord-14 conductor (1270 Telephone)
201940	(1261-B)	Extension Bell Box (Trunk Signal)
201941	(1261-BZ)	Extension Bell Box (Biased Ringer)
802325	(1220-A)	Extension Chime Box (Trunk Signal)
201983	(90-A)	Terminal Box (At each telephone)
53350	(SK 3350)	Code Call Key Box (if specified)

*To make the No. 1-7 Relay Cabinet, the No. 2-6 Cabinet is furnished and an additional 252-MM Line Relay with No. 25 Casing is supplied.

No. 2-10 Type Systems

Stock No.	Code	Description
*801718	(2-10)(1-11)	Relay Cabinet Manual or Dial
49700	(3-9)	Relay Cabinet Manual or Dial
801719	(2-M-10)(1-M-11)	Relay Cabinet Magneto
202299	(1271)	Telephone (12 button) 2-10, 2M-10, 1-11 2-10ST and 2M-10ST Systems
202300	(1272)	Telephone (12 button) 3-9, 3-9ST Systems
202326	(WD-18C)	Cord—14 Conductor (1271-2 Telephones)
201940	(1261-B)	Extension Bell Box (Trunk Signal)
201941	(1261-BZ)	Extension Bell Box (Biased Ringer)
802325	(1220-A)	Extension Chime Box (Trunk Signal)
201983	(90-A)	Terminal Box (At each telephone)
47384	(SK 3350-A)	Code Call Key Box

*In using the 2-10 Cabinet with the 1-11 System, it is necessary to add 1 No. 206-CMQ Relay with No. 25 Casing.

GENERAL INDEX

A complete alphabetical index with cross references for all the products shown in this section or any of the other sections will be found in the center of this catalog.

Accessories

Used with No. 2-6 Type Systems Cable

The No. 102 Type Cable is used for the installation of the 2-6 System and its variations.

This cable has a total of 22 Conductors consisting of 9 pairs and one spare pair of No. 22 AWG wires and 2 single wires of No. 18 AWG. Either moisture-treated external cotton braid or lead sheath can be furnished. The lead sheath is recommended in all cases, however, because it not only prevents trouble from moisture or unexpected leaks but it also is a safeguard against mechanical injury.

Stock No.	Code	Description
800203	(102-L)	Lead Cover
800201	(102-B)	Cotton Braid Cover
203155	(102-P)	Plastic Cover

Power Equipment

These systems operate on 22 volt direct current which can be supplied in any of the following ways:

Dry Cells—Eighteen 1½ volt cells in series.

Battery Current—From the Central Office.

Storage Battery—11 cells of Exide type BTMH-2 with .5 ampere trickle charger.

Rectifier—No. 1027-R Raytheon, .5 amp. capacity.

Code Call Equipment

A small metal Key Box equipped with a cam type key and an eight conductor cord, 5'6" long, comprises the equipment necessary to install a code call service on a No. 2-6 System. With this arrangement it is possible to ring all local stations at one time and thus a system of code calling may be instituted to locate people who are in the habit of leaving their particular telephone location. Size of box: 4¼" x 3⅞" x 1⅞".

Used with No. 2-10 Type Systems Cable

The No. 103 Type Cable is used for the installation of 2-10, 3-9 and variations of these systems.

This cable has a total of 26 conductors consisting of 11 pairs and one spare pair of No. 22 AWG wires and 2 single wires of No. 18 AWG. Either moisture-treated external cotton braid or lead sheath can be furnished. The lead sheath is recommended in all cases, however, because it not only prevents trouble from moisture or unexpected leaks, but it also is a safeguard against mechanical injury.

Stock No.	Code	Description
800204	(103-L)	Lead Covered
800202	(103-B)	Cotton Braid Cover
203154	(103-P)	Plastic Cover

Power Equipment

These systems operate on a 22 volt direct current which can be supplied in any of the following ways:

Dry Cells—Eighteen 1½ volt cells in series.

Battery Current—From the Central Office.

Storage Battery—11 Cells of CTMH-2 with .5 ampere trickle charger.

Rectifier—No. 1027-R Raytheon, .5 amp. capacity.

Code Call Equipment

A small metal Key Box equipped with a cam type key and a twelve conductor cord, 5'6" long, comprise the equipment necessary to install a code call service on No. 2-10 Type Systems. Key Box Size: 4¼" x 3⅞" x 1⅞".

MULTIPLE LINE KEY TURRET

There are many business and professional establishments that are not large enough to warrant a special "Order Board" for handling incoming calls. On the other hand, traffic in such places is too heavy to be handled by individual telephones answered by one or more of the office personnel. Careful and satisfactory attention to telephones calls often means the difference between profit and loss.

The perfect solution is the Stromberg-Carlson Multiple Line Key Turret—an investment that will soon pay for itself by eliminating delays in handling incoming calls that could not be given proper attention without service of this kind. Ask your Stromberg-Carlson representative for attractive booklet.

Multiple Line Key Turrets make it possible for an incoming call to be handled by more than one person or operator. For example, in a department store, when customers call in over one of the telephone trunks to place an order or to secure information, the message can be handled promptly, as more than one operator can take the call. In other cases, the system may be used to extend the trunks to a number of offices so that when one person is out, another may answer; or it may be used to permit one person to answer all calls and signal the party desired by the push button signal system, at which time the party wanted takes over the call. All turret stations may also originate outgoing calls.

As many as nine key-and-lamp-ended lines may be handled at a single turret position, and with these turrets multiplied, prompt response to incoming calls is assured. It retains the essential features for holding, signalling and busy supervision.

Construction and Arrangement

The cabinet turret woodwork is walnut and consists of three basic units: the base, the key section and the top. The base, No. 24809, contains the terminal equipment, telephone and night alarm equipment, common talking key and indicator lamp. Above the base, the key sections, No. 24808, are mounted. One, two or three sections may be so installed. Each key section contains three keys, three line lamps and three busy lamps, or an ultimate of nine circuits. To finish the turret a No. 24807 Top covers the assembled equipment.

In cases where signalling between turret operators is desired the No. 26004 Top equipped with five push buttons is substituted for the No. 24807.

The relay equipment for the system is housed in a sheet metal cabinet finished in green to blend with office furniture, arranged for wall mounting. Relays, condensers, fuses and time release element are mounted accessibly on the door of the cabinet while the terminals are mounted in the stationary portion. The terminal capacity is for six key turrets of three key sections each. This provides a total ultimate of nine trunk lines per turret. The circuits of the turrets are multiplied on the terminal strip, so that as many as six attendants have access to any or all of the nine telephones.

The Standard No. 1 Relay Cabinet Assembly is wired for the ultimate but is carried in stock with three trunk lines equipped. Dimensions of relay cabinet are: height, 24 7/16", width, 15 3/16", depth, 6 5/16".

Telephone equipment for the operator may be provided in three types, breast plate type, handset desk type, or suspended type.

Standard Equipments

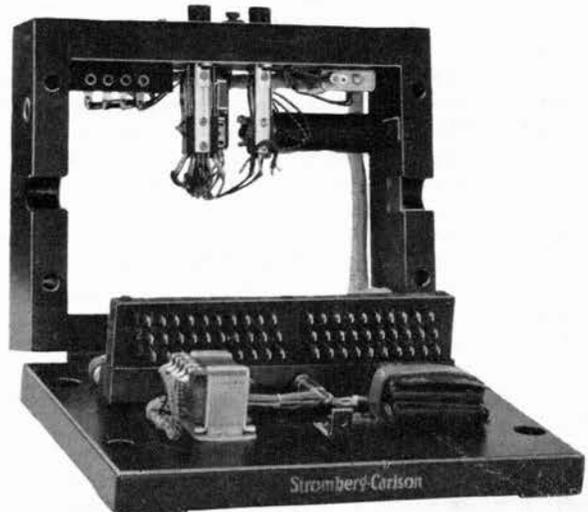
All parts—bases, key sections and tops—are carried in stock and shipped separately. The key sections and the bases are completely wired with local cable forms, permitting the customer to assemble and connect the turret assemblies to meet installation requirements.



No. 1 Stromberg-Carlson Key Turret

Standard Turret Equipments

Stock No.	Code	Description
801450	(1-A)	3 Key Unit Assembly consists of: 1-No. 24807 Top 1-No. 24808 Key Section 1-No. 24809 Base
801451	(1-B)	6 Key Unit Assembly consists of: 1-No. 24807 Top 2-No. 24808 Key Sections 1-No. 24809 Base
801452	(1-C)	9 Key Unit Assembly consists of: 1-No. 24807 Top 3-No. 24808 Key Sections 1-No. 24809 Base



Base Section, No. 24809, Multiple Line Key Turret

MULTIPLE LINE KEY TURRET (Cont.)

Telephone Equipment

Attendant's station telephones may be selected from the following types:

Stock No.	Code	Description
201377	(1244-W)	Handset Telephone (Desk Type)
48046	(1234-M)	Handset Telephone (Suspended Type)
801453	(4)	Operator's Telephone Set (Breast-plate)

NOTE: No station bell is required with these instruments. Dials may be used when operating into a dial central office.

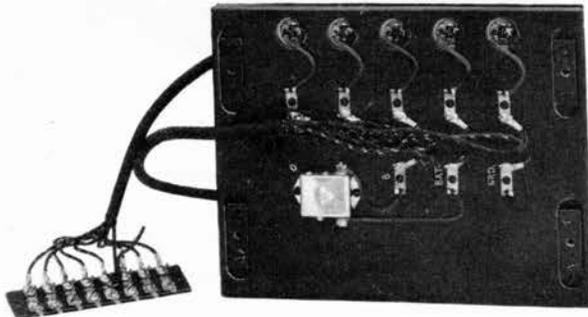
Turret Signalling Top

The No. 26004 Top is used when it is desired to have common talking and selective ringing between turrets. The common talking key is furnished with all bases.

No. 26004 Top provides 5 Push Buttons and 1 Miniature Buzzer.

When specified, a six-foot eight conductor cord and an eight-point terminal block are furnished. This provides a finished appearance to the wiring for the separate inter-communicating circuit and also provides suitable terminals for readily making the required connections.

When No. 24807 Top is replaced by No. 26004 Top, add the Letter "D" to the equipment code number. Thus 1-A Equipment becomes 1-AD Equipment.



Under Side of Push Button Top, No. 26004

Noise Killer Equipment

When the No. 26004 Push Button Top is used, it becomes necessary to provide noise eliminating equipment, which is common to all turrets. This equipment is mounted in one unit known as:

Stock No.	Description
26060	Noise Killer Assembly

Installation

The Multiple Key Turret System requires separate machine-made cable between each individual turret and the central relay cabinet. No. 800156 (65-BE) braided cable (20 triple No. 22 AWG) is suitable in dry places but No. 201393 (65-L) with lead sheath, should be used where runs are exposed to moisture or mechanical injury and in the case of conduit installations.

It is good practice to connect the wiring to all terminals of the turret base as this will simplify any later installation of additional key sections. Turret base cables are not soldered at the factory.

Sometimes, when leaded cable is used, it may not be desirable to bring the runs all the way to the turret base. In these cases a splicing terminal is recommended such as Type "E" Reliable Building Terminal Box with a Type T "20" triple terminal strip.

When signalling tops are included in the installation No. 164-B (braided) or No. 164-BS (leaded) cable can be used which provides sufficient wiring (6 pairs) for a full complement of six turrets.

Relay Cabinet Equipment

The standard No. 1 Relay Cabinet Assemblies (Stock No. 24726) are wired for nine telephone lines and equipped for 3 lines. This includes wiring for intercepting line equipment. All additional line equipment apparatus and intercept relay apparatus is shipped separately to be mounted and connected for installation requirements.

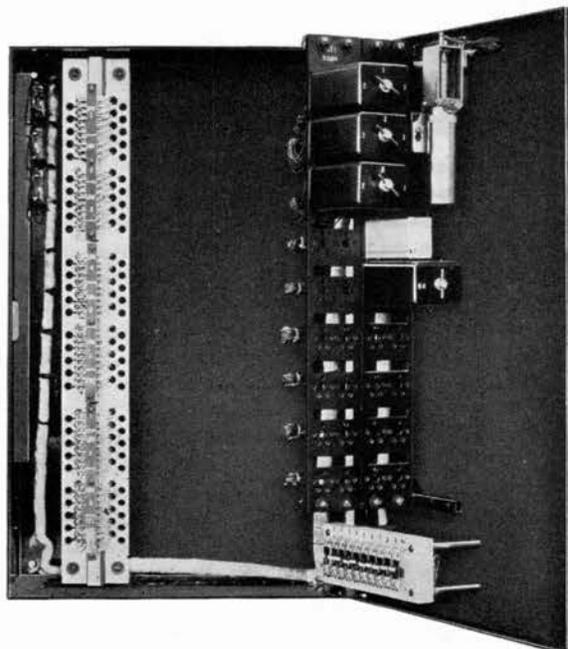
Each additional line equipment requires the following:

Stock No.	Code	Description	Stock No.	Code	Description
803084	(298ZW-AYAY)	Relay	801610	(25)	Relay Casing
802993	(253Z-BYCY)	Relay	28158		Resistor,
37193		Condenser, 1 mf.			1000 ohms

Intercepting service requires the following per line:

Stock No.	Code	Description	Stock No.	Code	Description
801610	(25)	Relay Casing	802871	(215Z-AY)	Relay

When it is known at the time equipment is originally ordered that talking between turrets is desired, order Noise Killer Equipment per Stock List B-7134 for mounting in No. 1 Relay Cabinet.



No. 1 Relay Cabinet for Stromberg-Carlson Key Turret Equipment

Power Supply

This system is designed to operate off 22 volts D.C. and the current can be supplied in any one of the three following methods:

- Battery Supply over cable pairs from the central office main battery or special battery at the central office.
- Storage Battery located on premises and charged from a dry plate rectifier such as 11 cells CTMH-2 Battery with 842028 Rectox Charger.
- Recti-Filter Battery Supply Unit. Either No. 1040 (3 Amp.) or No. 1043 (1.5 Amp.) depending on requirements.

When figuring any of the above battery supply methods the maximum current drain to be used is approximately 4 amperes at 22 volts. This current figure takes care of an instantaneous load when the system is fully equipped; this extreme condition is seldom met in actual operation.

INTER-COMMUNICATING SYSTEMS

(LESS EXCHANGE TRUNKS)

Inter-Communicating Systems have gained universal recognition for providing reliable telephone communication in installations requiring limited local service and not requiring outside or city connections. Offices, factories, stores, schools, apartments, and institutions find these systems efficient and convenient. In addition to providing greater effectiveness within the organization, the switchboard will be relieved of much of its burden, permitting better service for calls coming in.

Executive System (No. 1-A)



No. 6240-C24 Wall Mounting

Selective Talking—Selective Ringing

This System features selective talking and selective ringing service and provides as many separate simultaneous conversations as there are pairs of telephones installed. The total number of stations which may be connected is 25.

The No. 6240-C is sold as a desk type telephone. If the subscriber wishes to convert to wall mounting this can be done very simply—a screw-driver alone is necessary to affect this change.

Stock No.	Code	No. of Buttons	Station Capacity
43531	(6240-C6)	6	7
43532	(6240-C12)	12	13
43533	(6240-C16)	16	17
43535	(6240-C24)	24	25



No. 6240-C12 on Desk

Accessories

The Executive System requires the following material for completing an installation:

- A. **CABLE** with suitable conductors, (2 pairs No. 18 gauge for battery supply, and 1 pair No. 22 gauge, for each station in the system). Lead or plastic covered cable is recommended for all locations where moisture is present or where cable may be exposed to mechanical injury.
- B. **STRANDED FLEXIBLE CABLE** is used where it is necessary to move the desk telephone about on a desk. Conductors required depend upon number of buttons in the key box.
- C. **CABLE TERMINALS** should be provided wherever there is a junction between cables and at desk mountings.
- D. A **RECTIFIER** is recommended in place of dry cells wherever reliable 110 volt AC is available.

Accessories are described in further detail following System descriptions.

Master System (No. 11)

Common Talking—Selective Ringing System

With this system only one conversation may be carried on at a time. Any station may call any other station in the system without operating the remaining bells. This type of service is extensively used in banks, stores, warehouses and residences.

No. 2527 Telephone

The No. 2527-C is a wall type telephone suitable for surface wall mounting. The No. 2539-C, a flush type wall telephone, is no longer manufactured.

Stock No.	Code	No. of Buttons	Station Capacity
800906	(2527-C2)	2	3
800908	(2527-C4)	4	5
800910	(2527-C8)	8	9



No. 2527-C8 Wall Telephone

STROMBERG-CARLSON

INTER-COMMUNICATING SYSTEMS (Cont.)

Master System (Cont.)



No. 6347-C8 Wall Telephone

No. 6347-C Telephone

The No. 6347-C Telephone is a surface mounting wall type instrument. The housing is of molded phenol compound with the push button unit mounted at the top. The transmitter and receiver are made up in the form of a handset.

Stock No.	Code	No. of Buttons	Station Capacity
43561	(6347-C4)	4	5
43562	(6347-C8)	8	9



No. 6345-C8 and Apparatus Box

No. 6345-C Telephone

The No. 6345-C Telephone consists of a handset desk telephone with push buttons mounted in the base together with an apparatus box containing a bell and connecting block.

Stock No.	Code	No. of Buttons	Station Capacity
43553	(6345-C4)	4	5
43554	(6345-C8)	8	9

Accessories

The following material is necessary to complete the installation of a Master Common Talking-Selective Ringing System.

A. 1 NO. 51-H RETARD COIL, to be installed near the battery of each system.

B. CABLE—3 Common Wires, No. 18 Gauge, and one individual wire, No. 22 Gauge, for each station.

C. DRY CELLS—5 cells required. If 110 volt A.C. current is available, a No. 1024 Rectifier may be employed.

Standard System (No. 12)

Master Station (Common Talking)

This system provides for communication from a central point, the Master Station, to several outlying stations. The master station is equipped with push buttons, one for each outlying station. By operating these buttons each outlying station may be rung separately. The outlying stations are each equipped with one ringing button only, by which they are able to signal the master station. However, outlying stations can converse with each other by first asking the master station to ring the desired station. Only one conversation can be carried on at one time. The capacity of this system permits the operation of one master station and from two to sixteen outlying stations.

Instruments for Master Station System

MASTER STATIONS—Any telephone for the common talking, selective ringing system previously described may be used as a master station instrument in this system. If larger capacities are required, more stations may be added by using code ringing.

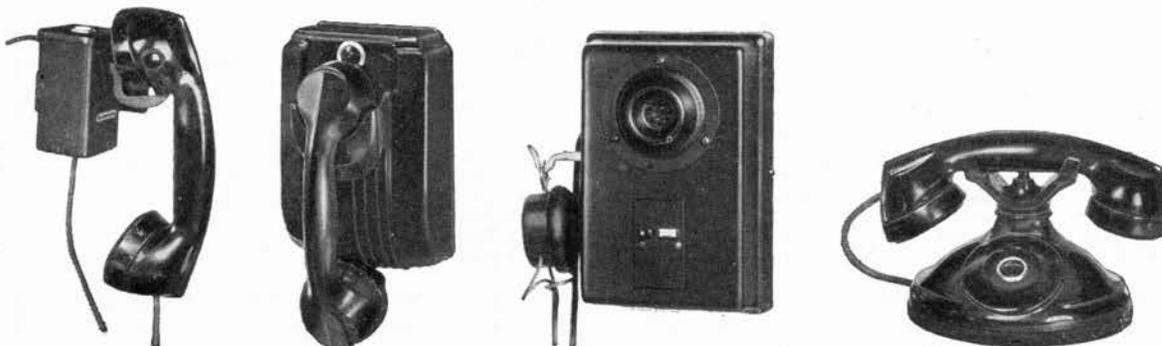


No. 2527-C8 Wall Telephone

This is one of the telephones recommended for use at the master station. Other suitable telephones are the No. 6347 and the No. 6345 shown above on this page.

STROMBERG-CARLSON

INTER-COMMUNICATING SYSTEMS (Cont.)



OUTLYING STATIONS—These are the Nos. 2527, 6339, 6345 or 6347 type telephones already described, except that they are equipped with one button only for signalling the master station.

Stock No.	Code	Type	Stock No.	Code	Type
800905	(2527-C1)	Surface Wall	46747	(6345-BC1)	Desk Handset
43559	(6347-C1)	Wall Handset	46744	(6339-BC1)	Suspended

Accessories*

The following material is required for completing a Standard System.

- A. 1 NO. 51-H RETARD COIL, to be installed near the battery of each system.
- B. WIRE—Three common wires are required throughout the System, No. 18 or No. 19 gauge. In addition one individual wire between each outlying station and the Master Station, No. 22 Gauge. It will be found economi-

cal to use cable when there are long runs or a large number of wires.

- C. CABLE TERMINALS—Terminals are desirable at junction points and distribution centers.
- D. DRY CELLS—Five cells are required. If 110 volt A.C. current is available a No. 1024 Rectifier may be used.

*Accessories are described in further detail following system descriptions.

Duo-Private System

Two-Station Private Line

Two-Station Private Line Telephones are used extensively for communication between rooms in a residence, between offices, between shipping room and warehouse and to fill other similar requirements.

This system requires three wires for connecting the two telephones and one set of three to five dry cells connected at one station only. One No. 51-H Retard Coil is also required.

One station can ring the other simply by depressing the button in the set. Wall or desk sets may be used interchangeably.

Two-Station Private Line Telephones			
Stock No.	Code	No. of Buttons	Description
800905	(2527-C1)	1	Surface Wall
46747	(6345-BC-1)	1	Handset Desk
46744	(6339-BC-1)	1	Suspended Wall
43559	(6347-C1)	1	Wall Handset

Accessories*

Installing Material as follows is required for the Duo-Private System.

- A. 1 NO. 51-H RETARD COIL to be installed near the battery of each system.
- B. THREE WIRES are required for connecting the Inter-phones.
- C. DRY CELLS—No more than five (5) dry cells connected in series are used for this system.

*Accessories are described in further detail following system description.



No. 6339-BC-1 Suspended Telephone No. 2527-C1 Wall Telephone



6345-BC-1 Desk Telephone

INTER-COMMUNICATING SYSTEMS (Cont.) COMMONLY USED ACCESSORIES

Interphone Cable with Thermo-Plastic Insulation

Stock No.	Code	No. 22	No. 18	Spare	Covering	Approx. O.D.	LB. per 100'
45886	IC-112	6 Single	2 Pair	2 Wire	Braid		5.9
45914	IC-212	6 Single	2 Pair	2 Wire	Plastic	.349"	8.2
45882	IC-122	8 Pair	2 Pair	1 Pair	Braid		9.8
45910	IC-222	8 Pair	2 Pair	1 Pair	Plastic	.554"	13.3
45883	IC-134	14 Pair	2 Pair	1 Pair	Braid		13.3
45911	IC-234	14 Pair	2 Pair	1 Pair	Plastic	.579"	19.0
45884	IC-142	18 Pair	2 Pair	1 Pair	Braid		15.9
45885	IC-158	26 Pair	2 Pair	1 Pair	Braid		21.2
45913	IC-258	26 Pair	2 Pair	1 Pair	Plastic	.710"	25.5

These conductors are tinned copper with .012" wall of thermo-plastic (polyvinyl chloride) insulation. Conductors are twisted into pairs; cabled with full twist each 9"; and finished with

flame-proof saturated gray cotton braid, or braided and then molded with a black polyvinyl chloride jacket of .047" thickness for all-weather protection.

Raytheon Rectifiers

These power filters with dry plate rectifying units are used extensively to replace dry cells in the operation of various Inter-Communicating Systems. They not only supply a quiet source of talking battery, but also supply ringing current as indicated in the following table:

Catalogue No.	Volts	Amps.	A.C. Freq.	A.C. Volts	Ringing Volts A.C.	Width	Cabinet Size in		Wt. lbs.
							Depth	Height	
RFR-1024	6	0.5	50/60	115	6-12-18-24	7	6¼	10½	12
RFR-1026	12	0.5	50/60	115	6-12-18-24	7	6¼	10½	14

Change of source relay will be supplied on either of the above models when the suffix "R" is added. Example RFR-1026-R. This relay automatically switches the outside current supply to a stand by battery during A.C. power interruptions.

Standard Flexible Cable

Used principally with the Executive System, between cable terminal and key-box, when it is necessary to move the key-box and telephone about on the desk. Conductors have plastic insulation and black outer braid.

Flexible Cable

Stock No.	Code	Description
43595	IC-18	9 Pair Cable, No. 22 Stranded
43596	IC-30	15 Pair Cable, No. 22 Stranded
43597	IC-42	21 Pair Cable, No. 22 Stranded
43598	IC-54	27 Pair Cable, No. 22 Stranded

Batteries

See Construction Division of Catalogue for prices and descriptions of Gray Label and other primary cells.

See Accessories Section of Telephone Catalogue for Storage Batteries.

Battery Boxes

Code No.	Dry Cell Capacity	
2	2	See Construction
3	3	Section of Catalogue

Terminal Boxes

Terminals are numbered and mounted on hard wood blocks with sheet metal covers.

Stock No.	Code	No. of Circuits	Terminals Per Circuit	Box Dimensions
800777	19AC	15	2	8 x 5⅞ x 2½ in.
800778	19BC	27	2	14 x 5⅞ x 2½ in.
46769	IB-30	15	2	9¾ x 5½ x 1¼ in.
46770	IB-45	22	2	9¾ x 5½ x 1¼ in.

Terminal Strips and Blocks

See Construction Division of the Catalogue which shows the many different types of strips and blocks as well as boxes available for connecting purposes.

Relays for Loud Ringing Bells

Type 1-HXX Relay provides a means by which loud powerful signals may be applied to Inter-Communicating Stations when 110 direct or alternating current is available. The contacts of the relay are rated to carry 6 amperes, 110 volts A.C. or 1 ampere 115 volts D.C.

The 1-HXX Relay is installed in the circuit in place of the bell or buzzer in the set. The loud signal circuit is carried through the relay contacts which close when the station is rung.

Loud Ringing Bells

The No. 17 Economy Bell, equipped with a 6" gong, may be wired directly in place of the signal in an Inter-Communicating set. Specify gong size (6") and ringing voltage used. The bell is finished black and weighs 5 lbs.

When 110 volt A.C. is available the No. 560 Weatherproof Bell, used in connection with the 1-HXX Relay is recommended.

For other loud signal equipment see Construction Division of the Catalogue.

Retard Coils

The No. 51-H Retard Coil is required when the same battery is used for both talking and ringing current.

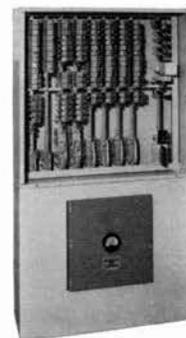
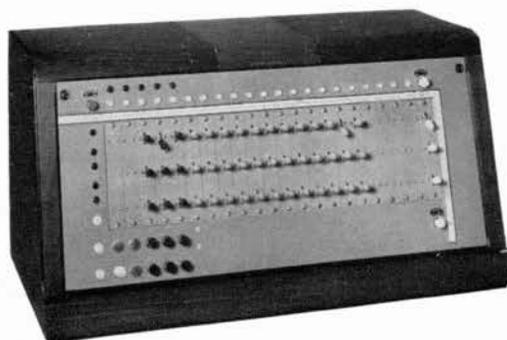
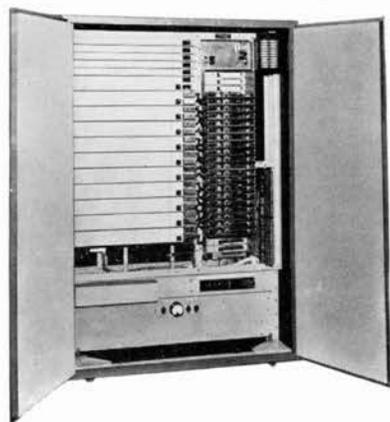
Wire and Miscellaneous Equipment

Single, Twisted Pair and Twisted Triple Interior Telephone Wire is available for installation work, as well as Insulated Staples, Telephone Wiring Nails, Pipe Straps and Bridle Rings. Prices furnished upon request. See Construction Division of Catalogue.

Inter-Phone Systems suitable for operation with annunciator panels and switchboards are available. Prices and descriptions will be furnished upon application.

STROMBERG-CARLSON

PBX and Interior Systems



To meet the varied requirements of interior communication, Stromberg-Carlson presents PBX Switchboards, the 6K-1 Multi-Line System, Convenience Systems, and Multiple Line Key Turrets for modern and efficient personal service.

PBX AND INTERIOR SYSTEMS

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STROMBERG-CARLSON PBX and INTERIOR SYSTEMS

Appearance is Important

PBX type equipment—more often than not—is right up front in the modern office. Stromberg-Carlson has specialized in equipment which brings prestige to the user.

Breadth of Services

Your customer will find, among the several types of systems described in this section, a solution for his individual communication problem—dial or manual, attended or unattended.

Trouble-free Operation

Unexcelled records for low-cost maintenance are the result of over sixty years experience in this field.



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SYSTEMS FOR INDIVIDUAL CONVENIENCE

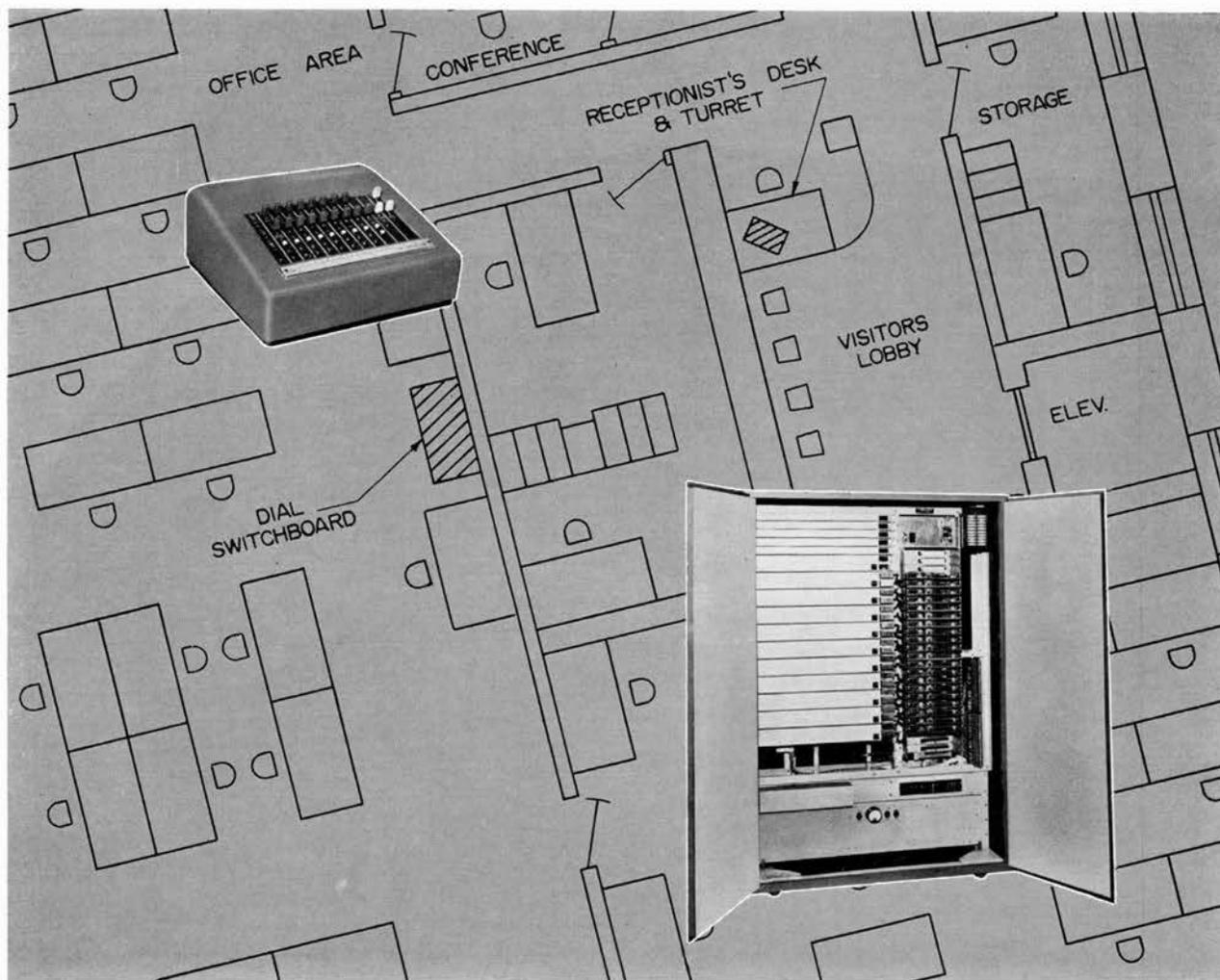
Service to the community is but one of the requisites of good telephone operation. The individual, with his many varying needs, must have available the special type of equipment which fits his own requirements. With this in mind, Stromberg-Carlson has long pioneered in the development of the smaller systems featured in this section.

1. **DIAL PBX SYSTEMS** are available for all types and sizes of business establishments. These attended switchboards are up to the minute in operation and styling. Included are Finder-Connector Type Systems such as the F-40 and Selector Type System for larger installations that feature regular shelf-type equipment.

2. **COMBINATION SYSTEMS** feature the unattended XY-PX and relay PX's. Stromberg-Carlson has produced telephones that will conveniently tie into XY-PX equipment to afford a combination Exterior-Interior System. The Stromberg-Carlson No. 1573 Telephone, commonly referred to as a two-line telephone, works well with any manual, dial, or relay PX system.

3. **INTERIOR SYSTEMS** include a self-contained system, the Stromberg-Carlson 6K-1 System, as well as the Convenience Systems, such as the 2-6 and 2-10 systems, and the Multiple Line Key Turret. Intercommunicating and central office services can be served 24 hours a day without requiring an operator in attendance.

4. **MANUAL PBX SYSTEMS** feature the conventional PBX Switchboard — the No. 121 Cordless Switchboard, the No. 120 Floor-type PBX switchboard, the Nos. 127 & 128 PBX Switchboards and the No. 106 Hotel Type PBX Switchboard. All boards have been designed with the operator in mind, resulting in easier operating functions and more reliable service.

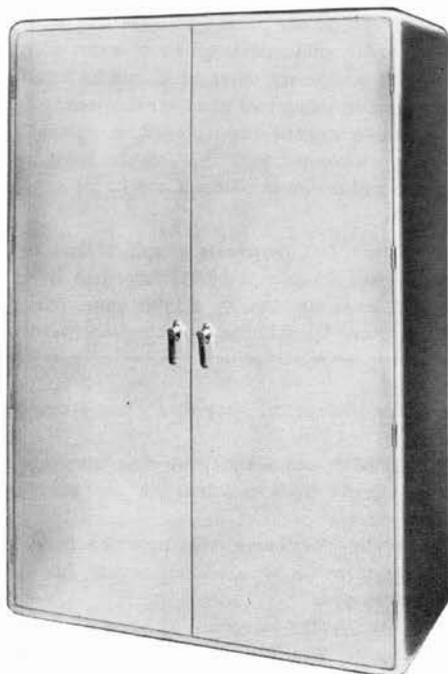


STROMBERG-CARLSON

DIAL PBX SYSTEMS

The following XY step-by-step switching systems are primarily for attended operation. In effect, these systems are miniature XY Dial Systems — appropriate for use in industry, large office buildings, hospitals, etc., where there is a need for internal as well as external communication.

The F-40A, XY-PBX



Equipment for 40-line XY Dial PBX is housed in this attractive cabinet, with attractive neutral gray finish.

This is a single party finder-connector system that has an ultimate capacity of 40 lines, 8 combination central office trunks and 2 information trunks. All equipment is mounted on a single bay frame, enclosed by an acoustically treated cabinet to minimize normal equipment noise. The dimensions are approximately 6'4" high, 4'1" wide and 2' deep. Because of its small size, acoustical treatment and roller mounting, it may be placed anywhere in an office in the same manner as filing cabinets or office machines.



The F-40A, XY-PBX has many applications including hospitals.

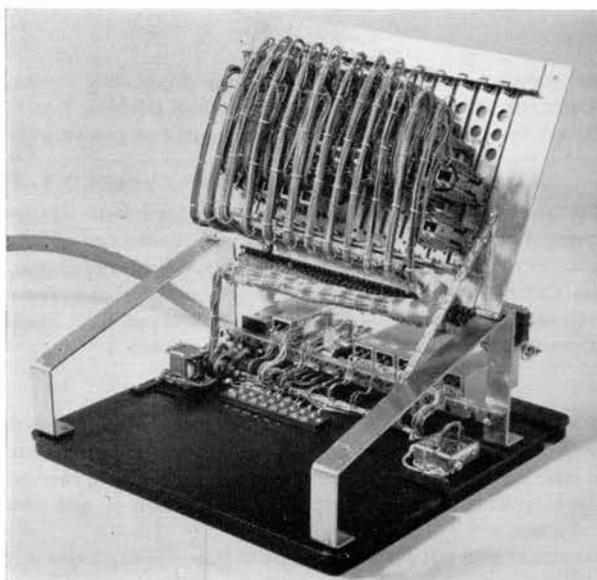


Cordless Attendant's Turret

ATTENDANT'S TURRET — A cordless type attendant's turret is provided. Modern and compact in design, attractively trimmed in colors which make the various parts self-identifying, this turret is arranged and equipped for 8 central office trunks — of which the first five are equipped for night switching — and 2 information trunks.

Incoming calls from the central office are answered by the attendant and passed on to a desired extension by dialing the assigned number of the extension. Information calls cannot be extended by the operator. Night switching keys are provided for connecting the central office trunks to predetermined extensions when the attendant is not on duty. An audible night alarm and a fuse alarm are provided, together with keys to cut off either alarm.

The dimensions of this turret are approximately 6" high, 14½" wide, and 14½" deep.



Turret with cover removed showing accessibility to all parts.

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F-40A, XY-PBX (Cont.)

Features

SINGLE PARTY LINES—provide fast service.

RESTRICTED SERVICE—provided on a per line basis so that, if desired, certain lines can be blocked from calling central office trunks. Such lines will receive busy tone when attempting to use these trunks.

DIRECTORY NUMBERS—are simple, two-digit numbers (51-80) for stations and single digits for trunks (9 for CO trunks and 0 for Information).

CALL DISTRIBUTION—distributes calls over the finder-connector links by a single rotary switch type allotter circuit.

NIGHT SWITCHING—permits predetermined stations to be connected with central office trunks.

EMERGENCY OPERATION—provides emergency service to central office by switching to the night trunk connection in the event of an A.C. power failure. Provision is made to mount a 45-volt dry battery which is switched by a change of source relay to operate the relays of the trunk circuits. This will provide service on the lines normally used for night answering. There will be no local service during an emergency.

EASY TO INSTALL—Circuit Plates jack into position on the shelf and the unit is simply plugged into a conveniently located wall socket—just like plugging in a toaster or other household appliances.

GENERAL FEATURES such as dial tone, busy tone, machine ringing, immediate ring trip and ringback tone are normally supplied.

SPECIAL FEATURES—These consist of code call and executive right-of-way service and are supplied at extra cost when ordered. Code call equipment, when used, can be mounted on the switchboard proper, using two local service terminals.

When executive right-of-way is used, a special connector circuit, directly associated with this feature, must be ordered. This connector will mount in place of one of the regular finder-connector links.

POWER—A 48-volt D.C. power is supplied from a 6-ampere battery eliminator. Ringing power is furnished by a 20-cycle Sub-Cycle with tones supplied by a static generator. All power equipment is mounted within the switchboard cabinet.

F-80, XY-PBX

This Finder-Connector System is similar in principle and operation to the F40-A, XY-PBX. The major differences between the two are that the F-80 has larger capacity, maximum of 80 lines, 10 central office trunks and 4 information trunks, and is mounted on a frame.

Like the F-40A, this system is a single party finder-connector type of system. All equipment except power supply is mounted on a bay frame, 6'4" high, 6'1" wide and 1'7" wide.

Attendants Switchboard

A cord type switchboard with jack ended trunks is provided with each F-80 PBX system. In over-all appearance, this switchboard resembles the 120 type switchboard. It features an attractively veneered walnut cabinet with sun tanned finished face panels to give a pleasing contrast in colors. All surfaces are smooth with rounded corners which makes this board a modern piece of furniture that will blend well with its surroundings.

Features

SINGLE PARTY LINES—provide fast, private, dependable service.

RESTRICTED SERVICE—provided on a per line basis so that, if desired, certain lines can be blocked from calling central office

trunks. Such line will receive busy tone when attempting to use these trunks.

DIRECTORY NUMBERS—are simple two-digit numbers for local extensions and single digits for trunks ("9" for central office and "0" for information).

CALL DISTRIBUTION—distributes calls over the finder-connector links by a rotary switch type allotter circuit. Dual allotter is available at extra cost.

EXECUTIVE RIGHT-OF-WAY—is provided on a per line basis by optional wiring on the line circuit. Such lines cannot be restricted.

TRUNK HUNTING AND SWITCH THRU—is provided on trunk levels.

NIGHT THRU SWITCHING—to a central office is provided for a maximum of five stations at any one time. Any station may be connected for this service.

CONFERENCE SERVICE—is available which will handle up to 5 conferring parties at any one time. A conference must be set up by an operator at the attendant's switchboard.

CODE CALL—can be provided by arranging the connector circuit to tie into the code call equipment. Two of the connector terminals for local service will be used when this feature is provided.

POWER—is supplied by 48 V DC batteries.

Type H, XY-PBX (Selector) System

This type of PBX is a one- or two-party Finder-Selector system having a capacity which is limited only by the amount of floor space available for the equipment. It uses the same type of separate factory-wired Linefinder, Selector, Connector and Trunk Shelf units which have been placed in XY CDO and MDO installations throughout the country.

Features

PROVISION FOR GROWTH—This system cannot be outgrown. Ready-to-use circuit plates and their associated XY switches can be inserted as new lines are added without any wiring change. The only limitation to growth is space in which to add new equipment.

PROVISION FOR EQUALIZING TRAFFIC—Heavy traffic loads can be equalized by reversing the multiple, slipping the multiple between groups, or introducing a grading panel.

CIRCUIT FEATURES—Conference Service, Executive Right-of-Way, Night Answering Service, Restricted Service, Code Call, Alarm, Two-Party Service, Consecutive Number Hunting, Watchman's Recording Service, as well as other standard operational circuits may be supplied as required.

UNIT TYPE POWER BOARDS—These are built up to customer specifications from standard panels mounted on multiple-drilled frames which match the equipment bays. Changes or additions to either supervisory or power equipment can be made quickly and easily by sliding out one standard unit or blank and inserting another.

BAY FRAMES—All switching and circuit plates are mounted on multiple-drilled bay frames that vary in height from 8', for systems of smaller capacity to either 9' or 11½' for the larger systems. The depth of the frame is approximately 1' 4" with the shelves mounted front and rear to save space and cable.

STROMBERG-CARLSON

COMBINATION SYSTEMS

The Stromberg-Carlson No. 1573 Two-Line Telephones and the No. 1575 Multi-Line Telephones can be used with step-by-step XY-PX, XY-PBX, or with the No. 2-10, or 4-20 Relay PX to make a PBX system.



No. 1573-A
Two-Line Telephone

The 1573 Telephone

This instrument is our adaptation of the present No. 1543 Telephone modified to provide line selection and hold keys for two lines. A third line may be used as an additional line to an internal PX or PBX. The entire switching mechanism is mounted on the base of the telephone and is encased by the housing. An outside call can be originated, answered, or held while maintaining connection to another line.

XY-PX, XY-PBX and the No. 1573 Telephone

This telephone may be used effectively with XY-PX's or XY-PBX's. When used in conjunction with a PBX, the two lines normally are terminated at the switchboard with the push button third line being used for special services. When a PX is involved, the telephone is usually arranged to have two lines for use as trunks to the central office and the push button is used as a third line to the PX for selective ringing and talking to other stations within the PX system.

Stromberg-Carlson 2-10, or 4-20 Relay PX and the No. 1573 Telephones

As many variations as are available on the No. 1573 Telephone XY-PBX's, there are the same number that can be made with Stromberg-Carlson 2-10, or 4-20 Relay PX's. It is normal to have two lines used as trunks to a central office and the push button third line used as a local line to the PX for intercommunicating service. This arrangement provides holding features on both trunk lines as well as selective signaling and secret talking on the intercommunicating line.

ORDERING INFORMATION

To order complete telephone instruments and component parts, refer to the No. 1573 Telephone in Section A of this catalog. See the following page for ordering information on the Types 2-10, 4-20 Systems.



No. 1575 Multi-Line Telephone

The Stromberg-Carlson 6K-1 System

The No. 1575 Telephone is the station equipment for use with the Stromberg-Carlson 6K-1 dial system. This instrument is a modification of the present No. 1543. Each station, with or without the assistance of an attendant, can originate, receive, hold, and transfer calls from one to five central offices, PBX, intercommunicating or private lines. Other parts of the 6K-1 System consist of a Terminal Box, distributing boxes, connecting cables, a relay cabinet, and a power pack unit.

XY-PX, XY-PBX and the 6K-1 System

When the 6K-1 System is used with an XY-PBX, all lines terminate on the PBX switchboard. Intercommunication could be arranged within the 6K-1 station telephones, complete with a separate signaling device. This would then permit a maximum of three lines that could be terminated on the PBX switchboard. The intercom line is usually terminated in the PX System when this telephone is used with XY-PX's.

Stromberg-Carlson 2-10, or 4-20 Relay PX and 6K-1 System

With this arrangement, intercommunication can be made with selective ringing and talking between parties that are tied to the PX as well as those that are tied to the 6K-1 system. Also, only one line is needed to terminate in the PX, leaving a maximum of four other lines to be used as trunks to the central office.

ORDERING INFORMATION

Description and ordering information for the No. 1575 Telephone will be found in Section A of this catalog. Information of like character concerning the remaining elements of the 6K-1 System will be found later in this section. See following page for 2-10, 4-20 Systems.

Revised 9-1-57

A DIAL PBX SYSTEM (using the 2-10 or 4-20 Relay Dial PX with No. 1573 or 6K-1 System with No. 1575 Telephones)

Type 2-10 System

The Stromberg-Carlson Type 2-10 Relay Dial PX provides two simultaneous talking paths for intercommunication in offices or factories. When connected with either the No. 1573 Telephone or the No. 6K-1 System 1575 Telephone, the 210 system becomes the internal portion of a dial PBX system.

Features

1. When used as a PBX, calls are completed without the aid of an operator.
2. Offers selective ringing and talking, instantaneous ring trip, ringing and busy tones.
3. Has an internal capacity of 10 lines; with extensions, this capacity may be increased to a maximum of 30 stations.
4. Two simultaneous talking paths.



2-10 Relay Dial PX

Operation

This system utilizes the *finder* principle, employing relays for linefinders and connectors to select an idle intercommunicating path automatically. When a party originates a call, the lockout circuit of the common allotter marks the calling line and selects an idle link. The idle link is marked for the calling line and, when connected to the calling line, sends back dial tone. The calling party need only dial two digits to be connected to the called party.

Intercommunicating connections are released when the last party releases. Trunk connections by-pass this system when the appropriate trunk key is thrown on either the No. 1573 or the 6K-1 station equipment.

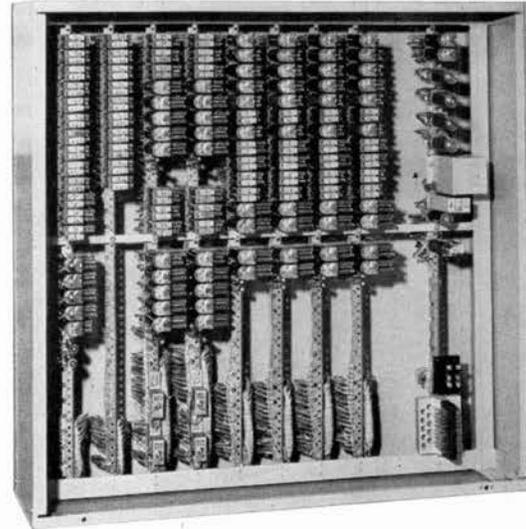
Equipment

The cabinet — contains all relays used for line finding and connecting. It is of rugged construction and is permanently finished in office gray. Outside dimensions are: 26½" high, 18¼" wide and 10⅞" deep.

The floor stand — is used for rack mounting the cabinet and the Battery Eliminator (if used) on the floor. It is constructed with angle irons and surrounded by sturdy sheet metal, painted office gray. Dimensional limits of this stand are: 27" high, 18¼" wide and 20" deep.

The telephones — used to make a PBX out of this Relay Dial PX System are the No. 1573 Two-Line Telephone and No. 1575 Multi-Line Telephone (6K-1 System). Standard No. 1543 Telephones may be used within the PX System.

Power Supply — is furnished either through the use of a Battery Eliminator or through the use of four 3-cell, 24-volt storage batteries. When the storage batteries are used, the cabinet containing the switching equipment may be wall mounted but should never be more than 25 feet away from the batteries.



Close-up of 4-20 Relay Dial PX

Type 4-20 System

The 4-20 PX is similar in purpose and operation to the 2-10 System. The larger capacity — four simultaneous talking paths and provision for a maximum of 60 telephones (including extensions) — is suitable for internal communication in a large office or factory. This system, when used with No. 1573 Telephone or the 6K-1 System for trunk connections, becomes a PBX.

Features

This system has the same features as the 2-10 System with the exception that there are more lines (20) and talking paths (4) in the 4-20 System than in the 2-10 System.

Operation and Equipment

The method and principle of operation are the same in this system as in the 2-10 System.

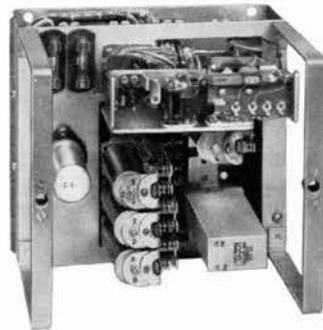
Due to increased capacity, the cabinet and power unit is larger, having dimensions of 27⅞" high, 32⅞" wide, and 10⅞" deep for the power pack unit (if used in place of storage batteries), and 32⅞" high, 32⅞" wide and 10⅞" deep for the relay cabinet. This unit cannot be wall mounted due to size and weight.

ORDERING INFORMATION

Stock No.	Description
484862-000	Relay Dial System (2-10 System)
485794-000	Mounting stand and cabinet (2-10 System)
893721-000	Raytheon Rectifier (2-10 System)
485832-000	Mounting stand and cabinet (4-20 System)
485650-000	Relay Dial System (4-20 System)
485833-000	Raytheon Rectifier (4-20 System)

STROMBERG-CARLSON

DIAL SELECTIVE PBX



Stromberg-Carlson now offers a new type of PBX service to the small businessman who wants dial-selective PBX service tailored to his budget. A simple combination of the Stromberg-Carlson two-line telephone (the 1573) and a ten station dial selective intercom unit will provide a highly effective PBX capable of handling ten stations.

Features

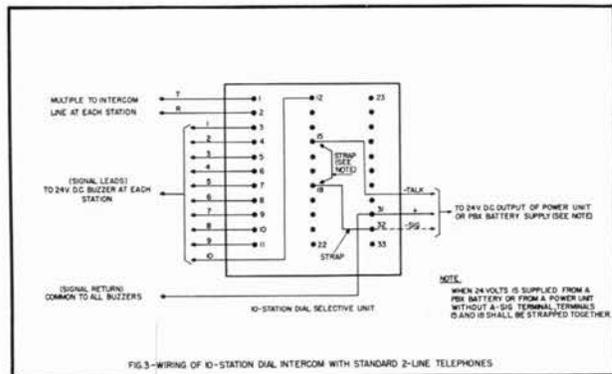
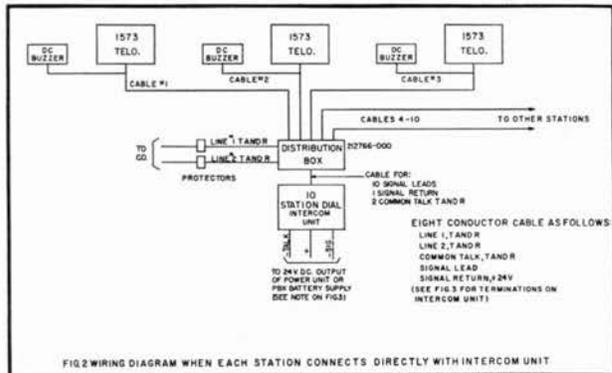
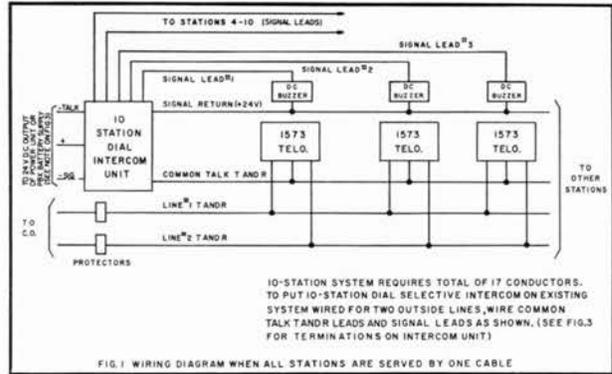
INTERCOM UNIT—is the same Dial Selective Unit that may be used with the 6K System having dial selective intercommunication. This unit provides fast, positive intercom service since only one digit need be dialed to call a desired party. Only 7 3/4" x 6 5/8" x 6 1/16", the Dial Selector Unit may be conveniently mounted on a wall.

THE 1573 TELEPHONE—is a two-line instrument that also has a provision for an intercom line. For use in this system, two-lines would terminate in a central office and the intercom line would terminate in the Intercom Unit, in essence, making each station a small PBX. A central office call on one line may be held and another call may be initiated or answered on either the remaining trunk line or the intercom line in strictest privacy.

SIGNALING DEVICES—are simple individual buzzers which must be placed at each station. These buzzers are wired to the dial selective unit and will operate when their specific digits are dialed.

CABLING REQUIREMENTS—vary as to the arrangements of the stations. A 17 conductor cable should be specified when all stations are served from one cable, otherwise an 8 conductor cable will suffice if each station is wired directly to a distribution box which in turn is connected to the Dial Selective Unit.

POWER SUPPLY—24 volts, 0.5 amperes Lorain T3 unit or equivalent is all that is necessary to operate the Dial Selective Intercom Unit.



ORDERING INFORMATION

Component Parts

Stock No.	Code	Description	Amount
210905-000	(1573)	Two-Line Telephone	10 max.
489840-000		Dial Selective Unit (10 stations)	1
800164-000	(71-B)	Cable, 17 conductor	as required
203726-000	(105-B)	Cable, 8 conductor	as required
212766-000		Distribution box	1
486209-000		Lorain T3 Power Pack	1
801759-000		Buzzer	10 max.

JACKSON... LIGHT & POWER Co MAIN ST + OLD POWER BUILDING... NODAWAY VALLEY BANK, RETA EAST OF TOWN... 313 N. MARKET... 5TH + BUCHANAN, DR... IN TARKIO

10c • P B X A N D I N T E R I O R S Y S T E M S

Revised 9-1-57

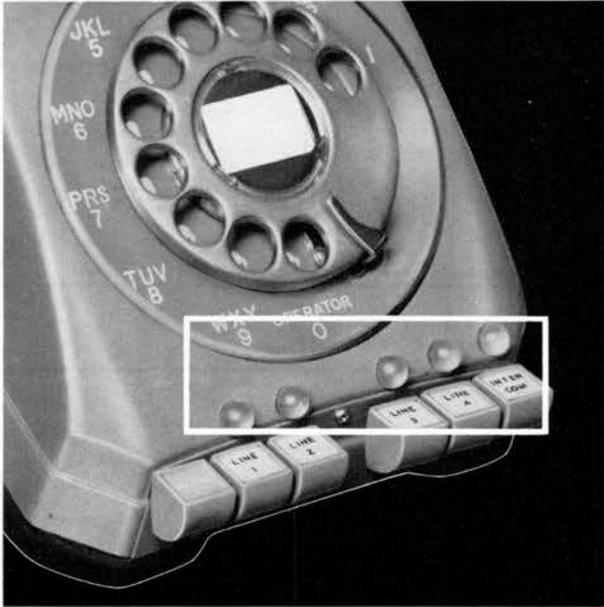
INTERIOR SYSTEMS

Stromberg-Carlson manufactures three types of interior systems—the new 6K-1 System, the Convenience Systems, and the Multiple Line Key Turret. These types of systems are for use where requirements are too small for a PBX switchboard and too large for a single trunk with one or two extensions.

Such systems can completely replace the type of PBX switchboard usually found in professional or sales offices and in small manufacturing plants, since answering, originating, holding and transferring of calls may be accomplished at the user's desk.

THE 6K-1 SYSTEM

The Stromberg-Carlson 6K-1 System will furnish a number of telephones with a means of efficiently sharing several trunk connections to a central office. The cumbersome method of providing multi-line service with key boxes, push-buttons and standard telephones has been discarded in this system for now each station may answer or receive calls on one to five trunk PBX, intercommunicating or private lines. The standard system is equipped with G1575A-1 Telephones (one per station), a relay equipment cabinet, a power pack unit and a line terminal box for each station.



Features

- 1. COMPLETE FLEXIBILITY**—The 6K-1 Telephone System can be arranged in a multitude of ways. There can be a maximum of five trunks available to a central office. If intercommunication is desired the number of trunks are correspondingly reduced. Code signaling can be arranged either as part of this system or as a separate unit. Dial signaling is an optional feature that is also available in this system.
Once installed, a 6K-1 System can be added to or modified as desired. This system may tie into a PX system or other 6K-1 systems.
- 2. DIAL SELECTIVE INTERCOM**—This feature is available in both the ten station and the fifteen station series. To use this type of intercom, the subscriber simply lifts the handset, depresses the intercom key and dials one digit in the 10 station series or two digits in the 15 station series.

- 3. FLASHING SIGNAL**—Appearing only on dial intercom systems, flashing signaling is available that will flash only on the station dialed. All other stations will have a steady light above the intercom key.
- 4. MANUAL EXCLUSION**—This optional feature is on a per station basis. It may be applied on any one line in a station that is wired for manual exclusion. Unless the exclusion button is elevated, a line wired for this feature is accessible to all stations. When the button is raised, such a line becomes inaccessible to all other stations.
Replacing the handset on the cradle releases the line to other people immediately and automatically.
- 5. POWER FAILURE**—Should there be an A.C. power failure, a Power Failure circuit is available as an optional feature which will permit outgoing and intercom calls and continuance of calls in existence at the time of power failure.
- 6. "WINK" LAMP SIGNALS**—This is a standard feature in the 6K-1 system. It permits differentiation between a held line and a busy line. A circuit is provided that will darken the line lamp once every second for a period of 50 milliseconds and occurs during the time the line is in a held condition.
- 7. AUTOMATIC TIE LINES**—With this circuit it is possible to tie two 6K-1 systems or a 6K-1 and a 6K system together. This circuit is available in two packages; one circuit plate mounted for use only in the 6K-1 systems, the other mounted in a small box about the size of that used to house the Dial Selective Intercom for use with the 6K systems.
The use of a tie-line circuit reduces the number of available lines by one. This circuit enables a person in one system to gain access to another system by depressing the Tie-Line Key. It does not, however, mean that a person in one system can utilize the facilities of the other system.

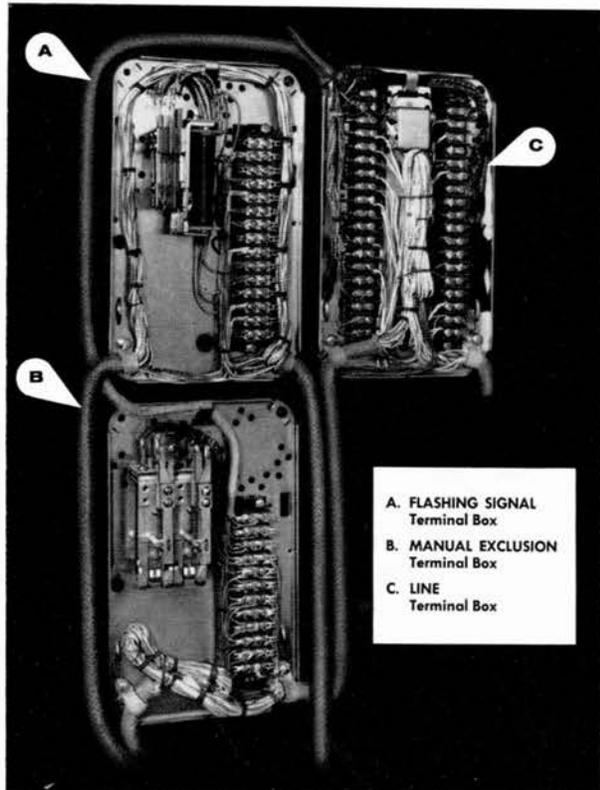
Station Telephones

The G1575 Series Multi-Line Telephones are available in gray only and are shipped without the manual exclusion button. This button is put in at the time of installation. The G1575-A1 telephone is equipped with five line keys each having an associated lamp, a hold key which is used to hold calls during transfer, and a terminal box. The lamps have a two-fold purpose, that of signaling the called party and the other to indicate a busy line. This instrument is used when Dial Selective Intercom is installed. It should be noted, however, that when Dial Selective Intercom or any of the other features are used the number of lines are reduced correspondingly.

The G1575-B1 is similar to the A1, except it is equipped with a signal key for use with intercom which does not have the dial selective feature.

STROMBERG-CARLSON

THE 6K-1 SYSTEM (Cont.)



A. FLASHING SIGNAL Terminal Box
 B. MANUAL EXCLUSION Terminal Box
 C. LINE Terminal Box

ORDERING INFORMATION

Once installed, a 6K-1 system can be added to or modified as desired. For this purpose ordering information on parts and assemblies is given below. All additions must be made by the purchaser, such equipment cannot be ordered or wired in.

The relay cabinet is initially equipped with one common circuit, three line circuits and one local cable. When ordering, specify Relay Cabinet, Stock No. 489679-000.

One Complete Line Circuit

Stock No.	Description
489687-000	Line Relay Circuit Plate Assembly

Parts List of Line Circuit

Stock No.	Description
358029-000	Relay (LR)
358028-000	Relay (HD)
354522-000	Relay (RU)
358046-000	Relay (SG)
358030-000	Relay (PF), Power failure if desired
47376-000	Condenser, (C-1), 1 MF
39504-000	Thermistor
202833-000	Rectifier (RF)

Parts List of Common Circuit

Stock No.	Description
358027-000	Relay (WS)
359421-000	Relay (FS)
358026-000	Relay (FL)
359766-000	Relay (WK) flasher, "C" Type
205363-000	Relay (IC), manual intercom only
210968-000	Relay (GV) Thermal, RM-120
36272-000	Resistor, 200 ohms
206436-000	Condenser (C-1), 200 MF

Parts List of 10-Station Dial Selective Unit

Stock No.	Description
489685-000	Complete Dial Selective Intercom Unit (10 station)
216597-000	Terminal Strip
354232-000	Relay (PL)
359422-000	Relay (RD)
359423-000	Relay (XD)
359424-000	Relay (XD-1)
36315-000	Resistor, 300 ohms, 5W (R-1)
203850-000	Condenser, 1MF x 200 ohms (C-2 & R-2)
216754-000	Condenser, 500 MF (C-1)
216586-000	XY Deca Switch

Parts List of 15 Station Dial Selective Unit

Stock No.	Description
489678-000	Complete Dial Selective Intercom Unit (15 station)
358034-000	Relay (SW)
359425-000	Relay (XD-1)
359423-000	Relay (XD)
359422-000	Relay (RD)
354232-000	Relay (PL)
359918-000	Relay (WS and XD-2) "C" Type
216586-000	Deca Switch
216754-000	Condenser, 500 MF (CS)
485530-000	Terminal Strips
212854-000	Resistor, 250 ohms, 5W (R-3)
36315-000	Resistor, 300 ohms, 5W (R-1)
203850-000	Condenser, 1MF x 200 ohms (C-1 & R-2)

Parts List of Automatic Tie-Line Circuit

Stock No.	Description
493120-000	Complete Auto-Tie Line Circuit (mtd. internally in 6K-1 cabinet)
493121-000	Complete Auto-Tie Line Circuit (mtd. externally)
216596-000	Terminal Strip (used on 489683-000)
485530-000	Terminal Strip (used on 489684-000)
358041-000	Relay (CB)
361632-000	Relay (BZ)
358068-000	Relay (ST)
359431-000	Relay (SR)
358067-000	Relay (AB)
358040-000	Relay (CBA)
206502-000	Resistor, 68 ohms
42375-000	Condenser, 2MF x 2MF (C-1 & C-2)
216754-000	Condenser, 500 MF (C3)
489774-000	Cable (used on 489684-000)
205369-000	Impedance Coil (RE)

Parts List of Signal Flashing Unit

Stock No.	Description
216719-000	Complete Signal Flashing Unit
214213-000	Terminal Box Housing Assembly
212849-000	Base
359917-000	Relay (LR-FL)
216716-000	Terminal Strip
216717-000	Marker Strip

Parts List Manual Exclusion Circuit

Stock No.	Description
216721-000	Complete Manual Exclusion Unit
214213-000	Terminal Box Housing Assembly
212849-000	Base
358035-000	Relay (CL)
358036-000	Relay (CD)
160627-000	Terminal Strip
216722-000	Marker Strip
216583-000	Plunger Assembly

Revised 9-1-57

THE 6K-1 SYSTEM (Cont.)

6K-1 SYSTEM Feature Selection Chart

Number of Lines				Intercom		Auto. Tie Line	Telo. Code No. Δ	Suggested Key Arrangement					
2	3	4	5	Com. Sig.	Dial Sel.†			H	PU	PU	PU	PU	PU	PU
X							1575-A1	H	PU	PU			
	X						1575-A1	H	PU	PU	PU		
		X					1575-A1	H	PU	PU	PU	PU	
			X				1575-A1	H	PU	PU	PU	PU	PU
X					X		1575-B1	H	PU	PU		IC	S
	X				X		1575-B1	H	PU	PU	PU	IC	S
X						X	1575-A1	H	PU	PU			IC
	X					X	1575-A1	H	PU	PU	PU		IC
		X				X	1575-A1	H	PU	PU	PU	PU	IC
X						X	1575-A1	H	PU	PU			TL
	X					X	1575-A1	H	PU	PU	PU		TL
		X				X	1575-A1	H	PU	PU	PU	PU	TL
X					X	X	1575-B1	H	PU	PU	TL	IC	S
X						X	1575-A1	H	PU	PU		TL	IC
	X					X	1575-A1	H	PU	PU	PU	TL	IC

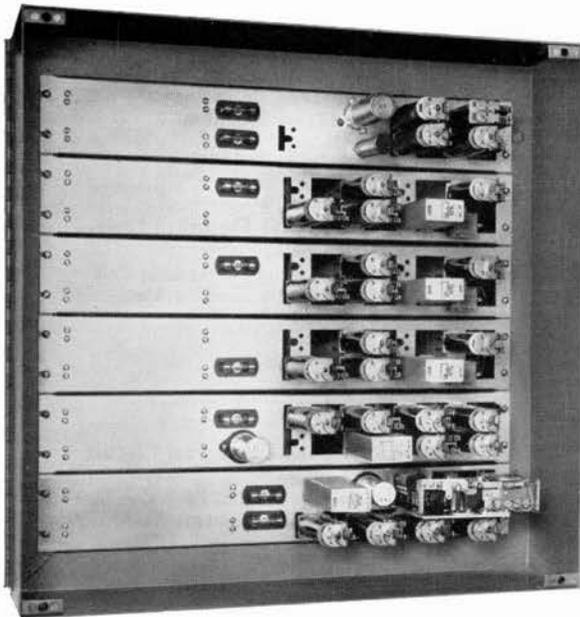
Legend

H Hold
 PU Pick Up
 IC Intercom
 S Intercom Signal
 TL Automatic Tie-Line

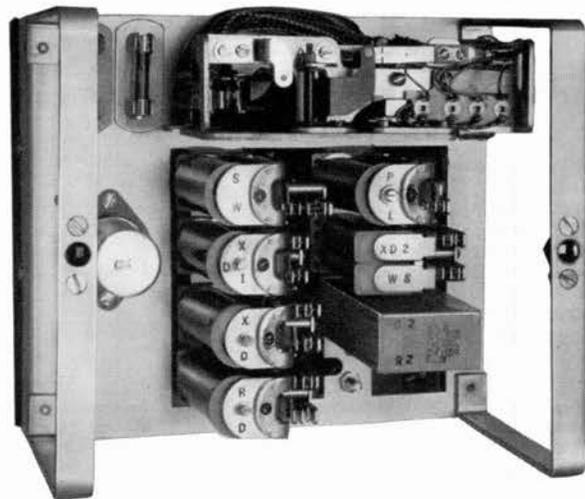
Notes

Δ Telephones are not equipped with Com. Line Sig. Buzzer. If Buzzers are required, order one Package Assembly No. 212764-000 for each Buzzer required.
 † The 15 station Dial Selective Intercom must be unit mounted.

(a) Maximum number of stations — 15.
 (b) Provision is made for use of an extension bell. The power supply provides 75-95 V.A.C. 60 cycles for this purpose. For each extension ringer required order one No. 214515-000.



Relay Equipment Cabinet



15 Station Dial Selective Intercom Unit

CONVENIENCE SYSTEMS

Stromberg-Carlson Convenience Systems make ideal installations for small businesses or professional offices. They offer trunk and intercommunicating service day and night without the service of an attendant. There are two basic systems available: the No. 2-6 System and the No. 2-10 System. Each of these basic systems has several variations.

The No. 2-6 System

THE NO. 2-6 SYSTEM provides common talking, selective ringing service for an ultimate of six local lines and is furnished with two central office trunks. Central office calls can be originated, answered, held and transferred to any station in the system. All equipment is designed to operate from 22 volts D.C.



No. 1270 Telephone for Convenience Systems

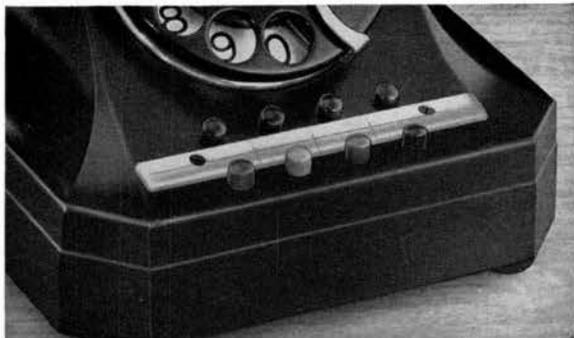
Features

CAPACITY — maximum capacity of 2 central office trunks and 6 local stations.

SECRET SERVICE — may be applied to both trunks for one station, or one trunk for two stations. Standard No. 2-6 Systems have trunk 1 arranged for secret service; the other trunk is common.

CODE CALLING — Any station can be arranged for code calling by addition of a code call key box.

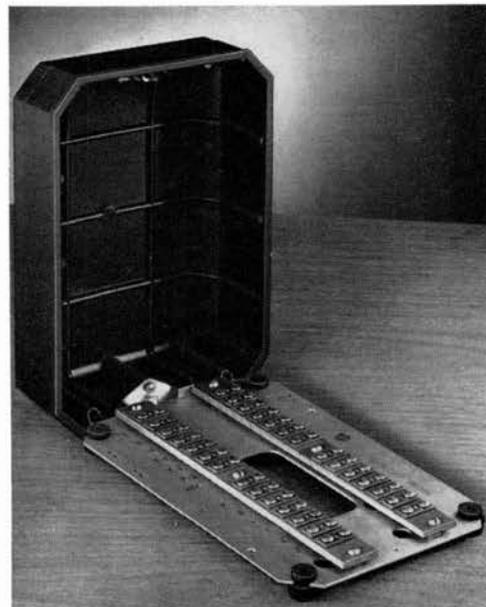
THE TELEPHONE — used in the No. 2-6 System is the No. 1270 Telephone. It is equipped with a buzzer for intercom signaling



Close-up of Push Buttons—No. 1270 Telephone

and with 8 non-locking push buttons. Five of these buttons are used for selectively signaling any local telephone within the system, two are for answering or originating central office calls and one for holding central office calls.

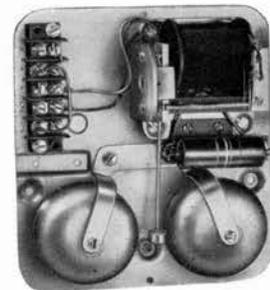
THE RELAY CABINET — is equipped to fit the trunking requirements. The cabinet consists of relay switching and terminal equipment housed in a surface mounting steel cabinet whose dimensions are approximately 18" high, 10" wide and 6" deep. The relays are arranged for easy inspection, adjustment, or testing.



90-A Terminal Box

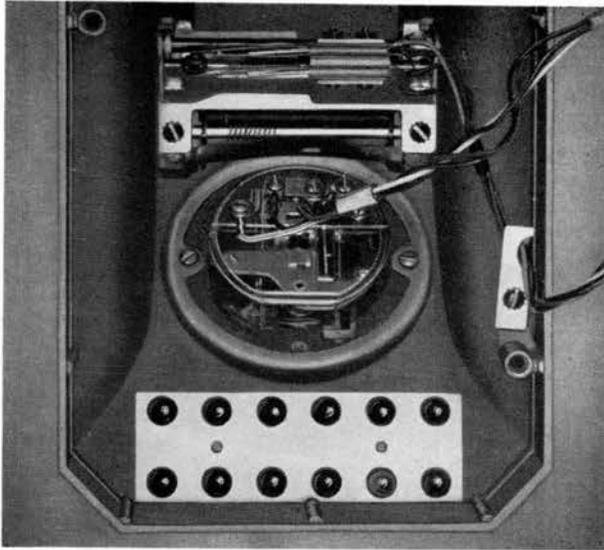
THE TERMINAL BOX — is used to make connection with each station telephone and can be mounted on a desk or nearby wall. The terminals are screw-type for easy installation.

THE BELL BOX — is the No. 1561 type equipped with gongs: one Hi and one Lo tone gong, two Hi tone gongs, or two Lo tone gongs. A Bell Box is supplied for each trunk. This makes it easier for answering parties to distinguish which central office line is signaling.

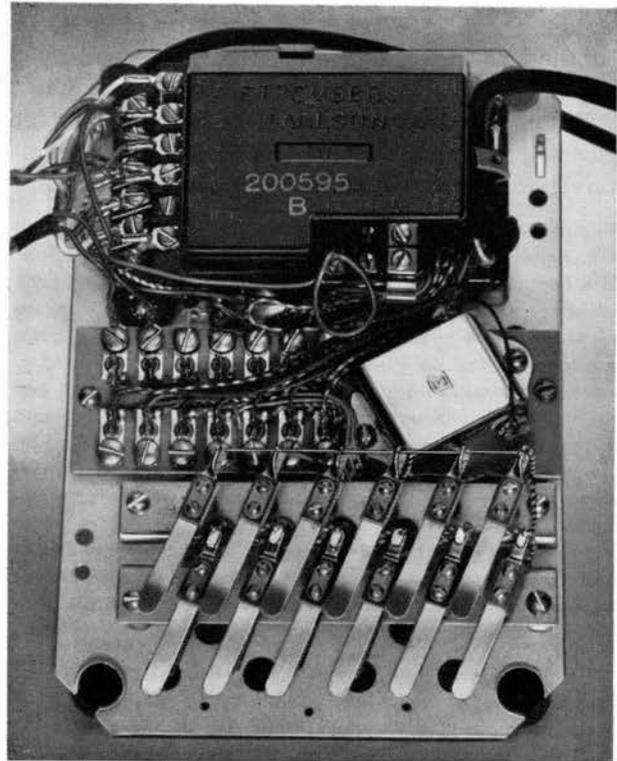


No. 1561 Bell Box, Compact and Efficient

CONVENIENCE SYSTEMS (Cont.)



View into Housing—No. 1271 Telephone



View into Base—No. 1271 Telephone

**Replacement Parts for
Convenience System Apparatus
Telephones**

(used commonly unless otherwise specified)

Stock No.	Description
208247-000	No. 23-N Handset (3 cond.)
35808-000	Rubber Foot
200595-000	Coil and Capacitor Unit
205842-000	Terminal Block Assembly
801757-000	Edwards Lungen Buzzer
202304-000	Push Button Spring Group (1270)
202305-000	Push Button Spring Group (1271)
202306-000	Push Button Spring Group (1272)
202321-000	Housing, 8 Button (1270)
202309-000	Housing, 12 Button (1271, 1272)
202310-000	Retaining Plate, Push Button
202311-000	Spacer, Retaining Plate
202312-000	Push Button, Black
202313-000	Push Button, Red
202314-000	Push Button, Green
202315-000	Push Button, White (1271)
202316-000	Push Button, Blue
202318-000	Holder, Station Designation Strip
42158-000	Complete Hookswitch Spring Combination
208073-000	Plunger, Hookswitch
205672-000	Base Plate

No. 90-A Terminal Box

Stock No.	Description
41562-000	Housing, Black Plastic
205674-000	Base Plate
201987-000	Terminal Block Assembly
17024-000	Spacer, Terminal Block Mtg.
35808-000	Rubber Foot
4185-000	Bracket, Housing to Base

No. 1561-A Extension Bell Box

Stock No.	Description
210244-000	Bell Box Housing Assembly
210378-000	Base Assembly
37204-000	Terminal Strip
41161-000	T-I-E Cord Assembly (3")
149402-000	Resistor 1 watt, 10,000 ohms
210684-000	Ringer (74-A) Straight Line, 5,900 ohms

**ORDERING INFORMATION
No. 2-6 Type Systems**

Stock No.	Code	Description
*801714-000	(2-6 (1-7)	Relay Cabinet, Manual or Dial
801715-000	(2-M-6)	Relay Cabinet, Magneto
801716-000	(3-5)	Relay Cabinet, Manual or Dial
801717-000	(7-6)	Relay Cabinet, Manual or Dial
202298-000	(1270)	Telephone
202325-000	(WD-14-C)	Cord, Telephone (14 cond.)
209973-000	(1561-A)	Extension Bell Box
201983-000	(90-A)	Terminal Box
53350-000	(SK-3350)	Code Call Key Box (if desired)
800203-000	(102-L)	Cable, Lead Cover
800201-000	(102-B)	Cable, Cotton Braid Cover
203155-000	(102-P)	Cable, Plastic Cover

*In using the 2-6 Cabinet with 1-7 System, add 1 No. 252-MM Relay with a No. 25 Casing.

No. 2-10 Type Systems

Stock No.	Code	Description
*801718-000	(2-10) (1-11)	Relay Cabinet, Manual or Dial
49700-000	(3-9)	Relay Cabinet, Manual or Dial
*801719-000	(2-M-10) (1-M-11)	Relay Cabinet, Magneto
202299-000	(1271)	Telephone, used on all but No. 3-9 Systems
202300-000	(1272)	Telephone, used on No. 3-9 System
202326-000	(WD-18-C)	Cord, Telephone (9 cond.)
209973-000	(1561-A)	Extension Bell Box
201983-000	(90-A)	Terminal Box
205686-000	(14-A)	Code Call Key Box
800204-000	(103-L)	Cable, Lead Covered
800202-000	(103-B)	Cable, Cotton Braid Cover
203154-000	(103-P)	Cable, Plastic Cover

*In using the 2-10 Cabinet with the 1-11 System, add 1 No. 206-CMQ Relay with a No. 25 Relay Casing.

Revised 9-1-57

MULTIPLE LINE KEY TURRET

There are many business and professional establishments that are not large enough to warrant a special "Order Board" for handling incoming calls. On the other hand, traffic in such places is too heavy to be handled by individual telephones answered by one or more of the office personnel. Careful and satisfactory attention to telephone calls often means the difference between profit and loss.

The perfect solution is the Stromberg-Carlson Multiple Line Key Turret—an investment that will soon pay for itself by eliminating delays in handling incoming calls that could not be given proper attention without service of this kind. Ask your Stromberg-Carlson representative for attractive booklet.

Multiple Line Key Turrets make it possible for an incoming call to be handled by more than one person or operator. For example, in a department store, when customers call in over one of the telephone trunks to place an order or to secure information, the message can be handled promptly, as more than one operator can take the call. In other cases, the system may be used to extend the trunks to a number of offices so that when one person is out, another may answer; or it may be used to permit one person to answer all calls and signal the party desired by the push button signal system, at which time the party wanted takes over the call. All turret stations may also originate outgoing calls.

As many as nine key-and-lamp-ended lines may be handled at a single turret position, and with these turrets multiplied, prompt response to incoming calls is assured. It retains the essential features for holding, signalling and busy supervision.

Construction and Arrangement

The cabinet turret woodwork is walnut and consists of three basic units: the base, the key section and the top. The base, No. 24809-000, contains the terminal equipment, telephone and night alarm equipment, common talking key and indicator lamp. Above the base, the key sections, No. 24808-000, are mounted. One, two or three sections may be so installed. Each key section contains three keys, three line lamps and three busy lamps, or an ultimate of nine circuits. To finish the turret a No. 24807-000 Top covers the assembled equipment.

In cases where signalling between turret operators is desired the No. 26004-000 Top equipped with five push buttons is substituted for the No. 24807-000.

The relay equipment for the system is housed in a sheet metal cabinet finished in green to blend with office furniture, arranged for wall mounting. Relays, condensers, fuses and time release element are mounted accessibly on the door of the cabinet while the terminals are mounted in the stationary portion. The terminal capacity is for six key turrets of three key sections each. This provides a total ultimate of nine trunk lines per turret. The circuits of the turrets are multiplied on the terminal strip, so that as many as six attendants have access to any or all of the nine telephones.

The Standard No. 1 Relay Cabinet Assembly is wired for the ultimate but is carried in stock with three trunk lines equipped. Dimensions of relay cabinet are: height, 24 $\frac{7}{16}$ " , width, 15 $\frac{3}{16}$ " , depth, 6 $\frac{5}{16}$ " .

Telephone equipment for the operator may be provided in three types, breast plate type, handset desk type, or suspended type.

Standard Equipments

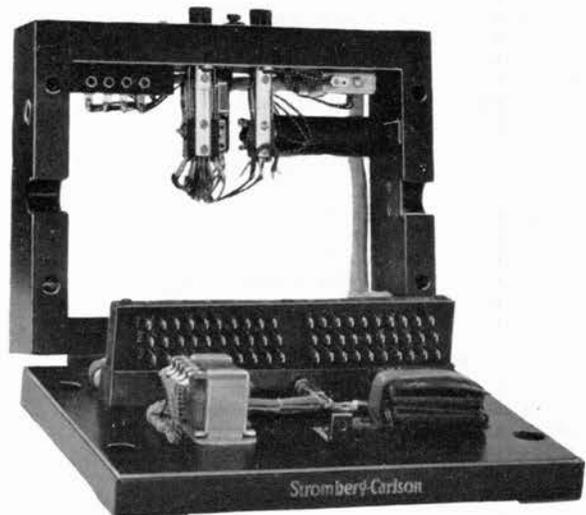
All parts—bases, key sections and tops—are carried in stock and shipped separately. The key sections and the bases are completely wired with local cable forms, permitting the customer to assemble and connect the turret assemblies to meet installation requirements.



No. 1-BD Key Turret features optional top

Standard Turret Equipments

Stock No.	Code	Description
801450-000	(1-A)	3 Key Unit Assembly consists of: 1-No. 24807-000 Top 1-No. 24808-000 Key Section 1-No. 24809-000 Base
801451-000	(1-B)	6 Key Unit Assembly consists of: 1-No. 24807-000 Top 2-No. 24808-000 Key Sections 1-No. 24809-000 Base
801452-000	(1-C)	9 Key Unit Assembly consists of: 1-No. 24807-000 Top 3-No. 24808-000 Key Sections 1-No. 24809-000 Base



Base Section, No. 24809-000, Multiple Line Key Turret

STROMBERG-CARLSON

MULTIPLE LINE KEY TURRET (Cont.)

Telephone Equipment

Attendant's station telephones may be selected from the following types:

Stock No.	Code	Description
211749-000	(1544)	Handset Telephone (Desk Type)
210962-000	(1534-M)	Handset Telephone (Suspended Type)
801453-000	(4)	Operator's Telephone Set (Breast-plate)

NOTE: No station bell is required with these instruments. Dials may be used when operating into a dial central office.

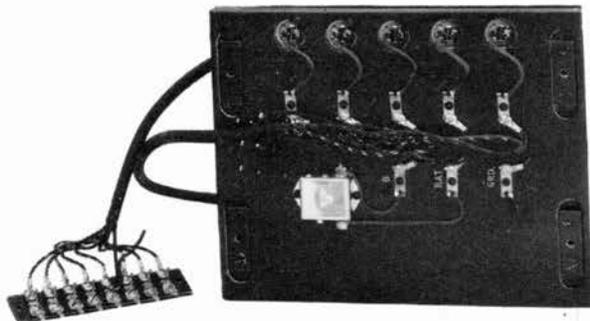
Turret Signalling Top

The Nos. 26004-000 and 54576-000 Top is used when it is desired to have common talking and selective ringing between turrets. The common talking key is furnished with all bases.

No. 26004-000 Top provides 5 Push Buttons and 1 Buzzer. The No. 54576-000 Top provides 10 Push Buttons and 1 Buzzer.

When specified, a six-foot eight conductor cord and an eight-point terminal block are furnished. This provides a finished appearance to the wiring for the separate inter-communicating circuit and also provides suitable terminals for readily making the required connections.

When No. 24807-000 Top is replaced by No. 26004-000 Top, add the letter "D" to the equipment code number. Thus 1-A Equipment becomes 1-AD Equipment.



Under Side of Push Button Top, No. 26004-000

Noise Killer Equipment

When the No. 26004 Push Button Top is used, it becomes necessary to provide noise eliminating equipment, which is common to all turrets. This equipment is mounted in one unit known as:

Stock No.	Description
26060-000	Noise Killer Assembly

Installation

The Multiple Key Turret System requires separate machine-made cable between each individual turret and the central relay cabinet. No. 800156-000 (65-BE) braided cable (20 triple No. 22 AWG) is suitable in dry places but No. 201393-000 (65-L) with lead sheath, should be used where runs are exposed to moisture or mechanical injury and in the case of conduit installations.

It is good practice to connect the wiring to all terminals of the turret base as this will simplify any later installation of additional key sections. Turret base cables are not soldered at the factory.

Sometimes, when leaded cable is used, it may not be desirable to bring the runs all the way to the turret base. In these cases a splicing terminal is recommended such as Type "E" Reliable Building Terminal Box with a Type T "20" triple terminal strip.

When signalling tops are included in the installation No. 164-B (braided) or No. 164-BS (leaded) cable can be used which provides sufficient wiring (6 pairs) for a full complement of six turrets.

Relay Cabinet Equipment

The standard No. 1 Relay Cabinet Assemblies (Stock No. 24726-000) are wired for nine telephone lines and equipped for 3 lines. This includes wiring for intercepting line equipment. All additional line equipment apparatus and intercept relay apparatus is shipped separately to be mounted and connected for installation requirements.

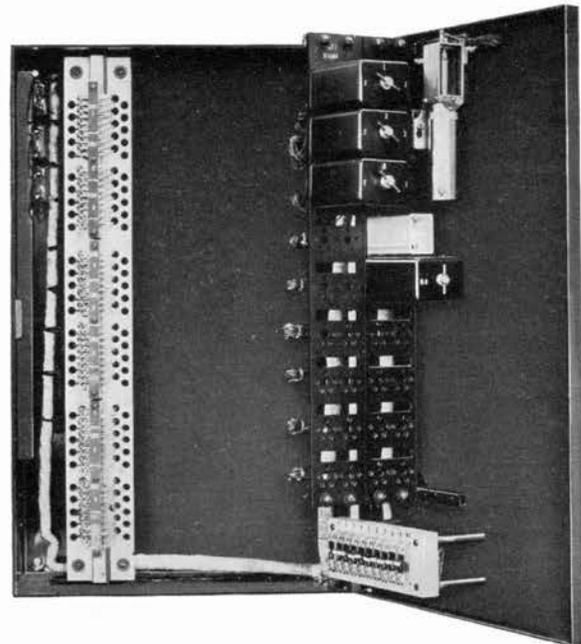
Each additional line equipment requires the following:

Stock No.	Code	Description	Stock No.	Code	Description
	(2555YQY)	Relay	801610-000	(25)	Relay Casing
	(253RR)	Relay	36276-000		Resistor, 1000 ohms
37193		Condenser, 1 mf.			

Intercepting service requires the following per line:

Stock No.	Code	Description	Stock No.	Code	Description
801610-000	(25)	Relay Casing	(215-AY)		Relay

When it is known at the time equipment is originally ordered that talking between turrets is desired, order Noise Killer Equipment per Stock List B-1321Y for mounting in No. 1 Relay Cabinet.



No. 1 Relay Cabinet for Stromberg-Carlson Key Turret Equipment

Power Supply

This system is designed to operate off 22 volts D.C. and the current can be supplied in any one of the three following methods:

- Battery Supply over cable pairs from the central office main battery or special battery at the central office.
- Storage Battery located on premises and charged from a dry plate rectifier such as 11 cells CTMH-2 Battery with 842028-000 Rectox Charger.
- Recti-Filter Battery Supply Unit. Either No. 1040 (3 Amp.) or No. 1043 (1.5 Amp.) depending on requirements.

When figuring any of the above battery supply methods the maximum current drain to be used is approximately 4 amperes at 22 volts. This current figure takes care of an instantaneous load when the system is fully equipped; this extreme condition is seldom met in actual operation.

Revised 9-1-57

MANUAL PBX SWITCHBOARDS (Turret and Floor Models)

In keeping with its long established policy of making telephone apparatus which is not only most serviceable, but also most attractive, Stromberg-Carlson offers PBX switchboards No. 120 and No. 121. Subscribers will appreciate the styling, which complements the appearance of the finest, most modern office. Operating companies will welcome the many circuit advancements, which are outlined in the general description, that make these switchboards ideal for today and tomorrow.

STROMBERG-CARLSON P. B. X. SWITCHBOARDS

	CORDLESS TYPE				FLOOR TYPE											
	No. 121				No. 106				No. 120-FJ		No. 120-FP		No. 127-F		No. 128-F	
	208093		208095						486208		486218		210572		486294	
	Wire	Eqpd	Wire	Eqpd	Wire	*Eqpd	Wire	*Eqpd	Wire	*Eqpd	Wire	Eqpd	Wire	*Eqpd	Wire	*Eqpd
Lines	16	12	16	16	⊕180		‡300		‡ 80	20	‡ 80	20	⊕100	20	⊕100	40
Trunks { Key Ended Jack " " Plug " "	5	3	5	5					15	3					15	5
					11		7				10	3	10	3		
Cords					8		8		15	5	10	4	10	4	15	10
Dial [^]	1	0	1	0	1	0	1	0	1	1	1	0	1	0	1	1
Operator	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Com. List Key	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Generator	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Insulated Gen.									1	0						0
Night Alarm	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Bat. Switch	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conv. Start	1	1	1	1	1	0	1	0	0	0	1	0	1	0		
Conference					0	0	0	0	1	0						0
Connectors	5	5	5	5												
Grounding [§]	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Toll Recall									0	0					0	0

*Equipped as indicated

[^]Dial and Dial Mtg. Accessories not furnished unless specified

‡Jacks 20 per strip

⊕Jacks 10 per strip

‡Individual Jacks

§When specified

1. THE NO. 121 CORDLESS SWITCHBOARD — The hand-rubbed cabinet of two-toned walnut with sun tanned key panel is ideally suited to the reception area in a fine office requiring no more than five central office lines and sixteen local stations.

2. THE NO. 120 PBX SWITCHBOARD — Employs the same beautiful cabinet treatment in a floor model of larger capacity. The standard No. 120 PBX switchboard has a capacity of 80 lines and either 15 jack-ended trunks or 10 plug-ended trunks. Connects with any common battery exchange, either manual or dial.

3. THE NOS. 127-F and 128-F PBX SWITCHBOARDS — Larger than the No. 120, these more traditional switchboards have a capacity of 100 lines. The No. 127-F board has plug-ended trunks and the No. 128-F board has jack-ended trunks.

4. THE NO. 106 HOTEL TYPE PBX SWITCHBOARD — is the practical switchboard for situations where a larger number of lines in proportion to trunks is essential, such as found in hotel service. There are two standard No. 106 Switchboards; one with 180 lines, the other with 300 lines.

STROMBERG-CARLSON

PBX AND INTERIOR SYSTEMS • 19c

Revised 5-1-55

NO. 121 CORDLESS SWITCHBOARD

Modern offices and smaller business establishments demand a communication system as modern as their other tools and accessories needed to carry on business. The Stromberg-Carlson No. 121 Cordless Switchboard fills this need. Good looking, practical, easy to use, this switchboard will provide the best in efficient service and be a compliment to any business or professional office.



No. 121 Cordless Switchboard

What the No. 121 Cordless Switchboard Offers

1. Complete PBX Service for sixteen stations and five trunks.
2. Five connecting circuits for answering, holding, transferring and extending calls.
3. The cabinet is finished in two-toned walnut veneers, suitable for the reception room or front office.
4. Operation is simple and quick due to contrasting front panel and keys of different colors.
5. All parts are accessible for easy maintenance.
6. Common Talking and Instantaneous Busy are standard circuit features.

Capacity

Refer to tables on previous page

Dimensions and Weight

The dimensions of the No. 121 Switchboard are:

Length—2'2 $\frac{3}{4}$ " Height—1'2"

Depth—1'2 $\frac{3}{4}$ "

Approximate Shipping Weight 150 lbs.

Material and Finish

The finish used is walnut. Correct application of overstain produces artistic banding of light and dark, so that the finish harmonizes with modern office furniture and room decoration. Key mountings are made of Sun Tan phenol fibre veneers, while the key handles are of plastic, colored in pleasing shades.

STROMBERG-CARLSON

Revised 9-1-57

NO. 121 SWITCHBOARD (Cont.)

Construction

Chassis construction is provided for mounting the apparatus, so that the cabinet cover can be removed and still maintain switchboard operation.

The armatures of the relays are at the rear of the board to allow for easy servicing.

Local Cable

The cable and all other wiring consists of copper conductors insulated with a 60% overlap serving of Mylar* Polyester film. Over this an outside serving of cotton is applied to the cable conductors, battery leads, and pilot circuit wiring, and a cotton braid to generator leads.

Connecting Equipment

The features of these connecting circuits are as follows:

KEY CONTROL—All connections between either PBX stations or trunks and PBX stations are made by means of keys.

BALANCED TRANSMISSION—Both the tip and the ring battery transmission coils to each station are placed on the same relay, and are carefully balanced for resistance and inductance.

BATTERY ECONOMY—The transmission battery not only supplies talking current, but also furnishes energy to operate the supervisory relays.

SIMPLICITY—The supervisory relays each have only one break contact; that contact controls the supervisory lamps. There are no other electrically controlled contacts in the connecting circuit.

TRANSMISSION EFFICIENCY—Both the tip and the ring talking conductors are entirely free from either series resistances or series retardation coils that contribute undesirable and appreciable losses.

Trunk Equipment

These trunks have the following characteristics:

THREE LAMP SUPERVISION—A white call lamp indicates that the Central Office operator is calling the PBX, a green hold lamp indicates that the trunk is being held by the PBX operator, and a red disconnect lamp indicates when the connected PBX subscriber hangs up. This disconnect lamp is associated with the connecting circuit equipment.

KEY CONTROL—All connections between PBX stations or between trunks and PBX stations are made by means of keys.

CONVERTIBLE—Provision for connecting with a Dial Central Office is already in the board. All that is necessary is to install one dial common to all the converted trunks. Switchboards are wired so that repeating coil (long line) trunks or magneto trunks may be installed readily when the proper equipment is ordered.

Operator's Telephone Equipment

The No. 1544-P (211757-000) Handset Telephone is used for operator's telephone equipment in the No. 121 PBX Switchboard (see catalogue pages describing Common Battery Telephones.)

This telephone takes a WDN-6-K Cord.

The use of the desk handset type of telephone assures uniform efficiency, as the relative position of transmitter and receiver is fixed. It also relieves the operator by eliminating the headband, and assures economical operation as no battery is used when the handset is replaced.

*Dupont's registered trademark.

Battery Switch Equipment

A switch is provided to cut the battery from the switchboard when no operator is in attendance.

Generator Equipment

REGULAR RINGING is accomplished by means of 20-cycle current which is brought into the PBX switchboard either from the main exchange or from a Stromberg-Carlson No. 5 Converter, which is of the vibrating type (see Accessories). This converter when connected with the No. 121 Cordless Switchboard runs only during the periods in which it is required for ringing.

EMERGENCY RINGING is accomplished by means of the hand generator. A key (Gen) is provided for switching from the hand generator to the power generator or vice versa. Terminals also are provided for connecting to the outside source of power ringing current.

Night Alarm Equipment

Each No. 121 Cordless PBX Switchboard is furnished with a night alarm. The apparatus for this purpose includes a buzzer, night alarm key, condenser, relay, and an impedance coil.

The night alarm buzzer sounds not only on the incoming line calls and the incoming trunk calls, but also on the connecting circuit's disconnect signals.

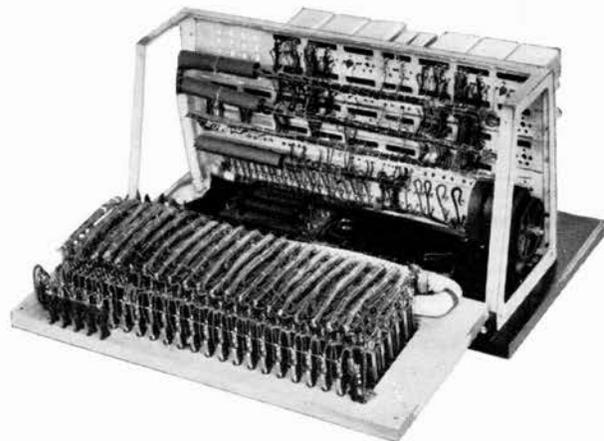
The operation of the night alarm is controlled by a switch. Two types of night alarm circuits are available:

THE REGULAR NIGHT ALARM EQUIPMENT operates off direct current from the battery terminals within the switchboard, and includes noise-suppressing components to prevent disturbances being carried into the talking circuit.

AC OPERATION OF NIGHT ALARMS is possible by relocating two terminal straps and disconnecting the No. 62 Condenser and the No. 202 Impedance Coil.

Common Listening Key

This is also known as Common Talking Circuit. When all five connecting circuits are busy, the attendant can answer further calls with the lower listening key in the "down" position.



No. 121 Cordless Switchboard with cabinet removed—
showing accessibility of wiring and equipment

NOS. 120-FJ and 120-FP PBX SWITCHBOARDS

These switchboards are the companion pieces to the No. 121 Cordless Switchboard just described. These boards have larger capacity (80 lines maximum) and carry over into the floor cabinet the striking beauty found in the cordless type switchboard.

The No. 120-FJ board has jack-ended trunks, while the No. 120-FP has plug-ended trunks. However, the circuits and features of both are similar.



The No. 120-FJ PBX Switchboard Enhances the Larger Office

No. 120-FJ PBX Switchboard

This board has a larger capacity than the 121 (80 lines maximum) and carries over in the floor cabinet the striking beauty found in the cordless type switchboard.

The No. 120-FJ Switchboard has jack-ended trunks which permits the operator to use the same cord for answering local stations and extending such calls to trunks.

What the No. 120-FJ PBX Switchboard Offers

1. Connects with any Central Energy Exchange—either manual or dial.
2. Jack-ended trunks.
3. PBX station is protected against re-rings.
4. Cord splitting is possible.
5. Instantaneous Busy feature on trunks.
6. Individual cord ringing keys, ring-back key, listening key, and dialing key when required.
7. Reverting Ringing Tone.

8. Coils, relays and capacitors are on a relay gate which swings horizontally.
9. Equipped to use Western Electric type headset.

Capacity of Stock Boards

Refer to the table on page 17C.

Dimensions and Weight

The dimensions of the No. 120 Switchboard are:
Width—2'1 1/8" Height—3'9 5/8" Depth—2'8"
Approximate shipping weight is 475 pounds

Cabinet

The equipment is mounted on steel frame members housed in an attractive veneered walnut cabinet that is in keeping with any type of office furniture. The sun tan finish of the face mounting, contrasted with the dark brown plugboard and polished brass fittings, adds to the over-all appearance. The surfaces are all smooth with rounded corners. The rear door is flush and is removed by means of a finger notch.

NO. 120-FJ TYPE SWITCHBOARD (Cont.)

Circuit Features

Provisions for Different Wiring

Wiring of the No. 120 Switchboard permits four combinations of Supervision.

CLASS "A"—All standard stock boards are wired for class "A" supervision. This type of supervision provides the following facilities upon release of a trunk by a PBX station: (1) Central office receives a disconnect signal, (2) The rear cord PBX supervisory cord lamp is lighted, thereby splitting the trunk.

However, should another call be initiated by the Central Office operator or Dial Exchange before the PBX operator has removed her plugs, the signal will appear on the trunk line lamp.

Because the trunk is split, the connected PBX station telephone bells will not be rung. To answer this type of call, the operator need only operate the listening key of the cord circuit associated with the trunk.

If the PBX station should recall before the PBX operator has removed the plugs on a previous connection, the calling party will again signal the Central Office.

CLASS "B"—Under wiring condition "B," Through Supervision or Central Office disconnect on trunk connections is controlled by the PBX station to which the trunk is connected. The signals to the PBX and Central Office Operator are, in all respects, similar to those under wiring conditions "A."

CLASS "C"—When the cord circuit is wired for "C" conditions, the supervisory signals operate as follows: When the PBX station hangs up, the back supervisory lamp is lighted at the PBX. However, the Central Office does not receive a disconnect until the front cord at the PBX is removed from the trunk jack. This arrangement is particularly adaptable to Central Office service wherein subscribers find it necessary to transfer calls.

If a trunk is connected to a Dial Office, the trunk is held busy until the front cord is removed.

If the PBX operator is slow in taking down a connection, the station concerned can signal on the back cord supervisory lamp as it will flash in unison with the movement of the telephone hookswitch.

CLASS "D"—Under set-up "D" supervision is the same as that described under "C" except talking battery is derived from the cord circuit.

DOUBLE LAMP SUPERVISION gives the operator definite information as to the condition of connections between local stations.

FRONT CORD TRUNK CONNECTION requires all trunk calls to be answered or connected by means of the front cord. Supervision is maintained on the back cord supervisory lamp only when the back cord is plugged into the local line.

BRIDGED LISTENING KEY enables operator to listen across cord circuit. An attendant answers an incoming call from a PBX station using an idle cord.

COMBINED INDIVIDUAL DIALING AND LISTENING KEY enables operator to dial over the front cord of any cord circuit. During dialing, the operator's circuit is opened, but returns to normal immediately afterward for further conversation.

THROUGH DIAL AND NIGHT SWITCHING KEY enables the PBX subscriber to dial or signal a central office over the trunk direct, when the cord pair is set up for this type of service. It is used principally for through night service, when the battery is cut off the board or for through service during the day when a party wishes to make a series of consecutive calls.

SEPARATE RINGING KEYS enables operator to ring over either front or back cord without taking the connection down.

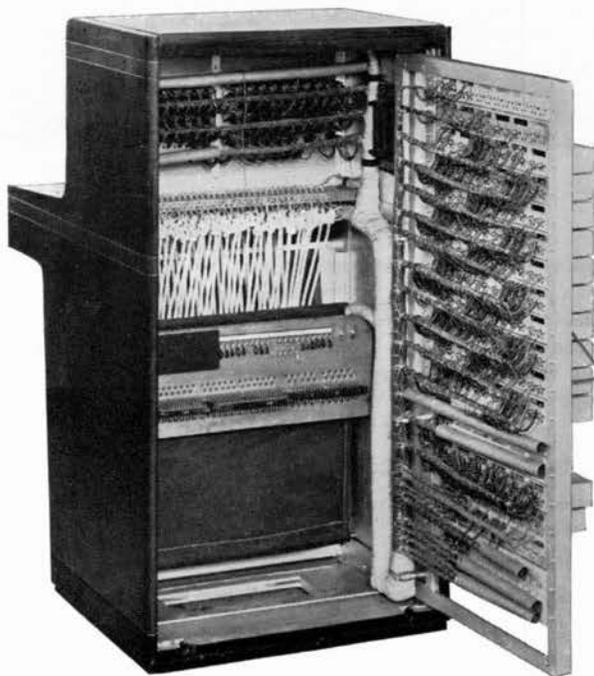
REVERTING RINGING TONE—Listening party hears reverting tone when either front or back ringing keys are operated.

TOLL RECALL (furnished only when specified) provides recall on front cord supervisory lamp, when front cord is plugged in on a trunk being held for toll service.

BOOSTER BATTERY SUPPLY may readily be applied to the battery feed coils of the cord circuits for long PBX lines by means of a simple battery terminal arrangement. This feature provides adequate transmission current for those zones beyond the limitations of the standard battery supply.

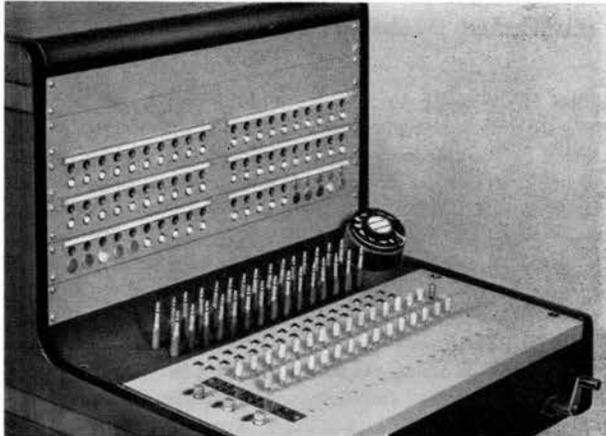
CONFERENCE CIRCUIT—When this feature is installed, as many as five lines may be set up for simultaneous conversation connections between PBX stations or as many as four simultaneous conversations between PBX stations and trunks.

FULL-TALK CIRCUIT—See Trunk Equipment.



No. 120 Switchboard, rear perspective, with open relay gate

NO. 120-FJ PBX SWITCHBOARD (Cont.)



Close-up of Keyboard

Circuits

The circuits for the No. 120-FJ Switchboard have been designed to provide fundamental wiring for all normal operating conditions. This means that a variety of exchange requirements can be met with little or no change.

The circuits will operate satisfactorily under the following conditions:

1. When the operating voltage does not drop below 16 volts or rise above 26 volts.
2. When the wire circuit loop resistance is 700 ohms or less in an eleven cell system.
3. When the wire circuit loop resistance is 1500 ohms or less in a twenty-two cell system.
4. When the minimum line insulation resistance is 10,000 ohms.

The local cable form is arranged so that by making simple wiring shifts in the cord circuit, the following classes of supervision and battery source become available.

- A. Through Supervision, with talking battery fed from the Central Office Trunk, with Trunk Splitting.
- B. Through Supervision, with talking battery fed from the PBX cord circuit, with Trunk Splitting.
- C. Non-through Supervision, with no Trunk Splitting.
- D. Non-through Supervision, with talking battery fed from the PBX cord circuit, with no Trunk Splitting.

The choice of Supervision is usually governed by the following:

If a PBX is connected to a Central Office, working from an eleven cell battery, talking battery is fed from the PBX cord circuit.

When the PBX is connected to a Central Office, working from a twenty-two cell battery, talking battery is fed from the trunk, provided the trunk line loop does not exceed 350 ohms and the longest PBX station line does not exceed the loop resistance of the trunk. In case the trunk line loop exceeds 350 ohms, transmitter battery should be fed from the PBX cord circuit.

If it is desirable to transfer trunk calls from one PBX station to another, or when the Conference Circuit is used, Non-through Supervision is essential.

Line Equipment

Stock switchboards are wired for line relays, although relays are provided only when specified. Standard equipment consists of series lamp signals.

Balanced talking conditions prevail as both battery and ground are cut off the line jack when the operator plugs in to answer. Reliable signals and battery economy are assured by the use of high grade line lamps and high wound efficient relays.

Trunk Equipment

The trunk circuits are of the jack and lamp ended type. Each trunk circuit used in connection with a common battery central office, or dial office.

When the PBX is connected for twenty-four hours a day or part time leased toll service (known as Full-Talk Circuit) the following equipment is connected between the PBX trunk terminals and the leased Toll Line and installed outside the PBX cabinet.

The same equipment is used and installed outside the cabinet when the PBX is connected to magneto exchange.

Dial Circuit Equipment

The common dial circuit is completely equipped with the exception of the dial and dial mounting.

Operator's Telephone Equipment

A Western Electric type headset is normally furnished with the No. 120 Type Switchboard.

Anti-Side tone qualities are provided wherein outgoing transmission, including the effect of local noises, is prevented from reaching the operator's receiver, but does not affect high quality incoming transmission.

Generator

REGULAR RINGING is accomplished by means of a 20 cycle alternating current derived from some type of power generator such as the Sub-Cycle, or Rotary Converter.

EMERGENCY RINGING is accomplished by means of the hand generator furnished with the switchboard. A key is provided to switch from hand to power generator or the opposite.

Night Alarm Equipment

To assist the operator in performing her duties, each switchboard is provided with a night alarm.

The night alarm is controlled by the Push Button Key. When this key is operated the night alarm sounds simultaneously with incoming line calls, incoming trunk calls and on cord circuit supervision.

CONVERTIBLE—Regular night alarm equipment is furnished to operate from the generator current source of supply, but wiring is arranged so that the night alarm may readily be operated from direct current when this method of operation is desired.

Battery Switch

A switch is provided to cut the battery from the switchboard when no operator is at the switchboard.

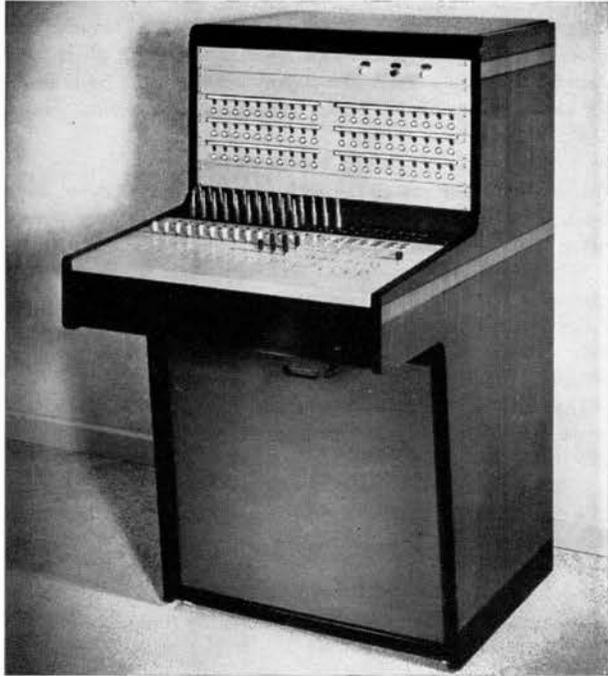
Insulated Generator

Insulated generator is provided when magneto or toll trunks are installed in the switchboard.

Revised 9-1-57

THE NO. 120-FP PBX SWITCHBOARD

The No. 120-FP Switchboard uses the same two-toned walnut cabinet as the No. 120-FJ Switchboard. This type of switchboard is wired and equipped with plug-ended trunks to make answering and extending incoming trunk calls easier for the operator.



No. 120-FP PBX Switchboard

Features of the No. 120-FP Switchboard

1. Like the No. 120-FJ, this board connects with any type of central office.
2. Instantaneous busy feature on all trunks.
3. Beautifully styled cabinet gives switchboard front office appeal.
4. Cord splitting is possible.
5. Trunks are of the plug-ended type.
6. Bridged or divided ringing.

Stock Switchboards are wired and equipped as follows:

Circuits	Wired	Equipped
Line	80	20
Trunks	10	3
Cords	10	4
Dial	1	0
Operator	1	1
Generator	1	1
Night Alarm	1	1
Battery Switch	1	1
Converter Start	1	0
Grounding	1	1

Circuit Features and Equipment

LINE CIRCUIT—Balanced talking conditions prevail as both battery and ground are cut off the line jack when operator plugs in to answer. These circuits are equipped with line relays which provide uniform signaling on all lines.

TRUNK CIRCUITS—These circuits are of the plug-ended type and have the advantage that incoming central office calls are answered by simply operating the listening key associated with the trunk. Equipment for each trunk includes a listening key, a ringing key, a night and thru-dial key and an operator's dial key.

CORD CIRCUITS—are of the condenser type which furnishes a separate battery supply to both answering and calling stations, and provides double lamp supervision. Each cord circuit is equipped with a listening key and a calling cord ringing key. **DIAL CIRCUIT**—is wired into the switchboard but is not equipped unless desired. When specified, order the following equipment: a No. 62 Condenser, a No. 222 Impedance Coil, a No. 336-B Key (engraved "WO"), a dial coded DCX-209, and a No. 3 Dial Mounting.

OPERATOR'S CIRCUIT—unless otherwise specified, is normally equipped with a Western Electric type headset. The transmitter on either set features anti-side tone qualities that reduce the effect of local noises being transmitted over the line.

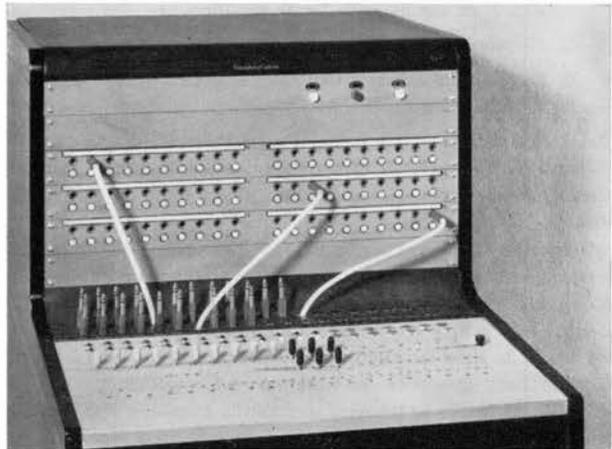
GENERATOR CIRCUIT—Normal ringing current is supplied by some type of power generator such as a sub-cycle unit that furnishes 20-cycle A.C. Emergency ringing is accomplished by a hand generator that is furnished on every stock board. A key is also provided to switch from power to hand generator.

NIGHT ALARM CIRCUIT—The stock switchboard is wired and equipped with this circuit to assist the operator in performing her duties. This alarm is controlled by a push-button key that, when operated, sounds an alarm with every incoming call, either local stations or trunks.

Standard Night Alarm equipment operates from the generator current source of supply. The wiring of this alarm is so arranged as to be readily adaptable to operate from direct current.

BATTERY SWITCHING CIRCUIT—A push-button key is provided to cut off battery from the switchboard when no operator is in attendance.

OTHER FEATURES—such as the Connector Start and Grounding Circuit are wired into this stock board; however only the Grounding Circuit is equipped. The other may be ordered when desired.



Close-up of Keyshelf No. 120-FP Switchboard

NOS. 127-F and 128-F PBX SWITCHBOARDS

The Nos. 127-F and 128-F PBX Switchboards have a greater line capacity than the No. 120 switchboard, with a maximum of 100 lines. The No. 127-F employs plug-ended trunks and the No. 128-F uses jack-ended trunks. Both boards incorporate the latest circuit principles so as to provide all customary services for many years to come. Both boards can work into dial, manual or magneto central offices.



The No. 128 PBX Switchboard

What Do These Switchboards Offer?

1. Will work into any type of exchange—manual or dial, common battery or magneto.
2. Cabinets are dark walnut and have dark face panels to lessen eye-strain while searching for signals.
3. A choice between jack-ended or plug-ended trunks.
4. Cord splitting is possible on both boards.
5. Instantaneous-busy feature is supplied on all trunk lines.
6. Arranged to use Western Electric type headset.
7. Coils, relays, capacitors are all mounted on a relay gate which swings outward for easy maintenance.

Cabinets

The cabinets for both boards are of dark walnut with a lasting hand-rubbed finish. The smooth, flush sidings and rounded corners make these boards most acceptable as furniture. The rear door is flush mounted and can be removed easily. The dull black panel makes it easy for the operator to catch line, trunk and supervisory signals as they appear.

Stock Switchboards are wired and Equipped as follows:

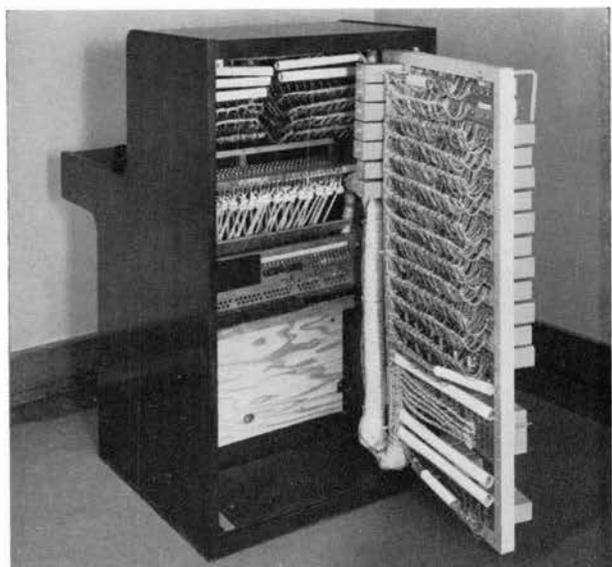
Circuit	No. 127-F		No. 128-F	
	Wired	Equipped	Wired	Equipped
Line	100	20	100	40
Trunk	10 (Plug-ended)	3	15 (Jack-ended)	5
Cord	10	4	15	10
Dial	1	0	1	1
Operator	1	1	1	1
Generator	1	1	1	1
Night Alarm	1	1	1	1
Battery Switch	1	1	1	1
Converter Start Relay	1	0	0	0
Grounding	1	1	1	1

Circuits

Circuits used on these boards have been designed to provide fundamental wiring for all normal operating conditions. Additions or variations of exchange requirements can be met simply, easily and quickly.

Line Circuits

Both stock boards are wired for 100 lines. The line circuits are equipped with line relays to provide uniform signaling on all lines. This circuit is so designed that several cases of line leakage will not cause the Night Alarm signal to sound thereby lighting line lamps.



Rear View of No. 128-F PBX Switchboard

Revised 9-1-57

NOS. 127 AND 128 PBX SWITCHBOARDS (Cont.)

Trunk Circuits

The No. 127-F Switchboard is wired and equipped with plug-ended trunks. The advantage of such trunks is that the operator answers incoming central office calls by simply operating the listening key associated with the trunk. Each trunk is provided with a listening key, a ringing key, a Night and Thru-Dial Key and an operator's dial key.

The No. 128-F Switchboard is wired and equipped with jack-ended trunks. The advantage of this type is that when extending outgoing calls from local stations, the operator may use the same cord for both answering and extending the call.

Conference Circuit

This feature is wired but not equipped in the No. 128-F PBX Switchboard. When this feature is desired, as many as five local stations may be arranged for conference purposes or as many as four conversations may take place between the PBX Stations and a trunk line.

Dial Circuit

The common dial circuit is furnished in the No. 128-F Switchboard; it is wired but not equipped in the stock No. 127-F. When such equipment is desired, order a No. 62 Condenser, a No. 222 Impedance Coil, a No. 336-B Key (engraved "WO"), a dial coded DCX-209, and a No. 3 Dial Mounting.

Operator's Telephone Circuit

These boards are arranged to work with the Western Electric

type headset. All headsets use transmitters with anti-side tone qualities to reduce effect of local noises transmitted over the line.

Generator Circuit

Normal ringing current is supplied by some type of power generator such as a Sub-Cycle unit, furnishing 20-cycle alternating current.

Emergency ringing is supplied by a hand generator furnished on both boards. A key is provided to switch from power to hand generator.

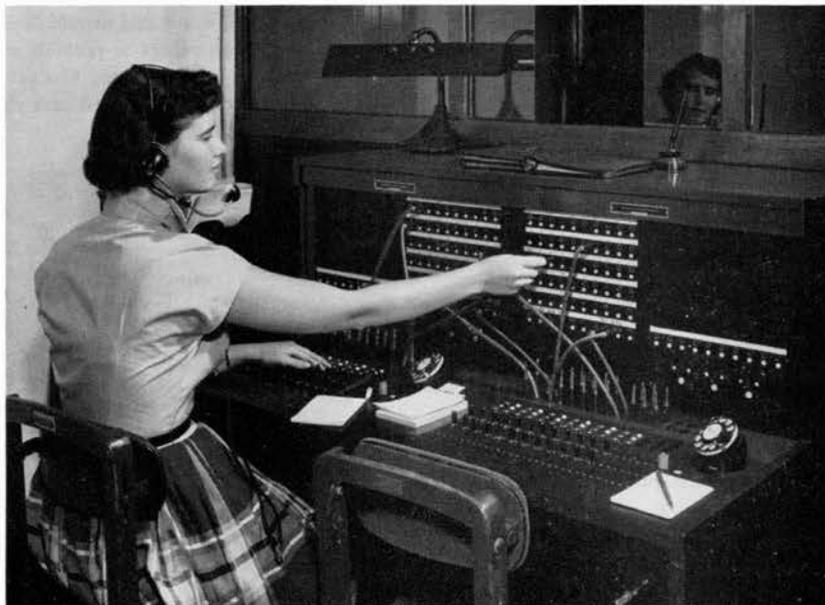
Night Alarm Circuit

Both boards are wired and equipped with Night Alarms. The operation of the alarm is controlled by a push-button key on the No. 127-F board, and a twist type key on the No. 128-F board. When these keys are operated, the alarm is sounded with every incoming call, local stations or trunks, and on cord supervision.

The night alarm equipment operates from the generator current source of supply. The wiring of the alarm can be readily arranged to operate from direct current if such power is supplied.

Battery Switch

Both types of boards are equipped with keys to cut off battery from the switchboard when no operator is present. The No. 127-F board employs a push-button key for battery switching while the No. 128-F board uses a twist-type key.



A small business is as efficient as its PBX service

THE NO. 106 PBX SWITCHBOARD

The No. 106 PBX Switchboard has been adopted by many telephone companies to meet the practical requirements of general service. Available with plug-ended trunks, this switchboard can operate into dial or manual common battery or magneto central offices. Designed primarily to maximize the number of lines with respect to trunks, it is offered in a capacity of 180 lines or 300 lines. If a 180 line board is desired, the jacks are larger and are mounted 10 per strip; whereas if 300 lines are desired, the jacks are mounted 20 per strip and are slightly smaller so as to keep them within comfortable reach of the operator.

Features of the No. 106 PBX Switchboard

PLUG ENDED TRUNKS permit the use of all cord circuits on the board for local to local and local to trunk service and have the advantage that both central office and local operators receive disconnect signals simultaneously.

LINE CIRCUIT EQUIPMENT may be furnished in either relay or line lamp types.

BALANCED TALKING CONDITIONS — both battery and ground are cut off the line jack when the operator plugs up to answer.

TRIPLE SUPERVISION facilitates fast and accurate operation.

NEAT SERVICEABLE KEYBOARD EQUIPMENT — the key mountings are flush with the keyboard and are neatly covered with a dull black insulating material. The lamp caps are of the unbreakable type without guards.

Line Circuit Equipment

The line capacity of this switchboard is either 180 or 300, depending upon type of line jacks used. If there is no foreseeable need to order a board over 180 lines, then when specifying the line equipment order jacks mounted 10 per strip. If the need for this type of board is over 180 lines but less than 300, order line jacks mounted 20 per strip.

In the No. 106 stock PBX Switchboard, the maximum number of lines are wired, but are not equipped. To order equipment for each line circuit, specify the following:

Stock No.	Code	Description
200724-000	135/100-A	Jack and Mounting Assembly (20 per strip)
48368-000	135/99	Jack and Mounting Assembly (10 per strip)
801425-000	121/81	Lamp and Mounting Assembly (20 per strip)
801392-000	27A	Lamp Cap
801369-000	24-B-2	Lamp
800718-000	17	Designation Strip (each 20 lines)
801424-000	121/80	Lamp and Mounting Assembly (10 per strip)

Trunk Circuit Equipment

The trunks are wired but not equipped. This arrangement makes it unnecessary to modify the key cable when adapting the PBX trunking apparatus to connect with any type of central office: dial or manual, common battery or magneto.

The stock switchboard is wired for 111 trunks (on a 180 line maximum board) or 7 trunks (on a 300 line maximum board). Basic equipment is as follows:

Stock No.	Code	Description
42936-000		Cord and Plug Assembly
800707-000	6	Cord Weights
801421-000	13	Lamp Socket
801412-000	31-A	Lamp Cap
801413-000	31-B	Lamp Cap
801414-000	31-C	Lamp Cap
801369-000	24-B-2	Lamp
207169-000	176-N	Key (Ring and Listen)
205052-000	173-M	Key (Dial and Night Thru Dial)
205653-000	160	Key Mounting
201763-000	20	Circuit Plate or

Stock No.	Code	Description
201764-000	21	Circuit Plate
28177-000		Resistors
17193-000		Terminal Strip

Cord Circuit Equipment

The PBX cords are of the double lamp supervisory type with three conductor plugs and three conductor cords. There are eight cord circuits wired into the No. 106 stock Switchboard. Equipment for each cord circuit is as follows:

Stock No.	Code	Description
42936-000		Cord and Plug Assembly
800707-000	6	Cord Weight
802622-000	172-F	Key
205652-000	159	Key Mounting
200769-000	222-B	Relay

Operator's Circuit Equipment

The most up-to-date operator's equipment is used in the No. 106 PBX Switchboard. Anti-side tone qualities have been incorporated in every operator's head set to reduce the effect of local noises from being sent out over the transmitter. Each Operator's Circuit contains the following equipment:

Stock No.	Code	Description
212463-000	50-A	Induction Coil
800281-000	21-A	Impedance Coil
48346-000	57	Condenser
42370-000	55	Condenser
42375-000	61	Condensers (2)
801179-000	144	Jack
14074-000	87	Jack Mounting
205701-000		Operator's Set

Night Alarm Equipment

Each PBX switchboard contains a night alarm to assist the operator in performing her duties. The apparatus for this purpose includes the following:

Stock No.	Code	Description
49508-000	334-C	Key (N.A.)
803103-000	381-A	Relays (2)
801861-000	50LL	Ringer

Generator Equipment

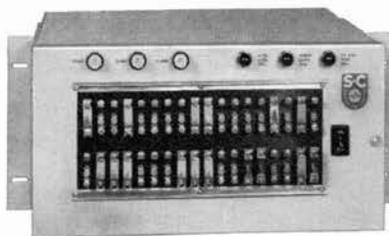
Regular ringing current is supplied by a sub-cycle unit that is provided with each No. 106 PBX switchboard. Emergency ringing is accomplished by means of a hand generator. A key is furnished for switching from power to hand generator.

Operator's equipment for emergency ringing is as follows:

Stock No.	Code	Description
201678-000	64	Generator
203555-000		Generator Shaft
204859-000		Generator Crank
49508-000	334-C	Key (Gen.)
42792-000		Lamp, 40w., 110 v.
42798-000		Lamp Socket

STROMBERG-CARLSON

Carrier and Microwave Systems



The Stromberg-Carlson Carrier and Microwave Systems are comprised of matched components designed and built to operate together providing the ultimate in Carrier and Microwave Transmission.

CARRIER-MICROWAVE

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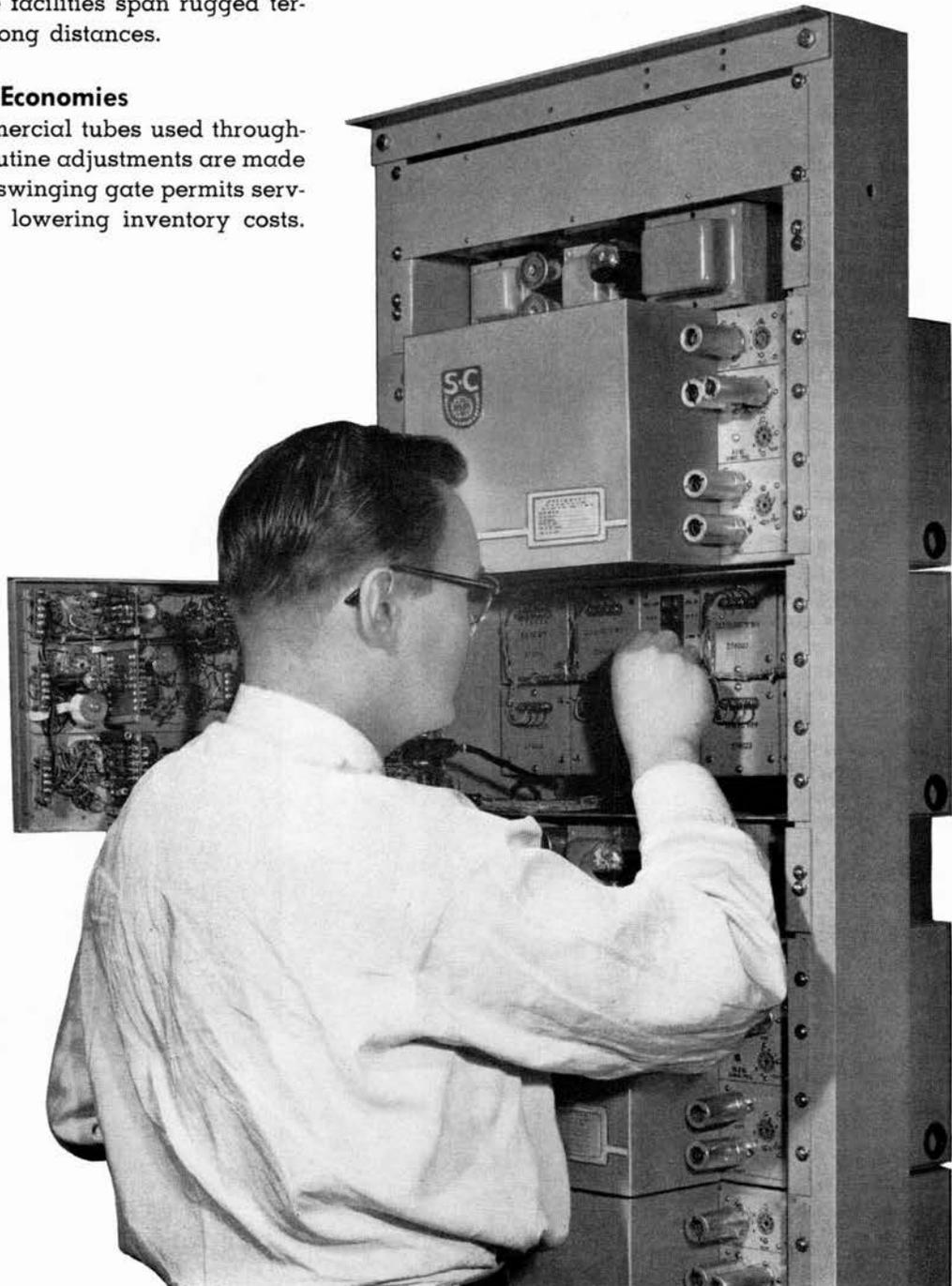
STROMBERG-CARLSON CARRIER and MICROWAVE SYSTEMS

Low Cost Additions

Carrier affords the most practical method for making additions to open wire toll or inter-office trunks, particularly where existing wire line facilities span rugged terrain or cover long distances.

Maintenance Economies

Standard commercial tubes used throughout: Normal routine adjustments are made from the front; swinging gate permits servicing in place, lowering inventory costs.



WIRE LINE CARRIER

501 Carrier Systems

FEATURES

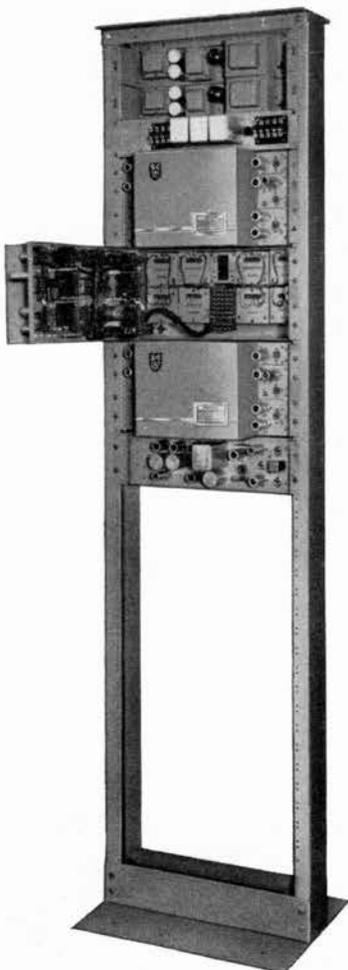
- Economical and Compact
- Simple Installation and Maintenance
- Stackable or Integrated Systems
- Two-Wire and Four-Wire Operation
- Dial or Ringdown
- Front Door Maintenance

The Stromberg-Carlson 501 Carrier Systems solve a problem for the ever expanding telephone industry, providing equipment to superimpose up to 4 high quality channels on an open-wire circuit.

As a result of recent research and development, combined with advanced engineering, the Stromberg-Carlson 501 Carrier Systems provide economical operation, simplified installation and maintenance.

The equipment incorporates a flexibility of design, characterized by two distinct applications, a 3-channel Integrated System and a 4-channel Stackable System. Each system is advantageous in its own application. The 3-channel Integrated System is more practical for repeatered systems since the three high frequencies are transmitted in one direction while the three low frequencies are transmitted in the opposite direction. The Stackable System is advantageous to installations not requiring repeaters since up to 4 channels can be installed on any existing transmission path. These channels can be installed individually as the need arises, proving a definite advantage to a growing concern.

The Stromberg-Carlson 501 Carrier Systems are designed to meet today's operational requirements in the telephone industry. With the Stromberg-Carlson 501 Carrier Systems, making additions to open-wire toll or extended area service trunks between central offices ceases to be a problem.



Typical Bay of a
501 Carrier 3-Channel
Integrated System

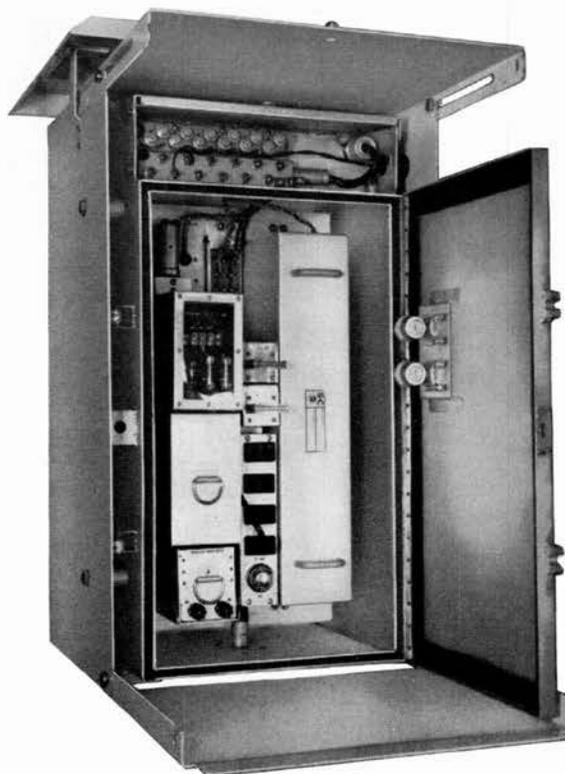
Transistorized Subscriber Carrier Systems

FEATURES

- Transistorized
- Printed Circuit
- Plug-in Circuit Cards
- Economical and Compact
- Simple Installation
- Front Door Maintenance

The Stromberg-Carlson Transistorized Subscriber Carrier System is engineered to provide Subscriber dialing and central office ringing from either tip or ring to ground of the transmission pair. Facilities for fully selective multi-frequency, bridged or divided ringing can be obtained without circuit modifications. In this way, up to 10 party lines per channel can be served, increasing the capacity of the existing line by 50 subscribers. The mechanical design of the Stromberg-Carlson Transistorized Subscriber Carrier is directed toward simplified installation and maintenance procedures. The terminal is enclosed in an aluminum cabinet. Within the cabinet, the circuits are broken down into functional units. Each functional unit is in the form of a plug-in printed circuit card which is held in place by aluminum slides.

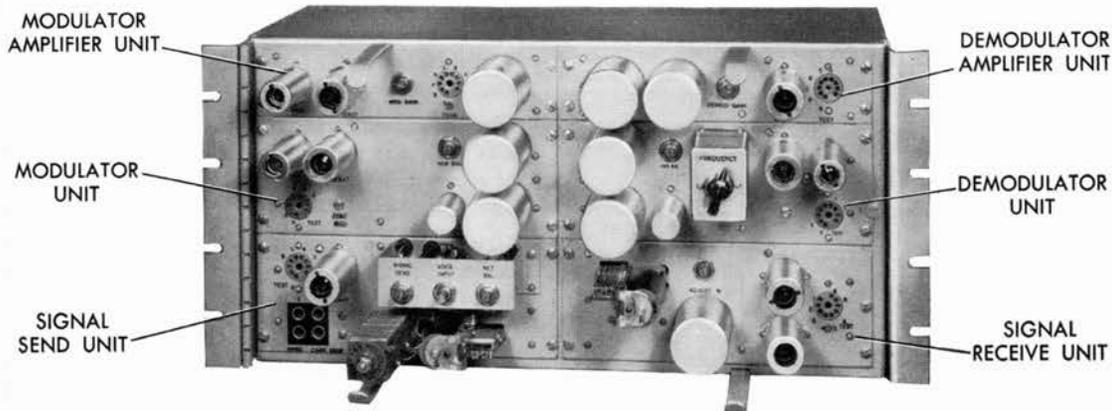
The Stromberg-Carlson Transistorized Subscriber Carrier System includes 5 channels in addition to the existing physical circuit. These 5 channels operate within a frequency band between 24 KC and 138 KC and are stackable, meaning that individual channels can be installed, disconnected or replaced without affecting the other operating channels.



Transistorized 561 Subscriber Carrier Terminal
with Protective Housing

WIRE LINE CARRIER (Cont.)

501 Carrier Terminal



501 Carrier Terminal, front view, Cover removed



501 Carrier Terminal

The Stromberg-Carlson Carrier Equipment is designed to provide up to 4 high quality voice channels in addition to the physical on an open-wire circuit. It is not necessary to run more wire over rugged terrain, and the operation and maintenance cost are generally lower than equivalent wire circuit.

The mechanical design of the 501 Carrier Terminal provides maximum serviceability, minimum rack space, and proper ventilation for continuous operation over a long period.

Each 501 Carrier Channel unit requires 8¾ inches of 19-inch rack space. Line filters, voice channeling equipment, and signaling apparatus are all provided within the basic 501 channel unit.

Mechanically the 501 Carrier Terminal consists of a steel chassis with a hinged gate type front panel, a design which expresses consideration for both the repairman and the operating company. The front can cover extends 3½ inches in front of the rack and the rear of the unit extends 8¾ inches behind the front surface of the relay rack. The 501 Carrier Terminal weighs approximately 50 pounds. All filters, the main terminal strip, and jacks which are used frequently are accessible by opening the front panel gate. Incoming cables enter the unit through knock-outs on either side of the main chassis.

The hinged front panel is equipped with six subpanel units. Each subpanel is designed to perform a specific function in the

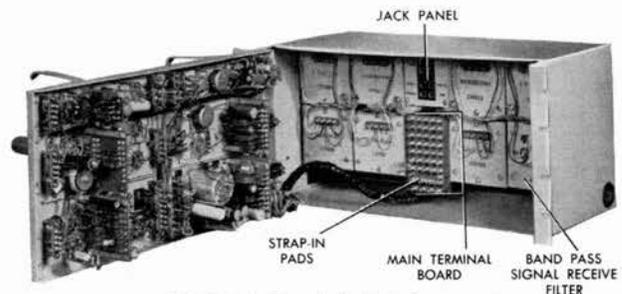
terminal. These functional units are:

1. 4-Wire Terminating Set and Signal Send Unit.
2. Modulator Unit.
3. Modulator Amplifier Unit.
4. Demodulator Unit.
5. Demodulator Amplifier Unit.
6. Signal Receive Unit.

The use of subpanels, each designed to perform a specific function, provides a high degree of electrical isolation between the various parts of a complete terminal and facilitates repairs and replacements which may be necessary.

Each subpanel is provided with test sockets on the front of the panel to measure tube voltages. Tubes are located at the extreme outer edges of the subpanels and a slip-on front can cover, common to the complete 501 Channel Terminal covers the center part of the unit. This provides a "Chimney" type of heat dissipation which eliminates overheating of other components and, while protecting controls from inadvertent misadjustment, allows easy access to the control. All control shafts are arranged for screwdriver adjustment and are variable to allow for optimum adjustment of carrier terminal circuits.

The power required per terminal is 40 watts which is supplied by the 505 or 518 Power Units. These units operate on 115 volt, 50-60 cycle AC line to furnish the necessary 6.3 AC heater voltage and the plus 250 DC plate voltage.



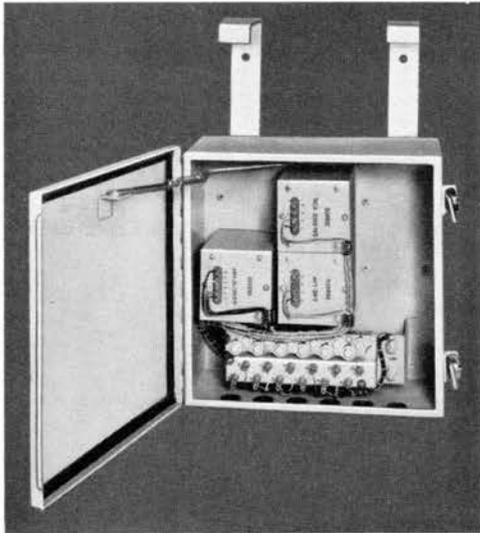
501 Carrier Terminal, Gate Open

STROMBERG-CARLSON

WIRE LINE CARRIER (Cont.)

502 Line Filters

A filter is used in a frequency circuit to exclude unwanted frequencies and to keep channels separated. It is also a device to suppress interference which would appear as distortion. The 502 Line Filter associated with the 501 Carriers are listed below and are supplied at a nominal charge.



Office Mounted

Code	Description
502-111	L. F. Panel W/3KC LP/4KC HP Line Filter Non-Phantom
502-112	L. F. Panel W/12KC LP/12KC HP Line Filter Non-Phantom
502-113	L. F. Panel W/22KC LP/22KC Line Filter Non-Phantom
502-114	L. F. Panel W/33.5KC LP/33.5KC HP Line Filter Non-Phantom
502-115	L. F. Panel 2-3KC LP/2-4KC HP Line Filter Non-Phantom
502-116	L. F. Panel 2-13KC LP/2-12KC HP Line Filter Non-Phantom
502-117	L. F. Panel 2-22KC LP/2-22KC HP Line Filter Non-Phantom
502-118	L. F. Panel 2-33KC LP/2-33.5KC LP Line Filter Non-Phantom
502-119	L. F. Panel 1-135-600 Impedance Matching XFMR
502-120	L. F. Panel 2-135-600 Impedance Matching XFMR
502-121	L. F. Panel 2-3KC LP Bal. & 2-4KC HP-Composite
502-122	L. F. Panel 1-3KC LP W LFB & 1-4KC HP-Composite

Pole Mounted

Code	Description
502-151	L. F. Panel W/3KC LP/4KC HP Non-Phantom
502-152	L. F. Panel W/12KC LP/12KC HP Non-Phantom
502-153	L. F. Panel W/22KC LP/22KC HP Non-Phantom
502-154	L. F. Panel W/33.5KC LP/33.5 KC HP Non-Phantom
502-155	L. F. Panel W/2.3KC LP/2.4KC HP Non-Phantom
502-156	L. F. Panel W/2-12KC LP/2-12KC HP Non-Phantom
502-157	L. F. Panel W/2-22KC LP/2-22KC HP Non-Phantom
502-158	L. F. Panel W/2-33KC LP/2-36KC HP Non-Phantom
502-159	L. F. Panel 1 Impedance Matching Transformer
502-160	L. F. Panel 2 Impedance Matching Transformer
502-161	L. F. Panel 2-3KC LP Bal. & 2-4KC HP W/600-135 XFMR
502-162	L. F. Panel 1-3KC LP & LFB & 1-4KC HP W/600-135 XFMR

506 Carrier Repeater

The 506 Carrier Repeater is available for the 3-channel Integrated System only. It is a bi-directional unit consisting of two identical groups of amplifiers; one group serving East to West signal and pilot frequencies, and the other group serving West to East signal and pilot frequencies.

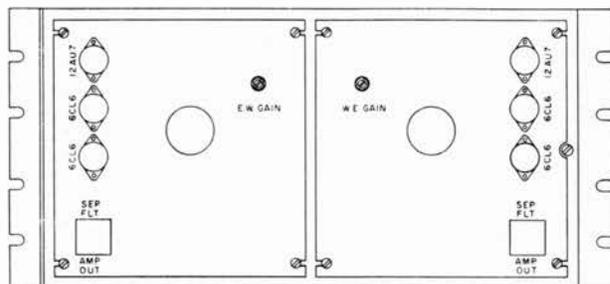
Two sets of standard 3KC LP/4KC HP filters are used to allow voice frequency transmission on the physical circuit to by-pass the repeater. Two sets of 18KC HP and LP filters are used for separating the two directions of carrier frequency transmission.

Each amplifier group consists of a 12AU7 twin triode, one section of which is used as a voltage amplifier, and the second section as a paraphase inverter. A push-pull amplifier, utilizing two 6CL6 power pentodes, comprises the final stage.

The 506 Carrier Repeater requires 8 3/4" of vertical space on a 19" rack and is complete within itself except for power supply.

The electrical characteristics are as follows:

Input Impedance	600 ohms balanced
Output Impedance	600 ohms balanced
Frequency Range	Flat to 100 KC
Frequency Response	±1 db
Recommended Input Level	-13 db
Recommended Transmit Level to Line	+18 dbm/channel
Nominal Gain	31 db
% Distortion	Less than 0.1 of 1%
Power Requirements	95 ma @ 250 volts DC 1.6 amp @ 6.3 volts AC
Power Source	S. C. 505 or 518 Power Supply



ORDERING INFORMATION

CARRIER MICROWAVE EQUIPMENT AND SYSTEMS

In order to achieve the finest system for you, our sales representatives and engineers are always available to work closely with you on your problems.

We suggest that you contact your nearest Stromberg-Carlson representative for further ordering information.

WIRE LINE CARRIER (Cont.)

507 Pilot Regulator

The Stromberg-Carlson 507 Pilot Regulator is designed for use with the 501 Integrated Carrier Terminal Equipment and with the 501 Line Repeater Amplifier.

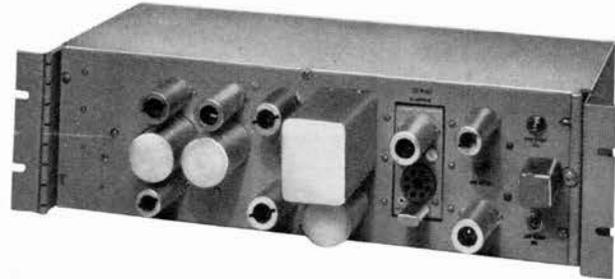
The Pilot Regulator works on the principle that variations in transmission losses will alter the level of a pilot frequency as well as carrier frequency level; and that these changes applied to a receiving amplifier can be made to affect the gain to compensate for the variations in transmission attenuation.

The regulator system will work directly between two carrier stations or over a carrier system using repeaters. Where repeaters are used, one receiving regulator section is required for both directions of transmission.

At the terminal equipment, the pilot regulator includes a crystal controlled pilot frequency oscillator to provide pilot signal for regulator control at the distant terminal. These same pilot oscillators furnish pilot signal for control of the line regulators. Consequently no pilot oscillators are included with the line repeater regulators.

The electrical characteristics are as follows:

Input Impedance 600 ohms unbalanced
Output Impedance 600 ohms unbalanced



Pilot Frequency (East to West) 16.5 Kilocycles
(West to East) 33.9 Kilocycles
Input Level Control Limits
(Carrier Sideband) -7 dbm to -27 dbm
(Pilot Frequency) -25 dbm to -45 dbm
Regulator Gain (Maximum)
(From Input of Var. Loss Stage) 20 db
Distortion 0.1 of 1%
Power Requirements 115 ma @ 250V
2.55 amp. @ 6.3V

Transistorized 561 Subscriber Carrier

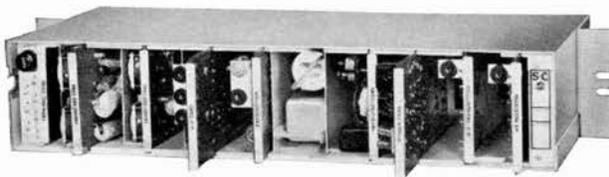
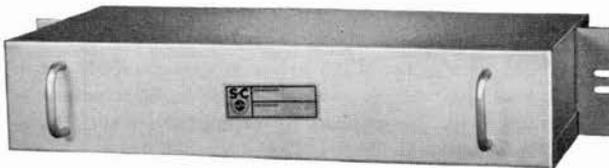
The Transistorized 561 Subscriber Carrier is designed to function with presently designed central offices and station equipment. The system includes five channels in addition to the existing physical circuit. These five channels operate within a frequency band of 24KC to 138KC and are stackable, meaning that individual channels can be installed, disconnected or replaced without affecting the other operating channels.

High quality transmission and a reliable ringing and dialing circuit are obtained with line losses running up to 35 db.

In offering this system to telephone companies and others with similar communication problems it is believed that objectives of low initial cost, minimum line rearrangement, maximum reliability and efficient maintenance have been met.

The operating characteristics are as follows:

Power Source 117V AC 60 cps. \pm 10%
or 48V DC \pm 4V



Transistorized 561 Central Office Terminal

Method of Transmission Double Sideband, Amplitude Modulated
Channel Bandwidth 250 to 2,500 cps. at 3 db points
Maximum Loss at
Carrier Frequency 35 db
Nominal V.F. Input Power 0 dbm
End to End Level Stability \pm 1 db Non Compandor
Line Impedance 600 ohms or 150 ohm balanced
Transmit Carrier Power +5 dbm Nominal
Receiver Section Gain 27 db
Nominal V.F. Receiving Power -4 dbm
Regulator Range +5 dbm to -10 dbm (about nominal)
Nominal Receive Level -20 dbm
Compandor Optional (depending upon noise and cross-talk levels)
Noise (Maximum) In terminals without compandors only 28 dba
Talking Battery 47V through 200-200 ohm balanced relay
Subscriber Loop Resistance 1,200 ohm maximum
Subscriber Loop Leakage 15,000 ohms
Signaling, Dialing and Supervision On-off Carrier
Ringing On-off Carrier, with tone for tip to ground ringing and no tone for ring to ground ringing
Operating Ambient Temperature -35°F to +130°F (with protective housing)

545 COMPANDORS

Stromberg-Carlson now offers Compandors for use in Carrier and Multiplex Equipment. A Compandor is a device, made up of an expander and a compressor, used to improve the signal or voice-to-noise ratio that appears on physical lines in such systems. Each Compandor serves one channel or link (talking

path).

These units are transistorized and feature printed circuit plug-in type cards. They fit into receptacles much like the 541 Voice Frequency Repeaters do. A Compandor occupies an area approximately $1\frac{1}{2}'' \times 3\frac{3}{16}'' \times 7\frac{1}{8}''$.

MULTIPLEX EQUIPMENT

Stromberg-Carlson offers multiplexing equipment that is compatible with any microwave system. Multiplexing equipment provides facilities to superimpose up to 90 high quality voice and signal channels on broadband radio circuits, using the frequency spectrum between 4 and 432 kilocycles. The basic building blocks are groups of 10 channels with super groups of 30 channels. Single sideband suppressed carrier operation is employed for this frequency division type of multiplexing.

There are 10 basic channel terminals using carrier frequencies spaced at 4 kilocycle intervals utilizing the lower sideband in each case. These fundamental channels occupy the frequency spectrum from 4 to 44 kilocycles to provide channels 1 to 10.

Then a second group of 10 fundamental channels may be operated through a group modulator-demodulator using the lower sideband of 96 kilocycles to position these channels (11

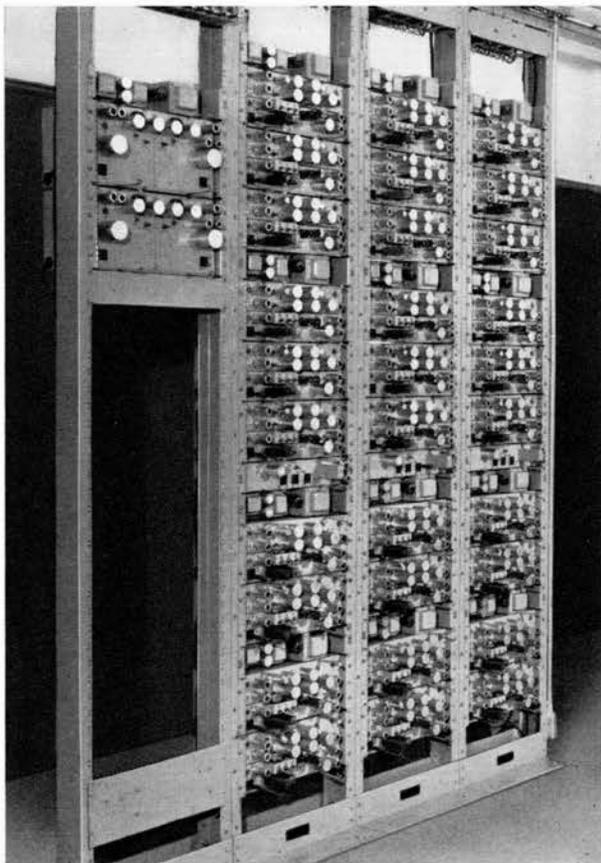
to 20) in the frequency spectrum between 52 and 92 kilocycles.

A third group of 10 fundamental channels may be operated through a second group modulator using the upper sideband of 96 kilocycles to position these channels (21 to 30) in the frequency spectrum between 100 and 140 kilocycles. Thus 30 channels occupy the range from 4 to 140 kilocycles.

For additional channels, 30 channel groups as described above may be operated through a group modulator-demodulator operating on the lower sideband of 292 kilocycles to position these channels (31 to 60) in the frequency range extending from 152 to 288 kilocycles. Channels 61 to 90 are obtained by using a group modulator-demodulator operating on the upper sideband of 292KC to position them in the 296 to 432 kilocycle range.

By this process, using only 10 types of fundamental channel terminal types and only 4 types of group modulator-demodulators, or translators, it is possible to obtain up to 90 voice channels in the frequency range between 4 to 432 kilocycles.

Multiplexing equipment consists of the 511 Multiplex Terminal, the 511-A 100 Service Channel Unit, the 512 Crystal Oscillator, the 513 Translators, the 514 Oscillator Synchronizers, and the 556 Broadband Amplifiers. All of this equipment is discussed on the following pages.



Typical Microwave Installation using Multiplex Equipment

511 Multiplex Terminals



The hinged front panel of the 511 is equipped with four subpanels. Each subpanel is complete within itself to perform a specific function in the terminal. These functions are:

1. 4-Wire Terminating Set and Signal Sending Unit
2. Modulator Unit
3. Demodulator and Receiving Amplifier Unit
4. Signal Receiving Unit

The use of subpanels, each designed to perform a specific function, provides a high degree of electrical isolation between the various parts of a complete terminal and facilitates any necessary repairs.

Each subpanel is provided with test points on the front of the panel to measure all tube voltages, and controls to standardize

MULTIPLEX EQUIPMENT (Cont.)

levels and gains in the unit. Tubes are located at the extreme outer edges of the subpanels and a slip-on front can cover, common to the complete 511 Multiplexing Terminal, covers the center part of the unit. This provides a "chimney" type of heat dissipation which eliminates overheating of other components and, while protecting controls from inadvertent misadjustment, allows easy access to the controls. All control shafts are arranged for screwdriver adjustment and are continuously variable, balancing controls are provided for each varistor. Tip-and-ring type jacks are located clear of the can cover to provide access to the channel drop, the switchboard, and both the E and M signaling leads.

The send and receive relays are Stromberg-Carlson Type A relays specially designed for this service and provide long, trouble-free operation with a minimum of adjustment.

The transmitting relay is a double-wound 200/200 ohm resistance relay suitable for connection directly into the M lead of the switchboard trunk circuit for dial service.

A bridge-type rectifier is provided which may be connected by straps on the 4-Wire Terminating Set terminal strip to provide

for ringdown service. The receive relay contacts are available for connection directly in the E lead of the switchboard trunk circuit or may be strapped on the main terminal strip to provide for ringdown service. It is not necessary to change any components to transfer from dial to ringdown signaling, and all relays are permanently connected in the circuit.

By using a low resistance balanced double-wound sending relay it is possible to use this as a battery supply relay when the voice frequency circuit is to be extended via a physical pair to serve outlying common battery telephones rather than terminating in a switchboard.

The 511 Multiplexing Terminal Unit occupies 7 inches of vertical rack space on a 19" rack, and is complete within itself except for power supply. Voice Channeling Equipment and Signaling Apparatus are all provided within the basic 511 Channel Unit. The total heater power necessary is 1.65 amps at $6.3 \pm 5V$, or 10.4 watts. The total +B power required is 50 ma at $250V \pm 20V$, when the signal receive relay is not operated, or 12.5 watts. When the signal receive relay is operated the +B drain is 65 ma at $250V \pm 20V$ or 16.25 watts.



511A-100 Service Channel Unit

The Stromberg-Carlson Service Channel Unit is designed to provide a service channel and additional channel facilities in conjunction with the 511 Multiplex Equipment. This rack-mounted self-contained unit operates in the 0 to 4 KC range which is not used in the 511 Multiplex Equipment. The main circuits that comprise the unit are: 3.3 KC low-pass filters, amplifiers, signal send and receive circuits, a resistance type hybrid and the power supply. This power supply will also provide power for one additional 511 Multiplex Terminal. The switchboard drop can be arranged for either 2-wire or 4-wire operation.



ORDERING INFORMATION

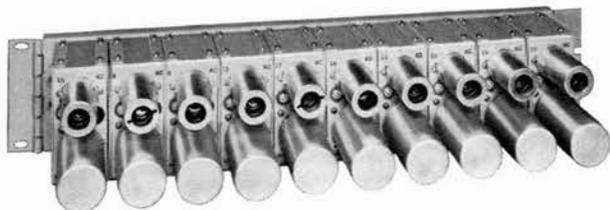
In order to achieve the finest system for you, our sales representatives and engineers are always available to work closely with you on your problems.

We suggest that you contact your nearest Stromberg-Carlson representative for further ordering information.

MULTIPLEX EQUIPMENT (Cont.)

512 Crystal Controlled Oscillator

The 512 Crystal Controlled Oscillator is used to provide a highly stable voltage source of a specific carrier frequency to each channel modulator and demodulator in the basic 10 channel

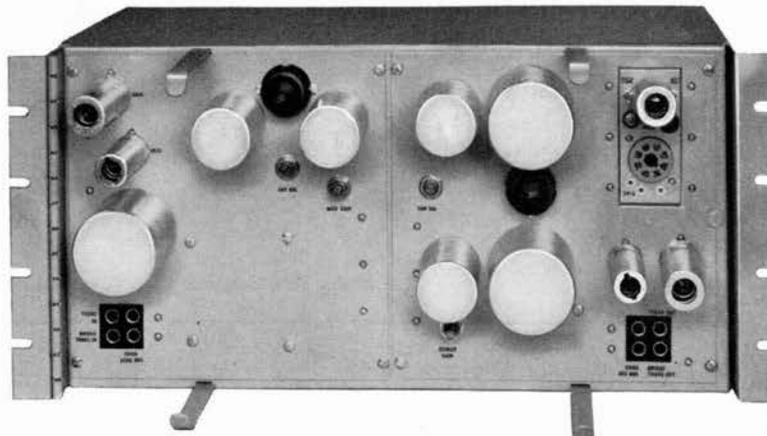


group of the 511 Multiplex Terminal; or to each channel modulator and demodulator within each channel group comprising a 90-channel system. The Crystal Controlled Oscillator is also used to generate a specific carrier frequency for the modulator and demodulator systems of the 513 Translator. The table of operating characteristics are as follows:

Nominal Output Voltage.....	8KC through 44KC units (into 600 ohms load)	2.5V AC $\pm 0.5V$
		96KC and 292KC units
		1.5V AC, $-0.5V +1V$
Frequency Stability (Non-oven)...	± 1.5 cycles	
Frequency Stability (Oven).....	± 0.25 cycles	
Frequency Adjustment Range...	8KC through 44KC units	± 0.3 cycles, 96KC units
		± 0.7 cycles, 292KC units
		± 2 cycles

513 Translators, 96H, 96L, 292H and 292L

The 513 Translators, 96H, 96L, 292H and 292L provide a means of translating signals of a basic 10-channel group of 511 Multiplex Terminal Units to higher frequency ranges so that 9 groups or 90 channels, may be used over one system. They are also used to provide a means of translating signals of higher frequency channel groups to the lower frequency range of the basic 10-channel group. Power requirements: 2.7 amps at 6.3V AC, 80 ma at 250V DC and crystal oven - 0.6 amp at 117V AC.



OPERATING CHARACTERISTICS: 96KC

Modulator Input Impedance.....	600 ohms unbalanced
Modulator Output Impedance	600 ohms unbalanced
Demodulator Input Impedance	600 ohms unbalanced
Demodulator Output Impedance	600 ohms unbalanced
Recommended Input to Modulator ...	-26 dbm/channel
Recommended Output to Radio	
Transmitter.....	-20 dbm/channel
Recommended Input to Demodulator..	-20 dbm/channel
Recommended Output to Basic	
Terminals	-20 dbm/channel
Oscillator Frequency	96KC
Oscillator Stability (with crystal oven)	$\pm .5$ cycle

OPERATING CHARACTERISTICS: 292KC

Modulator Input Impedance.....	600 ohms unbalanced
Modulator Output Impedance	135 ohms unbalanced
Demodulator Input Impedance	135 ohms unbalanced
Demodulator Output Impedance	600 ohms unbalanced
Recommended Input to Modulator ...	-26 dbm/channel
Recommended Output to Radio	
Transmitter.....	-20 dbm/channel
Recommended Input to Demodulator..	-20 dbm/channel
Recommended Output to Basic	
Terminals	-20 dbm/channel
Oscillator Frequency	292KC
Oscillator Stability (with crystal oven)	$\pm .5$ cycle

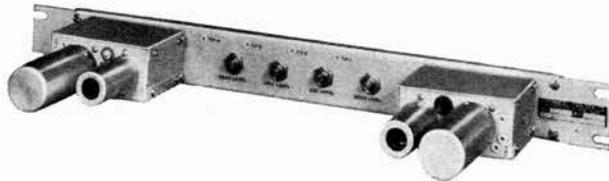
MULTIPLEX EQUIPMENT (Cont.)

514 Translator Oscillator Synchronizer

The normal deviation in frequency (less than 10 cps) between the translator crystal oscillators in a multiplex system causes no noticeable effect on voice transmission. However, when tone operated telemetering equipment is used on the multiplex chan-

Two Synchronizer Receivers are connected across the RECEIVE line at the distant terminal. By using a crystal filter, one receiver responds only to the incoming 96KC synchronizing signal while the other receiver responds only to the 292KC signal.

TRANSMITTER:



RECEIVER:



nels, a slight deviation may cause erroneous readings. Any drift in oscillator frequency between two translators (local and distant) can be held to a zero value by use of the 514 Translator Synchronizer.

The amplified and limited synchronizer signals are fed to the respective (96KC or 292KC) translators. At either terminal the translator oscillator will be enslaved or held to the frequency of the synchronizing signal.

The Synchronizer Transmitter contains two 512 Crystal Oscillator units (96KC and 292KC). Through variable pads the oscillator outputs are fed to the local translators and to the distant translators via the SEND line.

Code No.	Description
514A11	Synchronizer Receiver—96KC
514A12	Synchronizer Receiver—292KC
514A13	Synchronizer Receiver—96KC and 292KC
514A14	Synchronizer Transmitter—96KC and 292KC

556B11 Broadband Amplifier

The 556B11 Broadband Amplifier is designed as a general purpose broadband amplifier to increase the level of signals up to 500 kilocycles. Except for power supply, the 556B11 is a completely self-contained unit.

556A21 and 556A31 Jack and Amplifier

The Jack and Amplifier Panel is used in conjunction with the Type 511 Multiplex Carrier Terminal to provide an increased receiving level for a 10-channel group in the 90-channel system.

Test points are provided on the hinged gate-type front panel for making tube voltage measurements.

The center portion of the panel contains the input control to the amplifier which is continuously variable and arranged for screwdriver adjustment. Several banks of tip-and-ring type jacks are also provided which afford access to send and receive lines as well as amplifier input and output for purposes of bridging, monitoring, or testing.

The variable gain control, for adjusting the level of incoming signals, is easily accessible at the right front of the panel. Connections to the amplifier are made at the hinged side of the assembly assuring a neat and orderly installation. Detailed instructions for installation and line-up are provided with each purchased order.



The panel occupies 3 1/2" of vertical rack space on a 19" rack and is complete within itself except for power supply.

OPERATING CHARACTERISTICS:

- Input and Output Impedance . . . 600 ohms unbalanced
- Frequency Range 300 cycles to 500 kilocycles
- Frequency Response ±0.5 db
- Maximum Input Level +5 dbm
- Maximum Output Level 0 dbm
- Maximum Gain 25 db
- Minimum Gain -8 db
- Distortion at Maximum Output Level 0.15%
- Space Requirement 1 1/4" vertical rack space
- Power Requirements 1.05 amperes @ 6.3V AC
45 milliamperes @ 250V DC

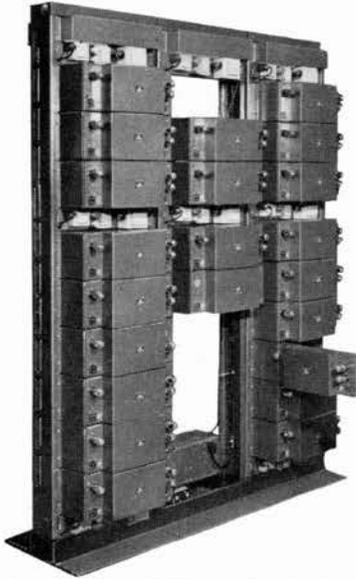
OPERATING CHARACTERISTICS:

- Input Impedance 600 ohms unbalanced
- Output Impedance 600 ohms unbalanced
- Frequency Range 4-44 KC
- Frequency Response ±0.1 db
- Nominal Input Level -10 dbm
- Nominal Output Level 0 dbm
- Minimum Gain -12 db
- Maximum Gain 12.7 db
- Maximum Power Output +10 dbm
- Noise Level-Input & Output Terminated with 600 ohms -60 dbm
- % Distortion (to 0 dbm input) 0.5%

CARRIER TELEGRAPH

FEATURES

- Electronic Keying
- Stackable and Compact
- Flexible System Arrangement
- Two- and Four-Wire Operation
- Easy Access to Components
- Loop Options
- Simple Installations and Maintenance



Typical Carrier Telegraph Installation

Stromberg-Carlson now offers an all-electronic Carrier Telegraph system employing frequency shift method of transmission. This is in addition to the "conventional" amplitude modulated, or "On-Off," equipment which has long been in manufacture. The decision to broaden the offering of carrier telegraph channel equipment is primarily because of the increased usage and more exacting requirements for this gear today. No less important, however, is the recognized fact that each of the two types has its own advantages and limitations, and the choice between them will be dictated by application for which they are intended.

The frequency shift method of carrier telegraphy can best be understood by explaining briefly how it differs from the more conventional amplitude modulated or "On-Off" type. The essential difference is the method by which transmission of Mark and Space signals is accomplished. In an AM carrier telegraph system, these signals are formed by sending intervals of carrier current for Marks and interrupting transmission (absence of carrier current) for Spaces—or vice versa. In a frequency shift system the Marks consist of periods of carrier of one frequency and the Spaces of similar periods of carrier of another frequency, above or below the mid-band nominal frequency. During signal transmission periods, the amplitude of current on the

carrier line is maintained constant whether in the marking or spacing condition; only the frequency changes. The frequency shift is accomplished by means of the channel oscillator, up or down.

Because AM systems are basically less expensive in first cost, one answer would be to say they will "prove in" wherever their operation is satisfactory. Against this must be balanced the operating and maintenance economies, and lower power requirements, of an all-electronic system such as present frequency shift units.

The AM system is less seriously affected by carrier frequency drift. In order to mitigate these variations, it has been found necessary to add DC elimination devices to frequency shift systems to make them comparable to AM systems in resistance to drift. Most present-day frequency shift equipment provides these corrective elements.

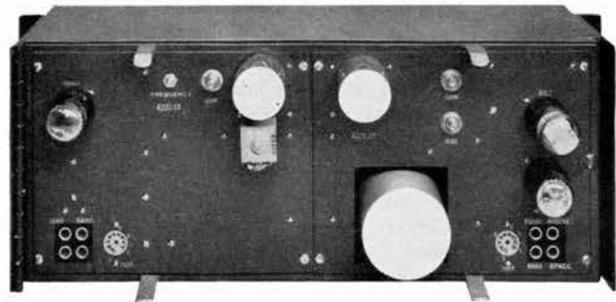
The AM or "On-Off" system has another unique advantage in that it may be used for "party-line" telegraph service. The term "party-line" refers to the shared use of a common carrier frequency by several telegraph terminals, within the system but geographically separated. The purpose of the party-line arrangement is to permit any one party (terminal) to transmit to all of the other parties (terminals) simultaneously. "Party-line" telegraphy is generally restricted to microwave communication networks, where transmit and receive levels are confined within fairly narrow limits.

Frequency shift telegraph terminals are not adaptable to "party-line" use, since each terminal is always transmitting one or the other of the two carrier frequencies. Thus if a "party-line" arrangement were attempted, transmission by any one party would not find a clear line, and the receivers of all the other parties would only be confused by the presence of both frequencies on the line simultaneously.

531 AM Carrier Telegraph Terminal

The 531 Carrier Telegraph is designed to provide high quality, amplitude modulated telegraph channels over any voice circuit with proper transmission characteristics. In AM Telegraph Transmission, signals are formed by sending intervals of carrier current for marks, and interrupting transmission (no carrier current) for spaces; or vice versa.

The 531 Carrier Telegraph Terminals can be applied to either physical or carrier voice channels because they will operate through a wide range of transmitting and receiving levels.



CARRIER TELEGRAPH (Cont.)

531 AM Carrier Telegraph Terminal (Cont.)

The 531 Carrier Telegraph Terminal is complete and compact in that the tone transmitter, tone receiver, and switching panels are all mounted on a single panel, using only 7" of vertical rack space. The units operate independently permitting partially equipped systems to expand merely by adding new channels. Operating characteristics are as follows:

OVERALL

Operating Frequency: 595 to 10,750 cps. and 11.5KC to 32.8KC

TRANSMITTER

Output Impedance at Operating

Frequency 600 ohms unbalanced
 Output Level: Adjusted from..... -36 dbm to +1 dbm
 Telegraph Send Loop Current:..... Adjustable to 30 ma for full duplex or polar operation. Adjustable to 70 ma for half duplex operation.

RECEIVER

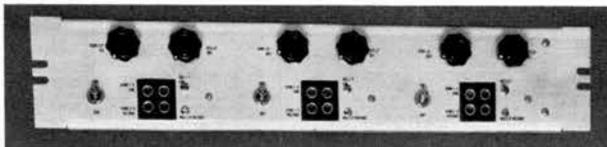
Input Impedance at Operating

Frequency 600 ohms unbalanced
 Recommended Minimum Input Level at Maximum Gain -20 dbm
 Receive Loop Current Adjustable to 70 ma for full duplex or polar operation

Loop Control Panel

The Loop Control panel provides the facilities for connecting up to 3 send and receive loops to the same number of 535 Telegraph Carrier Terminals.

Three identical send and receive loop circuit facilities are provided on the control panel. Each one of these circuits contains terminal connections to accommodate send and receive teletypewriter loops, +130 or +48 volt battery, ground or 130 volt battery and 535 Telegraph Carrier equipment.



Two rheostats are associated with each circuit. One (SEND LP. ADJ.) permits adjustment of the current in the send loop. The other, (REC. LP. ADJ.) performs the same function for the receive loop. A double pole, double-throw switch FDX-HDX, permits the DC loops to be operated on a full duplex (FDX) or a half duplex (HDX) basis, as required. In addition, a bank of 4 jacks associated with each circuit provides the facilities for measurement of voltage and current in the send and receive loops. These jacks are designated as J-1 (SEND LP. CUR.), J-2 (SEND LP. Voltage), J-3 (REC. LP. CUR.), and J-4 (REC. LP. Voltage).

535 Frequency Shift Carrier Telegraph



The 535 Carrier Telegraph provides terminal facilities for transmission and reception of telegraph signals in the voice frequency range over 2-wire or 4-wire circuits.

The type of transmission employed is frequency shift. The formation of Mark and Space signal is derived by shifting a carrier frequency between 35 to 50 cycles above and below the nominal mid-band frequency of a channel. Supervisory signals are established by turning the carrier on and off. Over a 2-wire circuit of conventional bandwidth, six 2-

way channels may be accommodated; and over a 4-wire circuit, twelve 2-way channels may be accommodated. In addition, three 2-way high frequency channels (utilizing the frequency spectrum between the voice and C carrier range) may be accommodated over a 2-wire circuit.

The signal circuits which constitute the basic channel terminal assembly are identical for all channels, and are comprised of a frequency-shift carrier transmission circuit, a frequency selective receiving circuit and a supervisory circuit. Two plug-in frequency determining units, one for the transmitting side and one for the receiving side, establish the operating frequencies of a particular channel terminal.

The equipment may be patched into telegraph loops in accordance with the commonly used transmitting and receiving options.

The 535 Carrier Channel Terminal is a plug-in unit approximately 10 1/2" high and 5 1/2" wide. Three channel terminals may be accommodated on a frame panel suitable for mounting on a 19" rack.

The operating characteristics are as follows:

TRANSMITTER

Line Impedance 600 ohms nominal, unbalanced
 Output Level Adjustable from +6 dbm continuously downward
 Send Loop Current Adjustable up to 62.5 ma for full duplex. Local circuits may be operated neutral or inverse neutral

RECEIVER

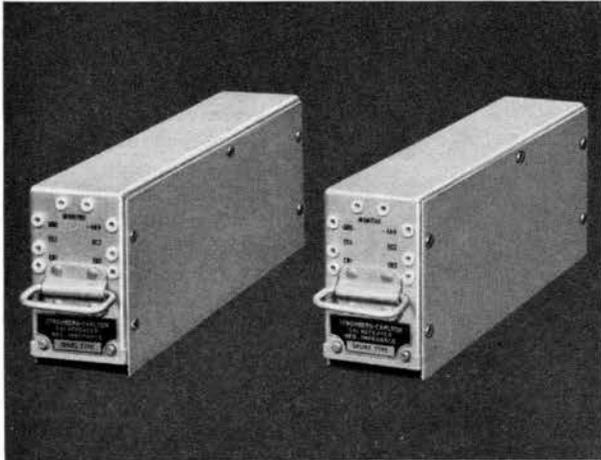
Line Impedance 600 ohms nominal, unbalanced
 Input Level..... -45 dbm to 0 dbm
 Receive Loop Circuit... Adjustable up to 62.5 ma for duplex or half duplex. Local circuit may be operated neutral or inverse neutral

POWER REQUIREMENTS..

25 ma at +130V DC (not including send and receive loop powered by teletype battery) 2.2 amp at 6.3 V AC, -24V or 48V bias potential

VOICE FREQUENCY REPEATERS

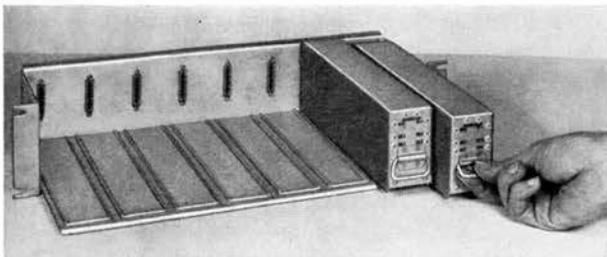
541 Negative Impedance



Series type — Shunt type
541 Negative Impedance Repeaters

Stromberg-Carlson introduces the 541 (series) and 541 (shunt) type Transistorized Voice Frequency Repeaters. These compact economy repeaters provide vastly improved voice frequency transmission on trunks and long lines where older methods of transmission loss compensation have proved to be economically infeasible. The use of these repeaters lessens the need for expensive cable loading, and, where cable loading is already in use, the addition of repeaters affords still greater improvement in transmission. Considerable savings are realized on new installations where, with the use of repeaters, smaller gauge cable or wire can be installed. The 541 is available in both the series and shunt type negative impedance repeater. On non-loaded cable lines, the 541 series type finds its ideal application as a single unit when its afforded gain is adequate. When the 541 series and the 541 shunt types are used as a repeater combination, the quality of transmission is improved, and maximum gain is possible when used at the electrical midpoint of the line. Slightly lower gain possibilities are obtainable when the combination is used as a terminal repeater.

A 19" mounting shelf mounts 8 repeaters and occupies only 3½" of vertical rack mounting space.



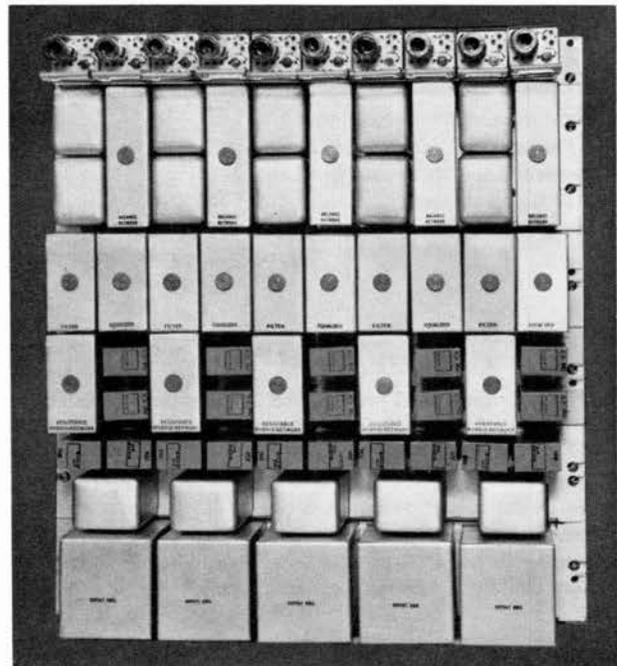
Mounting shelf for 541 Negative Impedance Repeaters

551 Hybrid

2-WIRE TERMINAL REPEATER—The 551 Hybrid 2-wire Terminal Repeater is a voice frequency repeater arranged for operation at the ends of transmission circuits. Essentially the repeater is comprised of two directional one-way amplifiers with the line and terminal equipment physically separated from these amplifying units.

The line equipment includes two separate and identical No. 24 type repeating coils designated as A and B. By proper interconnections, these two coils function as a combined repeating coil and hybrid coil. One such combination is used on the line side of the repeater. An equalizer (when used), a receiving filter and balancing network comprise the remaining line equipment.

A 2-coil hybrid is not used on the drop side of the repeater at the circuit terminals. Instead, a four-branch, balanced lattice-type resistance hybrid functions as the terminating network.



2-WIRE THRU OPERATION—The 551 Hybrid 2-wire Thru Repeater is a voice frequency repeater arranged for intermediate 2-wire operation. Essentially the repeater is comprised of two identical one-way amplifiers with the line equipment physically separated from these amplifying units.

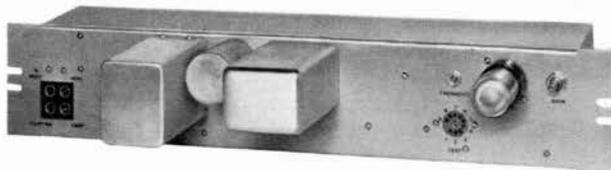
The line equipment includes two separate and identical No. 24 type repeating coils designated as A and B. By proper interconnections, these two coils function as a combined repeater coil and hybrid coil. One such combination is used on each side of the repeater. Equalizers (when used), low-pass filters and balancing networks comprise the remaining line equipment. Facilities are also provided for connection of 20 cps. signaling equipment when required.

TONE UNITS

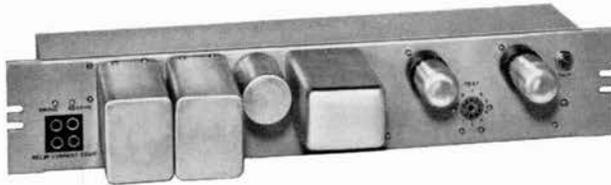
The Stromberg-Carlson Tone Units fill the growing need for amplitude modulated tone transmitting and receiving equipment suitable for the transmission of High (H), Medium (M), and Low (L) speed impulses for purposes of carrier telegraphy, telemetering remote control and other related applications between two or more points. These tone units have been designed for use with or without voice multiplexing equipment.

Normal production sets provide 41 channels for direct wire line, carrier or radio application within the assigned frequency allocations ranging from 425 cps. to 10,750 cps. Narrow bandpass filters at the transmitting and receiving ends provide bandwidths of from 60 to 400 cycles depending upon frequency, and approximately 50 db discrimination between adjacent channels. Units for higher frequencies, built on special order.

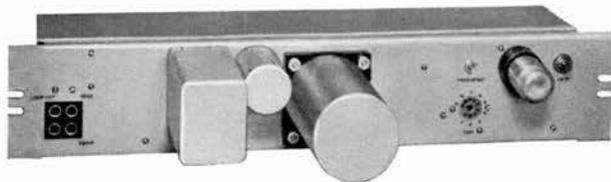
- 521 Low Speed Transmitter
- 522 Low Speed Receiver
- 523 Medium Speed Transmitter
- 524 Medium Speed Receiver
- 525 High Speed Transmitter
- 527 High Speed Transmitter
- 528 High Speed Receiver



521 Low Speed Transmitter

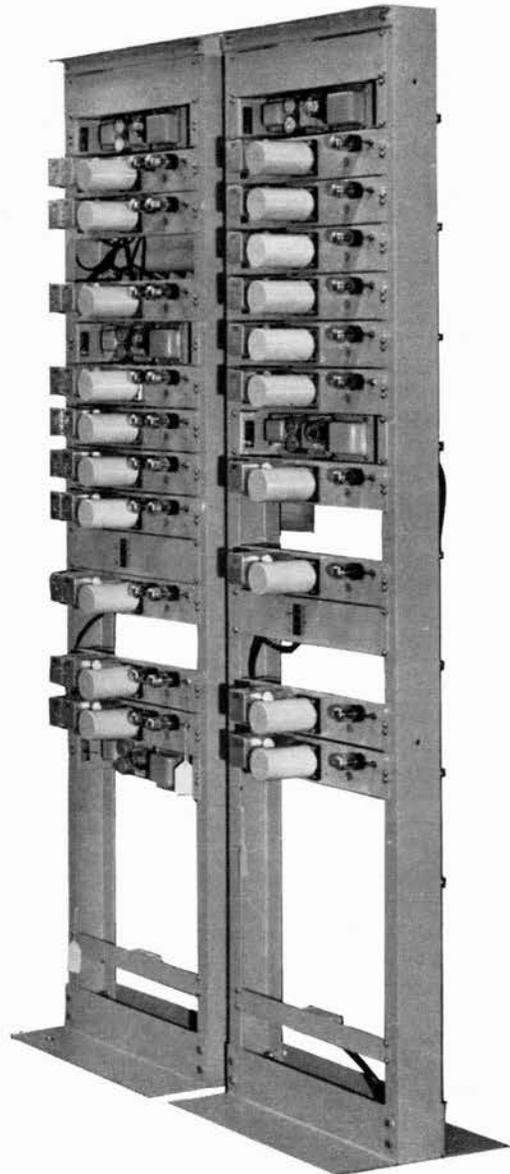


522 Low Speed Receiver



523 Medium Speed Transmitter

The Low Speed Amplitude Modulated Transmitter (Type 521 Tone Unit) is used for the transmission of low speed impulses (up to 15 pps.). It is used in conjunction with a receiver unit of the same frequency; to constitute a tone channel for the purpose of telemetering, remote control and other low speed applications between two points. The power requirements are 5.5ma at 250V DC, 0.6 amp at 6.3V AC. The operating characteristics are as follows:

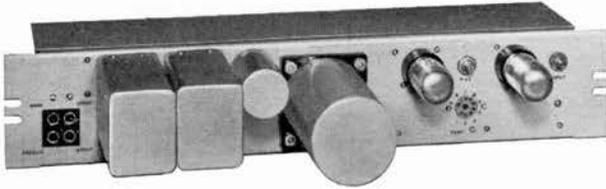


Transmit Impedance600 ohms (Frequencies at 10,750 cps and below are unbalanced. All others are balanced input and output).

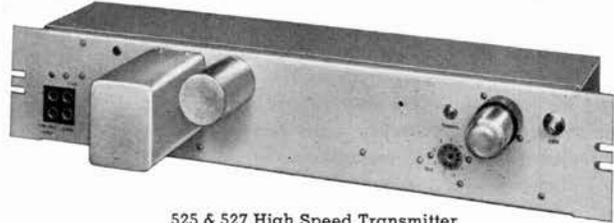
Output Level (Maximum)1 dbm
 Maximum Pulsing Rate15 pulses per second
 Space Requirement3 $\frac{3}{8}$ " of 19" rack

The Low Speed Amplitude Modulated Receiver (Type 522 Tone Unit) is used for the reception of low speed impulses (up to 15 pps), and the conversion of these signals to power form. It is used in conjunction with a transmitter unit of the same frequency to constitute a tone channel for purposes of telemetering, remote control and other low speed applications between two points. The power requirements are 35ma at 250V DC, 1.2 amps

TONE UNITS (Cont.)



524 Medium Speed Receiver



525 & 527 High Speed Transmitter

at 6.3V AC. The operating characteristics are as follows:

- Input Impedance 600 ohms
- Input Level (Minimum) -30 dbm
- Input Level (Minimum for full power output) -28 dbm
- Input Level (Maximum Recommended) +5 dbm
- Maximum Pulsing Rate 15 pps
- Space Requirement $3\frac{3}{8}$ " of 19" rack

The Medium Speed Amplitude Modulated Transmitter (Type 523 Tone Unit) is used for the transmission of medium speed impulses (up to 25 pps). It is used in conjunction with a receiver unit of the same frequency; to constitute a tone channel for the purposes of carrier telegraph, remote control and other medium speed applications between two points. The power requirements are 5.5ma at 250V DC, 0.6 amp at 6.3V AC. Operating characteristics: Transmit Impedance is 600 ohms, Frequencies at 10,750 cycles per second and below are unbalanced. All others are balanced input and output. Space requirement is the same as for the 522 Tone Unit.

The Medium Speed Amplitude Modulated Receiver (Type 524 Tone Unit) used for the reception of medium speed impulses (up to 25 pps) and the conversion of these signals to power form. It is used in conjunction with a transmitter unit of the same frequency to constitute a tone channel for purposes of carrier telegraphy, remote control and other medium speed applications between two points. Power requirements are 35ma at 250V DC, 1.2 amp at 6.3V AC. Operating characteristics are as follows:

- Input Impedance 600 ohms
- Input Level (Minimum operating) -30 dbm
- Input Level (Minimum for limiting action) -28 dbm
- Input Level (Maximum recommended) +5 dbm
- Maximum Pulsing Rate 25 pps
- Space Requirement $3\frac{3}{8}$ " of 19" rack

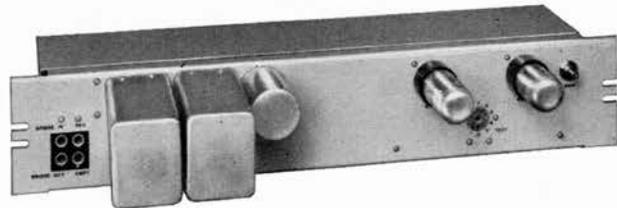
The High Speed Amplitude Modulated Transmitter (Type 525 Tone Unit) is used for the transmission of high speed pulses. It is used in conjunction with a receiver unit of the same frequency to constitute a tone channel for purposes of carrier telegraph, telemetering, remote control and other high speed applications between two points. Power requirements are 5.5ma at 250V DC, 0.6 amp at 6.3V AC. Operating characteristics are as follows:

- Transmit Impedance 600 ohms (Frequencies at 10,750 cycles per second and below are unbalanced. All others are balanced input & output.)
- Output Level (Maximum) -1 dbm
- Space Requirement $3\frac{3}{8}$ " of 19" rack

The High Speed Amplitude Modulated Transmitter (Type 527 Tone Unit) is the same as the Type 525 Tone Unit except that its primary purpose is for telemetering, remote control, and related application.

The High Speed Amplitude Modulated Receiver (Type 528 Tone Unit) is used for the reception of high speed impulses (up to 25 pps); and the conversion of these signals to the proper form. It is used in conjunction with a transmitter unit of the same frequency to constitute a tone channel for purposes of frequency-type telemetering, remote control, and other high speed applications between two points. Power requirements are 35ma at 250V DC, 1.2 amps at 6.3V AC. The operating characteristics are as follows:

- Input Impedance 600 ohms
- Input Level (Minimum operating) -30 dbm
- Input Level (Minimum for limiting action) -28 dbm
- Pulsing Rate (Maximum) 25 pps
- Input Level (Maximum recommended) +5 dbm
- Space Requirement $3\frac{3}{8}$ " of 19" rack



528 High Speed Receiver

ORDERING INFORMATION

CARRIER MICROWAVE EQUIPMENT AND SYSTEMS

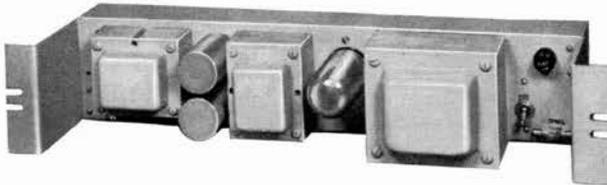
In order to achieve the finest system for you, our sales representatives and engineers are always available to work closely with you on your problems.

We suggest that you contact your nearest Stromberg-Carlson representative for further ordering information.

POWER SUPPLY UNITS

There are six power supply units offered by Stromberg-Carlson; type 505, 509, 515, 517, 518 and 519.

The 505 Power Supply converts 110-120V, 50-60 cycles AC line voltage to 6.3V AC, 5 amp filament voltage and 250V DC, 160ma plate voltage.



505 Power Unit

The 509 Emergency Power Supply provides 110V, 60 cycles AC power to a load consuming up to 150 watts. This emergency power source is derived from 48 volts central office battery by automatic switching when regular 110V, 60 cycle AC power line fails or is interrupted.

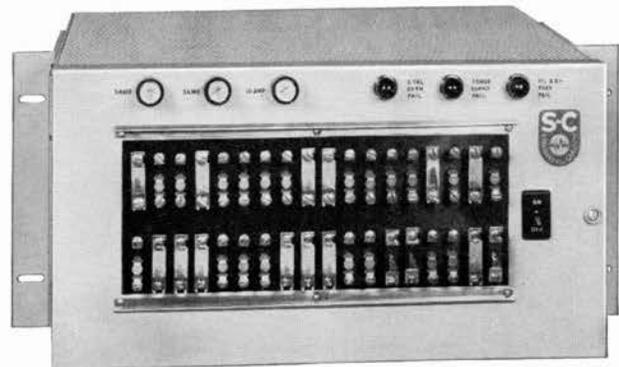


509 Emergency Power Supply, Rear View

The 515 Power Supply is the same as the 505 except that 110-120V, 50-60 cycle line voltage is available at terminals 5 and 6 of the output receptacle. Thus, permitting the line voltage to be supplied through the plug-in power cable to external units requiring its use.

The 517, 130V Power Supply, is designed to meet the power requirements of carrier and multiplex equipment; and it is also adaptable as a general purpose power supply for equipment requiring plus B voltage supply of 130V DC, 1 amp and filament supply of 6.3V AC, 20 amp.

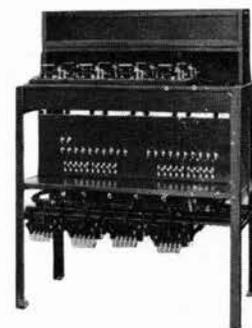
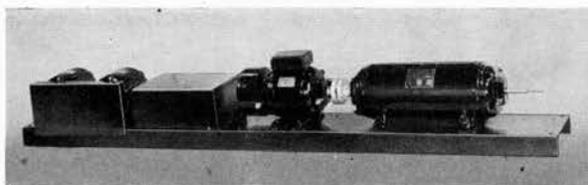
The 518 Power Supply is the same as the 517 except that the plus B supply is 1 amp at 250V DC and filament supply of 6.3V at 28 amps. The 519 Stand-by Power Supply can be used with the 518 Power Supply to provide an emergency source of power for supplying the requirements of carrier and multiplex equipment should the primary power source fail or become interrupted. A fuse and alarm panel for individual terminal unit protection is recommended as optional equipment and is used with the 505 and 515 Power Units. Fuse and alarm circuits are included in the 517 and 518 Power Units.



518 Power Supply Unit with fuse Cover removed

STROMBERG-CARLSON

Accessories



**Stromberg-Carlson has checked and approved the accessories
which are listed here for your convenience in ordering.**

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SECTION **E**

ACCESSORIES

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Ringng Machines and Convertors	12e
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CENTRAL OFFICE ACCESSORIES

The use of such modern equipment as sealed type batteries, trickle chargers, interrupters operating from induction motors, automatic switching circuits, etc., has tended to revise many of the older methods of power switching and control. Except in the larger exchanges, large multiple-panel power switchboards have been replaced by small compact and easily operated control units.

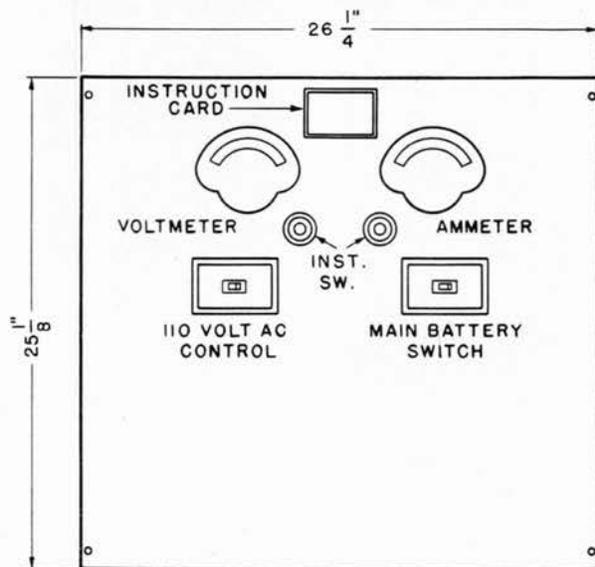
POWER EQUIPMENT FOR MANUAL OFFICES

As shown in the illustrations of the Power Terminal Unit, the power board is now regularly mounted in the terminal room frame line-up. This not only conserves space, but also places the equipment in one of the most convenient places to operate, directly associated with the apparatus it controls and supplies. The modern layout provides meters, instrument switches and a few controls all mounted on a panel approximately $25\frac{1}{8}$ " high by $26\frac{1}{4}$ " wide.

The panel itself is faced with black formica at front and rear providing a mounting with high insulation characteristics entirely free from metallic veins and unaffected by chemicals. The finish is durable, not easily scratched or marred. Standard meters are used, serving to indicate accurately the condition of

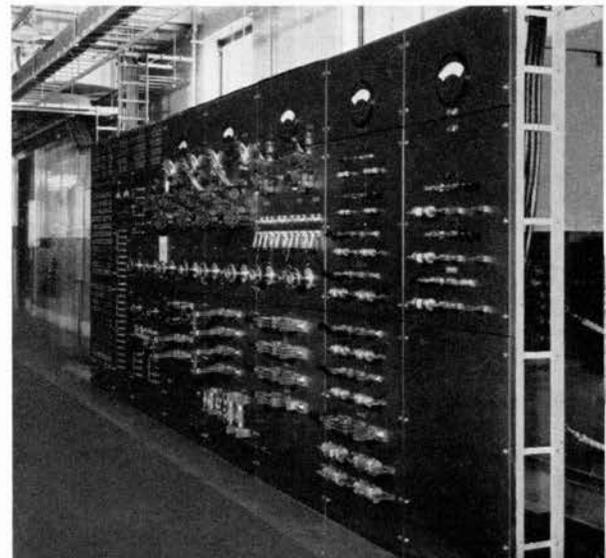
the circuits in use.

Large exchanges having line capacities which require the control of considerable amounts of current are best served by separate power control switchboards. They are designed by Stromberg-Carlson engineers to meet the particular requirements of the exchanges in which they are installed. Switches, bus bars, and circuit wiring are figured on a basis to handle all circuits without undue resistance and designed to meet ultimate growths without expensive additions. For special power switchboards our company offers you the services of its engineers in making layouts and estimates. Consult our nearest branch office.



BLACK FORMICA FACED FRONT AND REAR

Typical Power Switchboard used with Power-Terminal Unit



Typical Large Stromberg-Carlson Power Board Installation for Telephone Exchange

Storage Batteries

Stromberg-Carlson recommends the use of storage batteries for three main purposes:

MAIN BATTERY which is required to provide the main or standby current supply for transmission, signalling and general operation of circuit apparatus.

BOOSTER BATTERY which is required to increase the voltage for toll transmission when the main battery is 11 or 12 cells. When machine ringing is employed this battery is generally used for tripping the ringing.

CONVERTER BATTERY is required to operate the ringing converter. When used separately, this battery maintains the voltage within narrow limits thereby keeping the ringing voltages steady. It also prevents ringing induction from noising the main talking battery. This battery is usually 12 cells of the couple type.

The desirable size for the main battery is dependent upon the number of lines, the calling rate, the answering time, conversation period, time of restoring cords and the reliability of local commercial power supply.

STROMBERG-CARLSON

POWER EQUIPMENT (Cont.)

Storage Batteries (Cont.)

Modern methods applied to the use of storage batteries for telephone exchanges, employ charging equipment of a noiseless character and usually of a type which is automatic or semi-automatic in operation. By these methods the battery is kept constantly charged and the load is taken directly off the charging machine. Thus the battery, bridged across the load, acts as a "standby" source of power when the city current is interrupted or when a sudden surge in the load demands more current than the charging equipment can supply. The usual method of estimating capacity is to select a battery that will supply the normal load over a period of twenty-four hours.

Booster and Converter Batteries are usually the enclosed couple type group of cells. Main exchange batteries require greater capacity and are chosen from the multiple plate groups. Exide and Gould are standard makes of high grade batteries suitable for use in telephone exchange service. In the listings which follow, Exide types are indicated as typical of the various sizes and capacities which may be furnished.

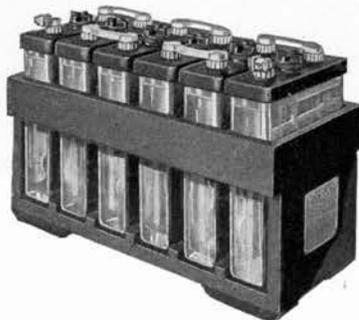
Two-Plate Types

BTMH-2, CTMH-2, FTMH-2, ETMH-2

These are Exide Two-plate Batteries that are used in cases where current requirements are small such as single-position non-multiple boards (ETMH-2) PBX Switchboards (PTMH-2 or (CTMH-2) and smaller installations where the BTMH-2 Type will provide sufficient current.

For convenience in handling and installation these four types are assembled in wooden crates of from 2 to 12 units, arranged in either single or double rows. The two larger size crates for PTMH-2 and ETMH-2 Batteries are equipped with chest handles.

When shipped these cells are sealed, charged and filled with electrolyte and have bolt connectors on the terminal cell of each unit. Each cell has one manchester positive and one negative plate with an intervening wooden separator. The plates are burned to straps with cylindrical posts that are sealed to the covers with rubber gaskets and grove ring seal nuts. Vent plugs of hard rubber are furnished as standard equipment.



Type CTMH-2

Although Exide Batteries are described in this section, batteries of either Gould or Electric Storage Battery Company's manufacture will satisfactorily meet the requirements for which the various types are recommended.

Information from our Engineering Department is always available in cases where there are any questions about the type of battery that can be used to best advantages.

Couple Type Cells

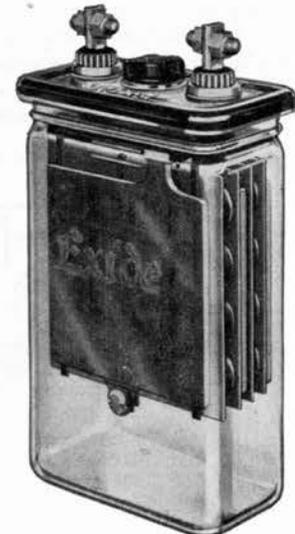
Specifications		BTMH-2	CTMH-2	PTMH-2	ETMH-2
11 cells 1 Row	Cat. Nos.	21312	21302	21368	—
11 cells 2 Rows	Cat. Nos.	21295	21346	21373	21361
Amp. Hr. Cap. at 72 Hr. rate		8.4	16.8	33.6	50.4
Amp. Hr. Cap. at 8 Hr. rate		6.0	12.0	24.0	36.0
Amp. Hr. Cap. at 3 Hr. rate		4.4	8.7	16.8	24.0
8 hr. charge rate		.75	1.5	3.0	4.5

Overall Dimensions in Inches

Specifications		BTMH-2	CTMH-2	PTMH-2	ETMH-2
11 Cells 1 Row	Length	26 7/16	29 7/16	34 7/16	—
11 Cells 1 Row	Width	4 15/16	7 1/2	8	—
11 Cells 1 Row	Height	10 1/8	12 1/8	16 7/8	—
11 Cells 1 Row	Weight	81	156	249	—
11 Cells 2 Rows	Length	14 7/8	16 1/2	20 1/16	21 13/16
11 Cells 2 Rows	Width	9 3/8	14 1/2	15 3/8	26 1/2
11 Cells 2 Rows	Height	10 1/8	12 1/8	16 7/8	16 3/8
11 Cells 2 Rows	Weight	83	160	258	368
Electrolyte weight per cell		1	3.3	5	6.8



Single Cell Type BTMH-2



Type DMGO

Multiple Plate Type DMGO

These are Exide multiple plate batteries in sealed glass jars for supplying current in exchanges operating from approximately 300 to 1000 lines. These types also have manchester positive and negative plates with necessary bolt connectors. When shipped these batteries are assembled and sealed; also charged and filled with electrolyte—all ready to put into service.

DMGO Multiple Plate Type Cells

Specifications		DMGO-5	DMGO-7	DMGO-9
	Cat. Nos.	22282	22283	22293
Amp. Hr. Cap. at 72 Hr. rate		58	87	116
Amp. Hr. Cap. at 8 Hr. rate		40	60	80
Amp. Hr. Cap. at 3 Hr. rate		31	47	62

Overall Dimensions per Cell in Inches

	DMGO-5	DMGO-7	DMGO-9
Length	4 11/16	5 15/16	7
Width	8 1/16	8 1/16	8 1/16
Height	14 3/8	14 3/8	14 3/8
Plate size, approximate	6x6	6x6	6x6
LCL Shipping Weight (lbs.)	40	50	62
Electrolyte per cell in lbs.	9.0	12.75	14.75

POWER EQUIPMENT (Cont.)

Storage Batteries (Cont.)

Multiple Plate Type EM

The multiple plate batteries below are similar to the Type DMGO previously described. Batteries shipped assembled, sealed and charged ready for service.

EM Multiple Plate Type Cells

Specifications	Cat. Nos.	EM-5	EM-7	EM-9
Amp. Hr. Cap. at 72 Hr. rate		116	174	232
Amp. Hr. Cap. at 8 Hr. rate		80	120	160
Amp. Hr. Cap. at 3 Hr. rate		62	93	125

Overall Dimensions per Cell in Inches

	EM-5	EM-7	EM-9
Length	5 3/4	6 3/4	8 1/4
Width	10 3/4	10 3/4	10 3/4
Height	17 3/4	17 3/4	17 3/4
Plate size, approximate	7 3/4 x 7 3/4	7 3/4 x 7 3/4	7 3/4 x 7 3/4
LCL Shipping Weight (lbs.)	72	91	119
Electrolyte per cell in lbs.	23	24	31

EM Multiple Plate Type Cells (Cont.)

Specifications	Cat. Nos.	EM-11	EM-13	EM-15
Amp. Hr. Cap. at 72 Hr. rate		290	348	406
Amp. Hr. Cap. at 8 Hr. rate		200	240	280
Amp. Hr. Cap. at 3 Hr. rate		156	187	218

Overall Dimensions per Cell in Inches

	EM-11	EM-13	EM-15
Length	9 3/4	11	12 3/4
Width	10 3/4	10 3/4	10 3/4
Height	17 3/4	17 3/4	17 3/4
Plate size, approximate	7 3/4 x 7 3/4	7 3/4 x 7 3/4	7 3/4 x 7 3/4
LCL Shipping Weight (lbs.)	143	163	182
Electrolyte per cell in lbs.	35	42	45

Type FM

These cells are in sealed glass and have double post construction. They are of the same general design as the DMGO, and EM Types except the capacities which are larger.

Specifications	Cat. Nos.	FM-9	FM-11	FM-13
Amp. Hr. Cap. at 72 Hr. rate		448	560	672
Amp. Hr. Cap. at 8 Hr. rate		320	400	480
Amp. Hr. Cap. at 3 Hr. rate		249	312	372

Overall Dimensions per Cell in Inches

	FM-9	FM-11	FM-13
Length	9 3/4	10 11/16	12 15/16
Width	14 7/32	14 7/32	14 7/32
Height	22	22	22
Plate size, approximate	11x10 1/2	11x10 1/2	11x10 1/2
Weight packed LCL in Lbs.	220	250	291
Electrolyte per cell in lbs.	60	65	75

Type FM (Cont.)

Specifications	Cat. Nos.	FM-15	FM-17
Amp. Hr. Cap. at 72 Hr. rate		784	896
Amp. Hr. Cap. at 8 Hr. rate		560	640
Amp. Hr. Cap. at 3 Hr. rate		435	498

Overall Dimensions per Cell in Inches

	FM-15	FM-17
Length	13 3/4	14 3/8
Width	14 7/32	14 7/32
Height	22	22
Plate size, approximate	11x10 1/2	11x10 1/2
Weight packed LCL in Lbs.	324	356
Electrolyte per cell in lbs.	86	95

Type LXGH

The LXGH is a sealed Exide battery assembled in two and three compartment glass containers. Each container has a cell equipped with pilot balls to give an approximate indication of the state of the charge. Chemically treated grooved wood separators and slotted rubber plate protectors provide double insulation against internal short circuits and vent plugs are spray-proof. When shipped these cells are sealed charged and filled with electrolyte and have bolt connectors on the terminal end of each unit.

The cells are used to advantage with trickle charging or constant potential charging outfits in which most of the switch-board current supply is taken directly from the rectified current of the charging equipment.



Type LXGH—3-Cell Unit

Specifications	2-LXGH-7	3-LXGH-7	2-LXGH-9	3-LXGH-9
2 Compartments	Cat. Nos. 23723	23725	—	—
3 Compartments	Cat. Nos. —	61	—	22370
Amp. Hr. Cap. at 72 Hr. rate	61	50	—	78
Amp. Hr. Cap. at 8 Hr. rate	50	44	—	60
Amp. Hr. Cap. at 5 Hr. rate	44	38	—	55
Amp. Hr. Cap. at 3 Hr. rate	38	—	—	48

Type LXGH (Cont.)

Specifications	2-LXGH-13	3-LXGH-13	2-LXGH-15	3-LXGH-15
2 Compartments	Cat. Nos. 23724	—	22371	—
3 Compartments	Cat. Nos. —	23726	—	22372
Amp. Hr. Cap. at 72 Hr. rate	122	122	136	136
Amp. Hr. Cap. at 8 Hr. rate	100	100	105	105
Amp. Hr. Cap. at 5 Hr. rate	88	88	96	96
Amp. Hr. Cap. at 3 Hr. rate	76	76	85	85

Overall Dimensions per Cell in Inches

Type Cell	Length	Width	Height	Weight Packed Lbs.	Electrolyte Per Cell Lbs.
2-LXGH-7	6 3/8	7 1/2	10 1/4	40	6.5
3-LXGH-7	9 7/32	7 1/2	10 1/4	58	9.75
2-LXGH-9	—	—	—	—	—
3-LXGH-9	9 7/32	7 1/2	10 1/4	72	9
2-LXGH-13	9 3/4	7 1/2	10 1/4	68	10
3-LXGH-13	14 13/32	7 1/2	10 1/4	102	15
2-LXGH-15	9 3/4	7 1/2	10 1/4	70	9.75
3-LXGH-15	14 13/32	7 1/2	10 1/4	104	14.5

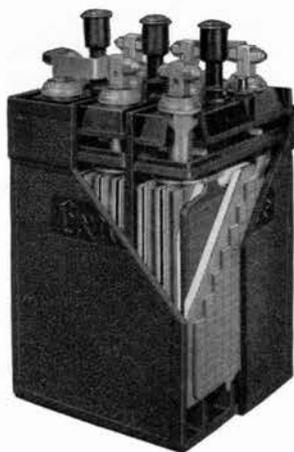
POWER EQUIPMENT (Cont.)

Storage Batteries (Cont.)

Types EB, FB, HB

Many distinctive features have been built into these new Exide Batteries which assure economies in both installation and maintenance.

- | | |
|-----------------------------------|-----------------------------------|
| 1. Gas Escape Vent | 7. Heavy Positive Plates |
| 2. Indicator of Electrolyte Level | 8. Balanced Negative Plate |
| 3. Heavy Post with Seal Nut | 9. Rib Supports for Plates |
| 4. Gas Collector Hood | 10. Thick-Walled Hard Rubber Jars |
| 5. Slotted Rubber Separators | 11. Deep Cover Seal |
| 6. Grooved Wood Separators | 12. Filling Funnel |



Typical Rubber-Jar Cell

The elements are assembled in thick-walled hard rubber jars which effect a saving in space up to 50% in comparison with lead-lined wood tanks of the same capacity. The design and construction of these batteries also assure freedom from trouble and long life. As an example of this, the shedding of active material has been greatly reduced by the snug fit of the elements within the jar and consequent pressure of the slotted-rubber and wood separators against the plate surfaces.

These batteries are also explosion proof which is an entirely new feature. This is accomplished by a specially designed hood, below the electrolyte level, which collects the gas bubbles before they reach the surface and then guides them to a vent in the cover. The small amount of gas that accumulates at this point ignites with only a "pop" even though the cells may be gassing violently.



Type V-2-F Hydrometer Syringe



Vent Hole Thermometer with vent plug.

Capacities (8-Hour Rate)

Type EB From 180 to 660 Ampere Hours

Type FB From 840 to 1680 Ampere Hours

Type HB From 4000 to 7000 Ampere Hours

FB and HB Type Batteries

These batteries are recommended in place of the old type with lead lined wood tanks because the installation cost is very much lower and because there are no damaging effects from acid spray when other electrical equipment is set up in the same room. There is also a great saving in space as against lead-lined wood tanks of equal capacity and the further advantage of a neater, safer and more attractive installation.

Summary of EB, FB and HB Batteries

Cell Type and Size	Rated Amp. Hr. Capacity			Electrolyte Per Cell	Dimensions		
	72 Hr. Rate	8 Hr. Rate	3 Hr. Rate		Length	Width	Height
EB-9	330	240	174	12 1/4 Lbs.	5 3/16	10 3/4	19 1/8
EB-11	450	300	217	15 1/4 Lbs.	6 3/16	10 3/4	19 1/8
EB-15	630	420	305	21 Lbs.	8 1/8	10 3/4	19 1/8
EB-19	810	540	392	26 3/4 Lbs.	10 3/16	10 7/8	19 1/8
EB-23	990	660	478	32 1/2 Lbs.	12 3/16	10 7/8	19 1/8

Cell Type and Size	Rated Amp. Hr. Capacity			Electrolyte Per Cell	Dimensions		
	72 Hr. Rate	8 Hr. Rate	3 Hr. Rate		Length	Width	Height
FB-15	1260	840	609	40 1/4 Lbs.	8 7/16	14 3/8	23 3/4
FB-19	1620	1080	783	51 1/4 Lbs.	10 8/16	14 3/8	23 3/4
FB-23	1980	1320	957	62 1/4 Lbs.	12 7/16	14 3/8	23 3/4
FB-29	2520	1680	1218	70 Lbs.	15 1/4	14 3/8	23 3/4
HB-21	6475	4000	2950	260 Lbs.	15 7/16	18 3/16	56 13/16
HB-25	7775	5000	3525	300 Lbs.	18	18 3/16	56 13/16
HB-29	9075	6000	4125	350 Lbs.	20 9/16	18 3/16	56 13/16
HB-36	11000	7000	5000	480 Lbs.	25 3/16	18 3/16	56 13/16

Estimates will be prepared by our nearest office on Exide or Gould batteries to meet all telephone requirements.

Storage Battery Accessories

- 21154 **Thermometer**—30° to 120° F—with hard rubber vent plug. For CTMH-2 and PTMH-2 Cells.
- 22783 **Thermometer**—30° to 120° F—with hard rubber vent plug and two soft rubber bushings. For DMGO-7 and 9; also EM and FM Cells.
- 24186 **Thermometer**—30° to 120° F—with hard rubber vent plug and two soft rubber bushings. For ETMH-2 and DMGO-5 Cells.
- 19396 **Hydrometer Syringe**—Type V-2-F, complete. (1.170 to 1.230 Sp. Gr.) Has Single-point scale divisions.

BATTERY CHARGING EQUIPMENT

There are several approved methods of charging storage batteries and for this purpose a satisfactory selection may be made from the following equipment:

1. Motor-Generator Sets
Diverter Pole Motor-Generator
2. Rectifiers
Recticharger
Rectox Charger
3. Illuminating Gas or Gasoline Engine
Used as an emergency charging set.
Information will be furnished upon application.
4. Mercury Arc Rectifier
This method has been replaced by the use of motor-generator sets or rectifiers.
5. Direct Charge from D.C. Power Mains
This is not an economical method and is not recommended from a safety standpoint.

Diverter Pole Motor-Generators

Ordinary generating equipment with "semi-constant" voltage characteristics, although considered satisfactory for many applications, cannot successfully meet the exacting requirements of modern communication systems. Load fluctuation of the modern exchange demands charging equipment which can instantly compensate for varying current demands. The time interval between zero and peak load demand is often measured in seconds which requires a correspondingly quick adjustment of the D.C. Power supply voltage to keep it constant.

The Diverter Pole Motor-Generator not only compensates for varying exchange demands by supplying a constant voltage at the generator terminals but also maintains this constant voltage in spite of variations in power source to the driving motor within commercial limits.

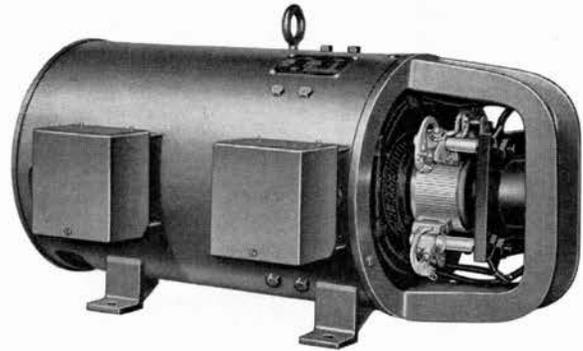
The use of these motor-generators as a power source in the floating charge of storage batteries provides a constant, dependable voltage in the conversion of A.C. to D.C. communication requirements.

Since the batteries are kept in fully-charged condition at all times, they are ready to furnish power at peak current demands beyond the capacity of the generator or in case of commercial power failures.

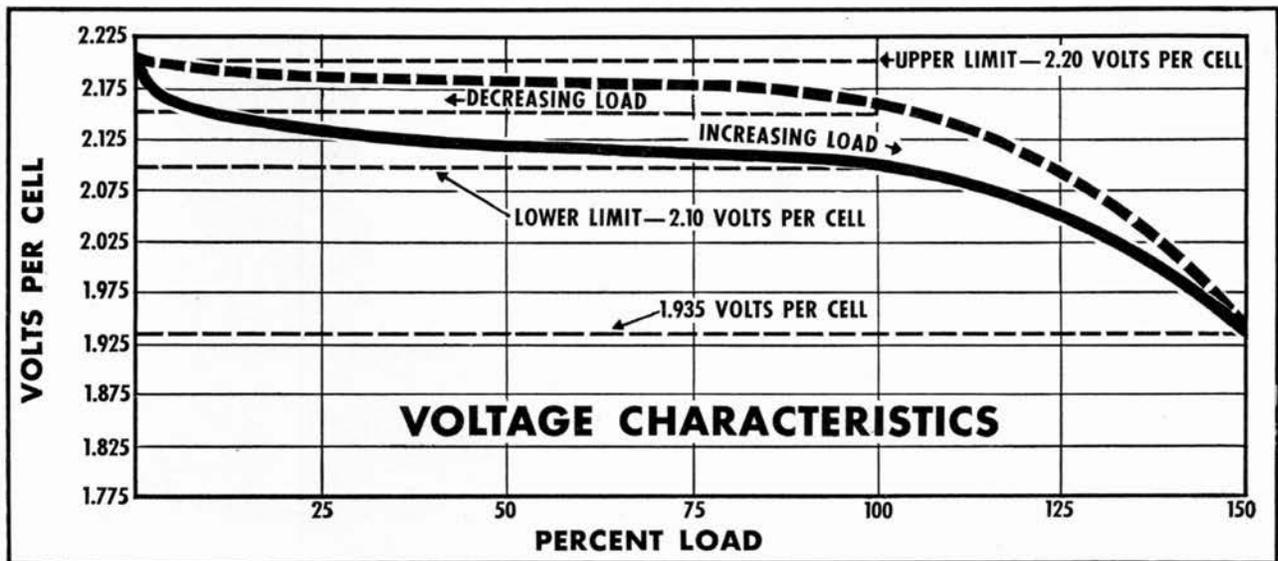
The following advantages are assured to the users of Diverter Pole Motor-Generator Sets:

DECREASE IN RELAY MAINTENANCE. Stable and low-cost operation of the sensitive exchange relays is assured by maintaining the D.C. voltage within close limits. This minimizes weak coil action and consequent service disruption from low voltages and also the pitting and burning of contacts due to voltages that are too high.

INCREASED BATTERY LIFE. This is accomplished by eliminating the dangers of both low and high voltages. Low voltages cause dim lights which are hazardous and high voltages lead to high battery temperatures, excessive gassing and undue breaking down of the active cell materials.



Typical Diverter Pole Motor-Generator



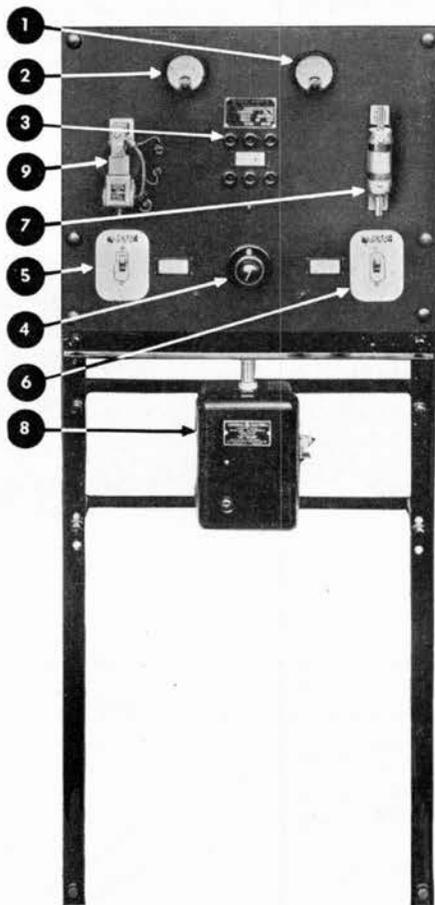
Typical voltage curve under load

BATTERY CHARGING EQUIPMENT (Cont.)

Diverter Pole Motor Generators (Cont.)

IMPROVEMENT IN VOICE TRANSMISSION. Assured constant value of the output voltage means efficient transmission. Excessively high voltages not only make transmitters noisy but exposes them to permanent damage while low voltages reduce their efficiency.

PROTECTION OF SIGNAL LIGHTS. Signals that are not dependable are almost worse than none at all. Low voltages cause dim lights which can easily disrupt exchange operation. On the other hand high voltages necessitate frequent replacements due to burn-outs.



Typical Open-Type Board

Automatic Control

Automatic control of Diverter Pole Motor-Generators may be obtained either in dead-front panels or in open-type. The standard size of the dead-front type is 24" by 90" while the open type is designed to fit its particular application. The equipment mounted on each type of board is basically the same.

1. Generator Ammeter.
2. Voltmeter with suppressed zero for accurate setting of the floating charge voltage.

Automatic Control (Cont.)

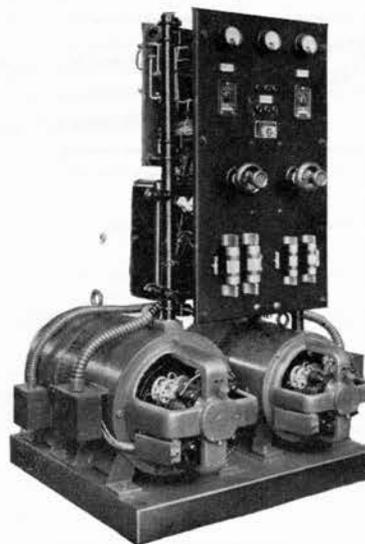
3. Voltmeter Plug to permit reading either the generator or the voltage.
4. Generator Field Rheostat is vernier type which provides exceedingly close adjustment of the generator voltage. Has a 10% tap for field forcing.
5. Motor Starter Control Switch.
6. D-C Contactor Control Switch.
7. Generator Fuse. (Mounted on back of dead-front design.)
8. Three-Pole A-C Magnetic Contactor for motor starting is equipped with thermal overload protection. (Mounted on back of dead-front design.)
9. One D-C Contactor, interlocked with the A-C Contactor, disconnects the generator during a power interruption, thereby conserving battery capacity. Upon restoration of power, the D-C Contactor closes automatically. (Mounted on back of dead-front design.) Auxiliary contact for field forcing control.
10. Every panel is painted with a rust-proof primer and then given an attractive exterior finishing coat.

Parallel Operated Sets with Remote Control

For highest efficiency, the ideal installation is two or more Diverter-Pole Motor-Generators operating in parallel with completely automatic control.

Not only is efficiency maintained at the maximum, but also a safety factor is positively assured. Wear is minimized. All manual attention is eliminated.

The inherent characteristics of the Diverter-Pole Generator permits the utmost economy in power consumption by using only one generator at very light loads. For heavier loads, the second generator starts automatically to share the load and shuts down automatically when the load decreases.



Two 100-ampere, 23-cell Diverter-Pole Chargers with completely automatic controls

BATTERY CHARGING EQUIPMENT (Cont.)

Raytheon Rectichargers

Raytheon Rectichargers are complete charging units employing dry disc rectifier elements with no moving parts used for the development of direct current from the AC city mains.

Codes **RCR-2013-A, 2013-B** and **2016-A, 2016-B** are constructed with an electronic control circuit for the stabilization of varying line voltage whereas the other models employ a magnetic control circuit. The electronic circuits are used to conserve space and give closer control in the higher amperage ratings.

The following description and claims of the manufacturer indicate the application of the Recticharger to modern methods of supplying power for small exchanges and PBX's.

The Raytheon Recticharger carries the normal current demand, and it is usually possible to use smaller batteries, particularly when compared to cycle charging. The Recticharger's constant potential method of charging these batteries lengthens their life and fewer renewals are necessary.

A small storage battery is floated across the terminals of the Recticharger and the combination of the two makes a complete AC to DC telephone power unit.

When the load current demand is less than the Recticharger rating, the Recticharger supplies all the current required and, at the same time, delivers to the battery a trickle charge of the right amount to make up for internal battery losses and to prevent destructive chemical action. If the current demand exceeds the rating, the excess is supplied by the battery. When the load drops back to a value below the Recticharger rating, the Recticharger output remains at its rated value. The difference between the Recticharger rating and the load current is thus supplied to the battery until it is fully charged. The principal cause of the failure of batteries to reach their maximum life expectancy is due to the under-charging and over-charging that results from the use of non-automatic battery chargers.

The principal components of a Recticharger are:

1. Dry Disc Rectifying Units
2. A.C. Stabilizer
3. D.C. Stabilizer
4. Trickle Rate Adjuster
5. Overcharge Switch
6. D.C. Voltmeter

With either line or load change, the Recticharger holds the DC output voltage within the close limits required for best operation of PBX switchboards.

Advantages

NO RECTICHARGER MAINTENANCE and battery maintenance reduced to the occasional addition of water to replace evaporation. **SMALLER BATTERIES REQUIRED.** Saving in battery cost may pay for the Recticharger.

BATTERY LIFE LENGTHENED by reducing its activity to a minimum and preventing overcharging.

THE RECTICHARGER COMES COMPLETE with instruments and all controls so there is no extra equipment to purchase.

TRICKLE RATE can be manually adjusted to meet the battery manufacturer's specifications for longest battery life.

A FRESHENING CHARGE for the battery is possible.

NO SURGING of the Recticharger output. This prevents increased battery activity through what in effect would be a cyclic charge.

DC OUTPUT VOLTAGE automatically held practically constant at



View of interior apparatus of the Raytheon Recticharger

any output current and with as much as plus or minus 15% change in AC line voltage.

RECTICHARGER PROTECTED against overload by automatically limiting the maximum current output to a safe value.

Available Rectichargers

Magnetically Controlled Models

Code No.	Batt. Cells.	D.C. Amp. Output	Width	Size in Inches Depth	Height
RCR-1066	11-12	1.0	14½	7½	14⅞
RCR-1073	11-12	2.0	14½	9½	14⅞
RCR-1058	11-12	3.0	19	11	21
RCR-1067	11-12	6.0	19	15¼	28
RCR-1068	22-24	1.0	14½	9½	14⅞
RCR-1076	22-24	2.0	19	11	21
RCR-1069	22-24	3.0	19	15¼	28
RCR-1070-B	22-24	6.0	19	15¼	28

Electronically Controlled Models

Code No.	Batt. Cells.	D.C. Amp. Output	Length	Size in Inches Width	Height
RCR-2013-A	11-12	12.0	20⅞	16 29/32	15 3/16
RCR-2016-A	11-12	24.0	27⅞	16 29/32	15 3/16
RCR-2013-B	22-24	6.0	20⅞	16 29/32	15 3/16
RCR-2016-B	22-24	12.0	27⅞	16 29/32	15 3/16

NOTE: Electronically controlled Rectichargers may be operated on an input voltage of 115 or 230 volts, 50 or 60 cycles, one-phase.

Rectichargers for XY Systems

The following Rectichargers should be specified for use with Stromberg-Carlson XY Systems:

Code No.	Type	Output
W-6158	Constant Voltage Charger	48V 6Amp
W-6166	Constant Voltage Charger	48V 12Amp
W-6156	Constant Current Charger	48V 6Amp
W-6156	Modified Constant Charger	48V 6Amp
W-6157	Recticharger (For Converter)	24V 2Amp

The above Constant Voltage Chargers and Constant Current Chargers which mount on XY System frames may be combined as follows:

Output Required	Constant Voltage Charger	Constant Current Charger
12 Amperes	W-6158	with W-6156
18 Amperes	W-6166	with W-6156 Modified

STROMBERG-CARLSON

BATTERY CHARGING EQUIPMENT (Cont.)

Rectox Battery Chargers



Rectox Battery Charger shown open

The Rectox Battery Charger is a completely dry, non-chemical, metallic oxide rectifier, consisting of copper discs which have been oxidized on one side, so that current can pass through in one direction, only. This permits their use in converting alternating current to direct current, suitable for many applications requiring a relatively small amount of power. The use of a Rectox Battery Charger offers the following advantages:

TROUBLE-FREE OPERATION. Rectox Battery Chargers contain no liquids, no bulbs, nor moving parts. Life tests over six years show no limitation in the rectifying elements. The absence of moving parts eliminates maintenance and replacement problems. Rectox Rectifiers cause no radio interference.

CONSERVATIVE CAPACITY. Rectox Rectifiers have at least 35% extra capacity to take care of any deterioration due to sustained and abnormal operating conditions. They will deliver their rated output years after they have retired their investment.

OPERATION. Rectox chargers are designed to have what approaches a constant-current characteristic; i.e. for any given adjustment the charging current will not vary greatly as the battery voltage changes. This is to minimize the effect of the charging rate of fluctuation in line voltage. In operation the charger is set to deliver a rate that approximates the average load on the battery, plus the amount necessary to take care of the battery losses. It is then only necessary to check the battery occasionally to see whether the rate chosen is correct and is maintaining the battery at proper voltage.

ECONOMICAL OPERATION. Overall efficiency of the complete outfit varies from 30% to 50% depending upon the type and rating.

CONSTRUCTION. In general a Rectox battery charger consists of a full-wave Rectox rectifying unit, an insulating transformer, a rheostat or dial switch, terminal board and fuses, all mounted in a ventilated sheet steel case in crackle finish.

Standard Rectox Battery Chargers

Standard Type Chargers—May be used successfully with separate converter batteries, tripping batteries or wherever "charging hum" is not objectionable or where their use does not produce noise in the main battery of the exchange.

Cat. No.	Description
842028	Rectifier with rheostat current adjustment. Height—14 inches, Width—10 $\frac{3}{8}$ inches, Depth—8 $\frac{1}{8}$ inches. Approximate net weight—28 lbs. Charges 12 cells from .05 to 1 ampere. Operates on 115 volts A.C., 50-60 cycles. Equipped with Ammeter.
899754	Rectifier with dial switch current adjustment. Height—20 $\frac{1}{4}$ inches, Width 10 $\frac{5}{16}$ inches, Depth—12 $\frac{3}{8}$ inches. Approximate net weight—74 lbs. Charges 12 cells from .1 to 3 amperes. Operates on 115 volts A.C., 50-60 cycles. Equipped with ammeter.

TELEPHONE TYPE CHARGERS. For the application of Rectox Chargers to telephone use a suitable reactor in the DC output circuit has been added. This reduces the amount of the ripple in the charging current to a value that will assure quiet operation of the telephone system.

Telephone Type Chargers

Cat. No.	Description
842034	Telephone Rectifier with rheostat current adjustment. Height—14 inches, Width—10 $\frac{3}{8}$ inches, Depth—8 $\frac{1}{8}$ inches. Approximate net weight—28 lbs. Charges 12 cells from .05 to .5 amperes. Operates on 115 volts A.C., 50-60 cycles. This Rectifier is used for charging CTMH-2 cells, supplying switchboards up to 100 lines capacity.
899753	Telephone Rectifier with dial switch current adjustment. Height—20 $\frac{1}{4}$ inches, Width—10 $\frac{5}{16}$ inches, Depth—12 $\frac{3}{8}$ inches. Approximate net weight—82 lbs. Charges 12 cells from .1 to 3.0 amperes. Operates on 115 volts A.C., 50-60 cycles. Equipped with ammeter. This rectifier is used for charging PTMH-2 cells, supplying No. 106 PBX's or No. 106 Non-Multiple Switchboards.

BATTERY ELIMINATORS

Raytheon Rectifiers

Raytheon Rectifiers furnish a desirable method of obtaining direct current telephone power directly from an alternating current source of supply. The manufacturers' claims and descriptions which follow show the economies and service which this modern way of supplying telephone power provides.

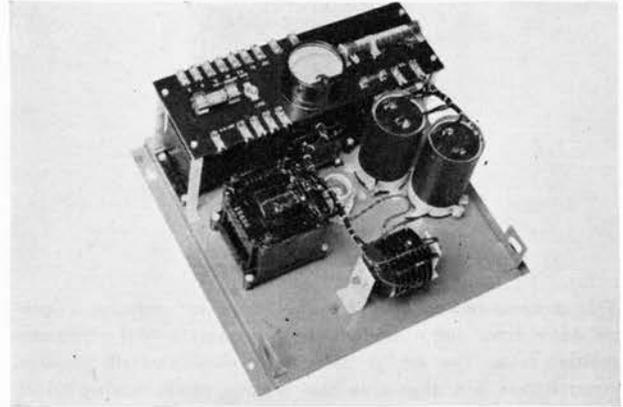
- A. Outlasts many sets of batteries.
- B. Eliminates the trouble and expense of routine service for battery inspection.
- C. Releases conductors carrying charging current or supplying power between central office and PBX Switchboards, for revenue producing purposes.
- D. Minimizes power cost because of high efficiency in converting AC to DC.

Many large telephone companies have found it desirable to replace their present PBX power installations with Raytheon Rectifiers and to equip new installations with this modern means of supplying power.

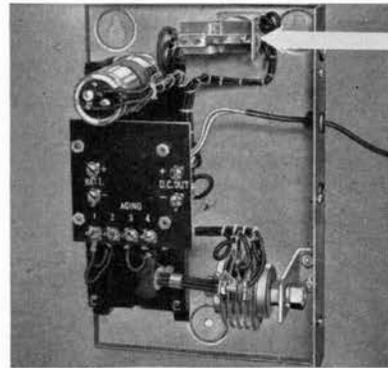
Output power ratings indicated in the following table are conservative and it will not be necessary to derate any of them by adding a safety factor. Ratings are based upon two assumptions; first, the Rectifiers must be installed in live air and second, they must be placed where the maximum ambient temperature does not exceed 95° F. If higher temperature conditions normally exist, write for suggestions before making your selection of the proper unit.

Change of source relays may be added to any model and this is indicated by adding "R" to the code in cases where this designation is not already shown. This relay automatically disconnects the Rectifier and connects an outside source of power such as dry cells or storage batteries in its place whenever there is a power failure. When the AC power returns, the Rectifier is automatically switched back into service. Stromberg-Carlson recommends the use of Rectifiers equipped with change of source relays for all telephone switchboard installations.

Rectifier No. 1044-E and all larger sizes are equipped with DC stabilizing circuits requiring no adjustment nor maintenance.



No. 1044-E Rectifier with Cover Removed



No. 1057-R Rectifier

Complete Specifications of Rectifiers using Dry Plate Rectifying Units
Input 110-125 volts AC Single Phase

Catalogue Number	DC Output for Talking		No Load Output Volts	Full Load Output Volts	AC Supply Freq.	60 Cycle Output for Ringing		Cabinet Size in inches			Ship'ng Weight Lbs.
	Volts	Amps.				Volts	Amps.	Wide	Deep	High	
*RFR-1057-R	4	0.23	—	4	50/60	None	—	7	6 1/4	10 1/2	13
RFR-1024	6	0.5	8.5	5.5	50/60	6-12-18-24AC	4.0	7	6 1/4	10 1/2	12
RFR-1028-A	6	1.0	8.5	5.5	50/60	6-12-18-24AC	4.0	7	6 1/4	10 1/2	14
RFR-1026	12	0.5	15.5	11.5	50/60	6-12-18-24AC	4.0	7	6 1/4	10 1/2	14
RFR-1027	24	0.5	28	20	50/60	6-12-18-24AC	4.0	7	6 1/4	10 1/2	19
RFR-1027-R	24	0.5	28	20	50/60	6-12-18-24AC	—	1027 with change of source relay	—	—	19
RFR-1044-E	24	1.0	26	24	60	6-12-18-24	4.0	14 1/2	7 5/8	14 1/8	63
RFR-1044-ER	24	1.5	26	24	60	75-100AC	—	1044-E with change of source relay	—	—	63
RFR-1043-R	24	1.5	26	24	60	—	—	1043 with change of source relay	—	—	69
RFR-1040-R	24	3.0	26	24	60	24vDC	—	1040 with change of source relay	—	—	81
RFR-1041	24	4.5	26	24	60	24vDC	—	19	12	14 1/8	142
RFR-1042	24	6.0	26	24	60	24vDC	—	19	12	21 1/2	179
RFR-1082	48	3.0	52	48	60	48vDC	—	19	12	21 1/2	170
RFR-1079	48	4.0	52	48	60	48vDC	—	19	15 3/16	28	169
RFR-1080	48	6.0	52	48	60	48vDC	—	19	15 3/16	28	180

Change of source relays can be supplied on all models. When not listed, order by adding suffix "R". Example, RFR-1041-R.

*RFR-1057-R Rectifier, with change of source relay, supplies current for one or two magneto switchboard operator's sets and takes the place of dry cell batteries.

STROMBERG-CARLSON

RINGING MACHINES

Magneto Ringing Set MG-125 Type



Holtzer-Cabot
MG-125 Magneto Ringing Set

This compact two-bearing motor-generator set contains a squirrel cage motor and a magneto type generator with permanent magnet rotor. The design completely eliminates all brushes, commutators and slip rings and insures continuous operation over long periods of time without attention. Operation is quiet, causes no interference with radio reception and has close voltage regulation. All terminals are mounted on insulating blocks recessed in the base with facilities for direct conduit connection. An insulating transformer is furnished with each set to prevent accidental demagnetization of the rotor.

The set operates on 115-volt, 60-cycle, single phase supply and delivers 80 volts, 19 cycles at 15 watts maximum output. Required floor space is 11 5/16" x 7 1/2" for the ringing set and 5" x 5" for the transformer. Shipping weight is 75 lbs. Where standby supply is required, a ringing dynamotor may be employed.

Ringling Dynamotor HD Type



Holtzer-Cabot
HD-13 Ringing Dynamotor

Ringling dynamotors operate from 48-volt battery supply and deliver 19 cycles at 115 volts, no load, and 80 volts at rated load. They are useful as standby sets for AC driven magneto ringers or as a principal source of ringing current where voltage variations are not excessive and where space and cost are important. Where tone and interrupter equipment are required, a separately driven interrupter should be employed or a motor-generator ringing set should be used. Time limit automatic starters are provided on sets of 75-watt output and above.

Cat. No.	Watt Output	Floor Space	Shipping Weight
HD-1430	30	11 1/2" x 8"	70 Lbs.
HD-13	50	16" x 9"	150 Lbs.
HD-12	75	18 1/2" x 9 3/4"	175 Lbs.
HD-1	150	20" x 10 1/2"	225 Lbs.
HD-2	300	24" x 14"	300 Lbs.

Four and Five Frequency Harmonic Ringing Motor-Generator Sets 25 Watt Output

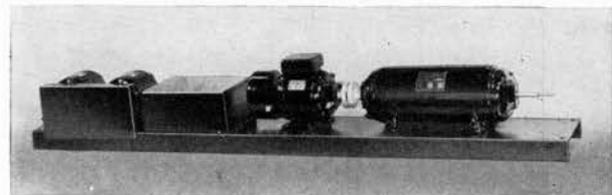
These ringing motor-generator sets supply constant frequency ringing current for harmonic party line installations, and are trouble-free in operation. A speed governor is used for both AC and DC motor driven sets, holding the ringing frequencies constant.

The generator rotors consist of Alnico castings eliminating brushes and slip rings. One generator supplies four frequencies and together with the motor and accessories is mounted on a channel iron base. See cut. The generator outputs are 16 2/3, 33 1/3, 50 and 66 2/3 cycles, 25 watts at each frequency, at voltages of 75, 100, 135 and 175 volts (at no load) respectively. When a fifth frequency (25 cycles, at 100 volts) is required, it is added in the form of a separate unit, and mounted on a long base with the four-frequency set. For AC supply, the fifth frequency set consists of a synchronous motor belted to a 25-watt, 25-cycle generator having an Alnico rotor. For DC supply, the fifth frequency is furnished by a 25-watt, 25-cycle dynamotor equipped with a speed governor.

An insulating transformer is needed for each frequency except the fifth frequency supplied by the dynamotor. These transformers are mounted on the channel iron base and are protected by a steel enclosing cover.

A shaft extension is provided on the generator. This may be used for mounting a tone commutator and for driving a slow speed spring type interrupter when either of the latter is specified. Limit, eight circuits.

Cat. Listing	Motor	Floor Space	Weight Lbs.
Item 1	115 V., 60 cycle, single phase	62" x 10"	325
Item 2	24 V., DC	60" x 10"	325
Item 3	48 V., DC	60" x 10"	325
Subscript F	Fifth Frequency, 25 cycles	82" x 10"	550
Subscript I	Interrupter—Specify circuits and timing	No Change	Add 20 Lbs.
Subscript T	Tone Commutator (133-400C)	No Change	Add 5 lbs.



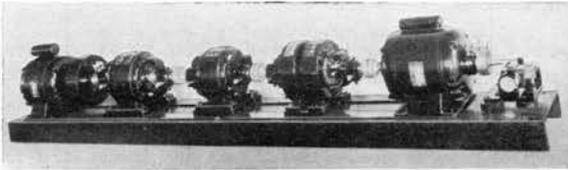
Holtzer-Cabot 5-Frequency Harmonic
Ringing Motor-Generator 25 Watt, AC Driven

50 and 150 Watt Output

These motor-generator sets are the accepted standard for harmonic ringing. The design inherently produces a wave form free from harmonics within the ringing range, but with sufficient harmonics in the higher range to provide audible ringing. Frequencies are held within $\pm 1\%$ under all normal operating conditions. Tone and interrupter equipment may be furnished as an integral part of the sets.

Standard frequencies are 16 2/3, 33 1/3, 50 and 66 2/3 cycles at 100, 125, 150 and 160 volts, no load, respectively. Where the fifth frequency is required, this is provided at 25 cycles at 125 volts. Special voltages may be obtained by the use of transformers which will be provided on order.

RINGING MACHINES (Cont.)



Holtzer-Cabot 4-Frequency Harmonic Ringing Motor-Generator 50 Watt, AC Driven

This equipment is available as companion sets, one for normal AC power operation and a DC standby operating from the main battery. The alternating current sets consist of two induction motors with magnetic coupling governors insuring a shaft speed of 1000 rpm. and four or five generators for the specified frequencies. One of these generators provides 230-volt exciter current for all generators and governors and coin collect current. One transformer with center tap for coin collect is supplied on all sets. Plus and minus 115 volts is supplied at .25 amperes in 50-watt and .5 amperes in 150-watt sets. This improved method eliminates all drain from the exchange battery for normal power operation. All of the units are connected in line on a heavy reinforced welded base. The DC standby set consists of one motor and field control governor, four generators for the harmonic frequencies, one of which provides exciter and coin collect current as above. Where the fifth frequency is required, a dynamotor with field control governor is provided. A time limit automatic starter is provided for each DC set and an across-the-line starter is provided for the 150-watt AC set.

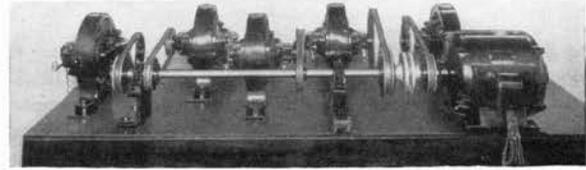
Cat. Listing	Watt Output	Motor	Floor Space	Shipping Weight
Item 1	50	48 volts, DC	89" x 12"	675
Item 2	50	115 V., 60 cycle, single phase	89" x 12"	675
Item 3	50	230 V., 60 cycle, three phase	89" x 12"	675
Subscript F	Same as above plus fifth frequency		103" x 12"	1150
Subscript I	Interrupter—Specify circuits and timing		No change	Add 20 lbs.
Item 4	150	48 volts, DC	94" x 13"	1260
Item 5	150	115-230 V., 60C, single phase	94" x 13"	1260
Item 6	150	220-440V., 60C., three phase	94" x 13"	1260
Subscript F	Same as above plus fifth frequency		117" x 13"	1360
Subscript I	Interrupter—Specify circuits and timing		No change	Add 20 lbs.

Four and Five Frequency Synchronic Motor-Generator Ringing Sets 25, 50 and 150 Watt Output

Each set consists of one motor belted to four or five separate generators. Four-frequency sets produce 30, 42, 54, and 66 cycles at 125, 125, 150 and 160 volts, no load, respectively. Where a fifth frequency is required, it may be either 16 or 20 cycles at 100 volts. Item 9F, 150-watt, five frequency set is illustrated.

These are available as companion sets for either AC or DC drive. DC drive motors are supplied with governors. The 25-watt sets use Alnico rotors and an insulating transformer is provided for each frequency. 50- and 150-watt sets have one generator which provides exciter current for all generator fields, and one transformer, center tapped for coin collect voltages. Time limit automatic starters are furnished for the 50- and 150-watt DC driven sets. Starters are provided for 150-watt AC driven sets.

Where tone and interrupter equipment is required, a separate motor driven interrupter, independently mounted, should be specified.



Holtzer-Cabot 5-Frequency Synchronic Motor-Generator 150 Watt, AC Driven

Cat. Listing	Watts Output	Motor	Floor Space	Weight Lbs.
Item 1	25	24 V., DC	48"x18"x14"	500
Item 2	25	48 V., DC	48"x18"x14"	500
Item 3	25	115 V., 60 cycle, single phase	48"x18"x14"	500
Subscript F	Same as above plus 5th frequen. Specify whether 16 or 20 cycles.		56"x18"x14"	550
Item 4	50	48 V., DC	68" x 36"	1000
Item 5	50	115-230 V., 60 C., single phase	68" x 36"	1000
Item 6	50	220-440 V., 60 C., three phase	68" x 36"	1000
Subscript F	Same as above plus 5th frequen. Specify whether 16 or 20 cycles.		68" x 36"	1050
Item 7	150	48 V., DC	84 1/2" x 28"	1400
Item 8	150	115-230 V., 60 C., single phase	84 1/2" x 28"	1400
Item 9	150	220-440 V., 60 C., three phase	84 1/2" x 28"	1400
Subscript F	Same as above plus 5th frequen. Specify whether 16 or 20 cycles.		84 1/2" x 28"	1450

A.C. VOLTAGE STABILIZERS

The Raytheon Voltage Stabilizers find a direct application wherever it is desirable to keep voltage outputs constant within a small degree of variation. They are used successfully with telephone apparatus which operates best with a constant voltage output. Other equipment such as laboratory apparatus, sound recorders and amplifiers find a definite application for stabilized voltages.

Raytheon Stabilizers hold their output voltages to within plus or minus 1/2%. For instance variations of input A.C. voltages from 95 to 130 are held to 115 volts plus or minus 1/2%.

This stabilizer consists of two transformers with primaries in series. Like all magnetic stabilizers, one transformer operates at high magnetic density. The transformer with the higher saturation is partially resonated by means of a condenser. The secondaries of the two transformers are connected in series opposed. By proper design this results in the various voltages adding up vectorially to give the desired output changes which compensate for differences of individual voltages and result in constant output.

Following is typical table of stabilizers which can be provided. Other voltage and frequency input stabilizers can be furnished upon application.

Input 95-130 Volts 60 Cycles Output 115 Volts plus or minus 1/2%

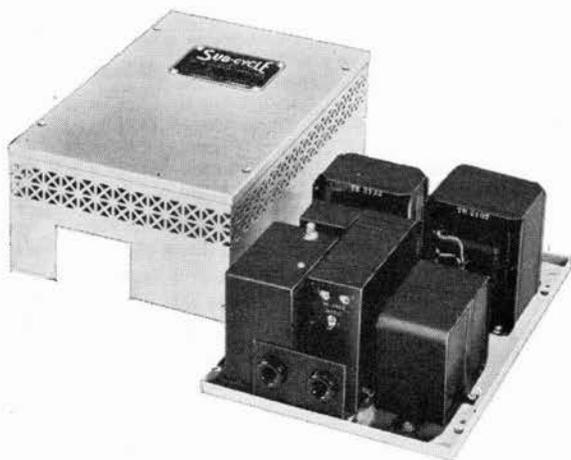
Code No.		Watts	Net Weight
VR-1	with case	30	8 lbs.
VR-1-A*	with case	30	8 lbs.
VR-2	with case	60	18 lbs.
VR-3	with case	120	26 lbs.
VR-4	with case	250	46 lbs.
VR-5	with case	500	70 lbs.
VR-6	with case	1000	140 lbs.
VR-7	with case	2000	200 lbs.
VR-107	less case	30	6 lbs.
VR-107-A*	less case	30	6 lbs.
VR-207	less case	60	16 lbs.
VR-307	less case	120	22 lbs.
VR-407	less case	250	36 lbs.

*Output of VR-1-A and VR-107-A is 6.0 or 7.5 volts plus or minus 1/2%.

SUB-CYCLE RINGING CONVERTER

MODEL "BX"-60 SUB-CYCLE

The Sub-Cycle Converter is a static type ringing generator designed to start and operate directly from the commercial 105-125 volt 60 cycle AC circuits. Other models are available for operation on 50 cycle supply. The Sub-Cycle Frequency Converters operate without moving parts, and supply an output frequency which is a fixed fraction of the input frequency. In the regular models that are here shown the output frequency is 1/3 the input frequency. Thus, 20 cycle current is supplied from a 60 cycle source depending upon the model selected. When a 50 cycle unit is used, 16 2/3 cycle ringing current is supplied from the 50 cycle source.



Model "BX"-60 Sub-Cycle

Because the frequency is changed without moving parts of any kind, the Sub-Cycle is the ideal ringing converter for all types of exchanges. These converters are guaranteed to be non-interfering to radio reception. All parts are housed in metal.

The most popular sizes of Sub-Cycles are: Model M7.5 for PBX use, Model S and BX for regular service and the Model CC for heavy duty service. The Model SP is used when pulsating ringing is required.

Outstanding Sub-Cycle Features

- Provides Ample power
- No routine maintenance required
- Cannot interfere with radio reception
- Economical in service
- Quiet operation
- Output voltage regulation very close between no load and full load

Sub-Cycle Converters contain:

- No moving parts
- No vibrators
- No vibrating contacts
- No Bearings to lubricate
- No Brushes nor commutators
- No Vacuum Tubes nor lamps
- No filters

Accessories for Sub-Cycle Ringing Converters

T-2259 Auxiliary Transformer

This transformer is used with Models "BX"-60 or "S"-60 input to provide a DC path for superimposed ringing.

Supplies two voltages, 95 or 130, at no load.

T-155. An autotransformer to step down 230 volts 50/60 cycle.

May be used with 105-125 Volts. Will operate Models M, S or BX from 230 Volt Supply.

Sub-Cycles for Operation from 60 Cycle Single Phase Supply

Model	Number of Stations up to	Duty Ringing	Input Voltage	20 Cycle Output RMS Values—unless stated			Size			Shipping Weight in Lbs.	Finish
				No load Volts	Full load	Watts	High	Wide	Long		
M-7.5-60	100	Light	105-125	90	75	7 1/2	6 5/8	5 1/8	11 1/4	18	Black Wrinkle
S-60	1600	Regular	105-125	90	75	15-20	5 3/4	9 5/8	14 1/8	35	Black Wrinkle
SP-60	1600	Pulsating	105-125	110 peak	— peak	15-20	5 3/4	9 5/8	14 1/8	36	Black Wrinkle
BX-60	1600	Regular	105-125	90	75	15-20	5 3/4	9 5/8	14 1/8	36	Gray Enamel
SP-LB-60	1600	Pulsating—tubes in series with ringers	105-125	135 peak	— peak	15-20	5 3/4	9 5/8	14 1/8	42	Black Wrinkle
CC-60	4000	Heavy	105-125 or 210-250	90 or 130	75 or 100	45	6 1/8	10 1/8	16 3/8	68	Black Wrinkle
CCP-60	4000	Pulsating	105-125 or 210-250	160 peak	— peak	45	6 1/8	10 1/8	16 3/8	70	Black Wrinkle
CB-60	4000	Pulsating	105-125	90 or 115	75 or 100	45	5 3/4 front, 5 1/2 rear	12 7/32 x 1 1/8	23 1/16	115	Gray Lacquer

Sub-Cycles for Operation from 50 Cycle Single Phase Supply

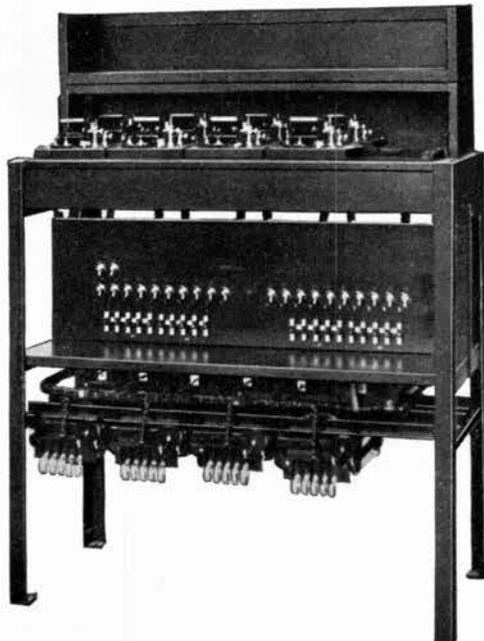
M 7.5-50	100	Light	105-125	90	75	7 1/2	6 5/8	5 1/8	11 1/4	20	Black Wrinkle
M GB-50	100	Light	210-250	90	75	7 1/2	6 5/8	5 1/8	11 1/4	20	Black Wrinkle
S-50	1600	Regular	105-125	90	75	15-20	5 3/4	9 5/8	14 1/8	40	Black Wrinkle
SP-50	1600	Regular Pulsating	105-125	110 peak	— peak	15-20	5 3/4	9 5/8	14 1/8	40	Black Wrinkle
BX-50	1600	Regular	105-125	90	75	15-20	5 3/4	9 5/8	14 1/8	41	Gray Lacquer
SGB-50	1600	Regular	210-250	90	75	15-20	5 3/4	9 5/8	14 1/8	40	Black Wrinkle
CC-50	4000	Heavy	105-125 or 210-250	90 or 130	75 or 100	45	6 1/8	10 1/8	16 3/8	75	Black Wrinkle
CCP-50	4000	Heavy Pulsating	105-125 or 210-250	160 peak	— peak	45	6 1/8	10 1/8	16 3/8	75	Black Wrinkle

STROMBERG-CARLSON

CONVERTERS

Multi-Frequency Ringing

These converters transform direct current obtained from 12 cells of storage battery, to ringing frequencies for use with tuned frequency signaling systems. They are of the vibrating type.



No. 6-A Converter, four frequency, with vibrator compartment shown open

Each standard converter is equipped with duplicate sets of both vibrators and transformers, so that a complete double ringing machine is included in each assembly. They are also provided with radio interference eliminators. All equipment including transformers, vibrators, fuses and terminals are mounted on a steel rack. The converter assembly has the following dimensions: Length 3' 1", Depth 1' 5", Height 3' 7 1/8".

The standard multi-frequency converters are listed below:

Stock No.	Code	Description	No. of Party
800567	(6-A)	16 2/3, 33 1/3, 50, 66 2/3, Freqs.	4 Pty.
800568	(6-B)	30, 42, 54, 66 Freqs.	4 Pty.
800569	(7-A)	16 2/3, 25, 33 1/3, 50, 66 2/3 Freqs.	5 Pty.
800570	(7-B)	20, 30, 42, 54, 66 Freqs.	5 Pty.

Although it is not standard practice, any of the above converters may be equipped with a single set of transformers.

When this arrangement is desired, specify the code number, and one set of transformers.

The above listed converters are used to provide party line ringing service for the larger exchanges and operate indefinitely with the maximum degree of efficiency. Only occasional replacement of contact springs and screws are necessary, together with the usual check-up of frequencies and voltages.

Converter Battery and Charging Equipment

In operating harmonic converters with telephone systems, a separate converter battery is recommended, associated with a trickle charge rectifier or other charging machine.

The use of the separate battery has many distinct advantages, among them are the following:

1. Absolute elimination of ringing noise in main battery.
2. Voltage at converter remains constant.
3. No voltage fluctuation in primary, steadies ringing output voltages.
4. Tone potentials from converter induce no noise in main battery.
5. Eliminates necessity for automatic switching equipment.

Battery and Rectifier Requirements for Converter Installations

4 Party, No. 6-A or No. 6-B Converters

No. of Lines	Type of Battery	Type of Charger	Charging Rate
24 Hour reserve battery capacity			
100-1000	PTMH-2	No. 842028	.05-1.0 Amp.
1000-2000	ETMH-2	No. 899754	0.1 -3.0 Amp.
2000-2500	DMGO-5	No. 899754	0.1 -3.0 Amp.
12 Hour reserve battery capacity			
100- 500	CTMH-2	No. 842028	.05-1.0 Amp.
500-1400	PTMH-2	No. 842028	.05-1.0 Amp.
1400-2000	ETMH-2	No. 899754	0.1 -3.0 Amp.
2000-2500	DMGO-5	No. 899754	0.1 -3.0 Amp.

5 Party, No. 7-A or No. 7-B Converters

No. of Lines	Type of Battery	Type of Charger	Charging Rate
24 Hour reserve battery capacity			
100- 500	ETMH-2	No. 842028	.05-1.0 Amp.
500-2000	ETMH-2	No. 899754	0.1 -3.0 Amp.
2000-2500	DMGO-7	No. 899754	0.1 -3.0 Amp.
12 Hour reserve battery capacity			
100- 500	PTMH-2	No. 842028	.05-1.0 Amp.
500-1300	PTMH-2	No. 842028	.05-1.0 Amp.
1300-2000	ETMH-2	No. 899754	0.1 -3.0 Amp.
2000-2500	DMGO-5	No. 899754	0.1 -3.0 Amp.

Battery chargers specified are Westinghouse "Rectox" type—operate from 115 volt, 50-60 cycle A.C. supply circuits. Raytheon Rectichargers of equal capacity are highly recommended where initial cost is not a deciding factor. They are self regulating and automatically adjustable to the load, whereas straight rectifiers are hand regulated and require the attention of the maintenance man.

Converter Accessories and Parts

Vibrators

The following numbers apply to complete vibrating units.

Stock No.	Code	Coil Stock No.	Armature Stock No.	Description
802544	(1-F)	12261	13771	33 1/3 Cycle
802545	(1-G)	12262	13772	50 Cycle
802546	(1-H)	12263	13737	66 2/3 Cycle
802543	(1-E)	12264	13773	16 2/3 Cycle
802547	(1-I)	12264	13773	20 Cycle
802548	(1-J)	12263	13737	60 Cycle
802549	(1-K)	12261	13771	30 Cycle
802550	(1-L)	12262	13772	42 Cycle
802551	(1-M)	12262	13772	54 Cycle
802552	(1-N)	12261	16706	25 Cycle

Transformers

Code numbers given below are used in all new converters and replace old Stromberg-Carlson and Garford codes.

Stock No.	Code	Description
802506	(6-E)	16 Cycle
802507	(6-F)	30, 33, 42 Cycle
802508	(6-G)	50, 54 Cycle
802509	(6-H)	60-66 Cycle
	(6-J)	20 Cycle

CONVERTERS (Cont.)

Miscellaneous Parts

Multi-Frequency Ringing

Stock No.	Description
13031	Contact Screw
13032	Contact Spring (Old Style)
13717	Contact Spring (New Style)
13033	Motor Spring
13034	Spring Stop, Single
13035	Spring Stop, Double
13036	Locking screw
800527	Condenser (5 mf)
800277	Impedance (No. 18-A)

Single Frequency Ringing



No. 1 Single Frequency Converter

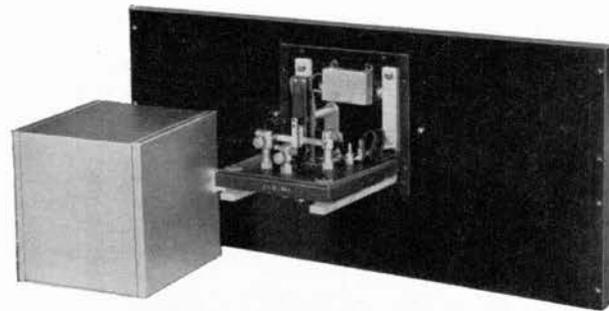
The No. 1 Type Converter is a single frequency ringing machine and operates from storage batteries only. The vibrating and transformer units are constructed similarly to the No. 6 and No. 7 Converters described in more detail on accompanying pages. It is suitable for exchanges up to 2000 subscribers. Size: 12" x 12" and stands 14½" high.

Stock No.	Code	Description
800559	(1-A)	Single frequency converter 16 cycle
800560	(1-B)	Single frequency converter 20 cycle
800561	(1-C)	Single frequency converter 25 cycle

Noise Killer equipment normally provided when converter operates off main exchange battery; consists of 1 No. 18 Impedance Coil, 1 Fansteel FT-10 Condenser, 2 five amp. fuses and fuse blocks.

Power Converters

The general construction of the No. 8 Power Converter is similar to the Nos. 6 and 7 Vibrating Ringing Converters. Instead of being arranged to furnish generator current for ringing purposes, it is a single frequency type designed to furnish emergency power at 110 volts, 60 cycles for the operation of Stromberg-Carlson ringing interrupter machines and electrically operated calculagraphs.



No. 8 Power Converter with dust cover removed

The power circuit in which the No. 8 Converter usually operates is designed so that the converter starts automatically in case of power failure and ceases operation when city power is restored. The No. 8 Converter operates from twelve (12) cells of storage battery and delivers approximately twenty (20) watts of power at 110 volts, 60 cycle.

This is sufficient to drive a maximum of two Stromberg-Carlson A.C. operated interrupters and five Calculagraphs. It provides a very satisfactory source of power for emergencies and insures continuous service by its instantaneous operation.

As this converter is generally used with the standardized power terminal unit, it is arranged for relay bay mounting. The panel is 26 inches long, finished in dull black, and mounts on 25½ inch centers. Width is 11 9/16 inches. The vibrator, which extends 7 inches from the front of the panel, is encased in a sheet steel light finished cover. The equipment is fused and terminated for ready connection to the power circuit.

Stock No.	Code	Description	Vibrator Used	Transformer Used
800571	(8-A)	Power converter	1-H	6-H

No. 9 Type PBX Ringing Converter

This unit is designed to convert 48 or 24 volt battery current to 18-22 cycle ringing current for PBX service. The equipment includes a vibrator, transformer, impedance coil and a network to prevent radio interference.

Used in PBX Circuits that include a converter starting relay such as No. 381-A.

Stock No.	Code	Description	Frequency Cycles	Battery used
800572	(9-A)	Converter (less housing)	18-22	48 Volt
800573	(9-B)	Converter (less housing)	18-22	24 Volt

NOTE: The above converters, without housings will mount directly on a standard relay rack.

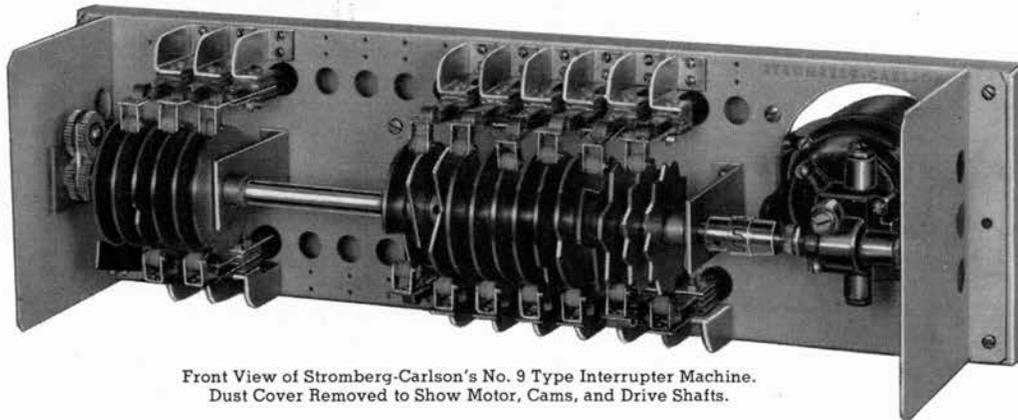
When furnished with a housing consisting of a metal box and cover the following stock numbers should be specified:

Stock No.	Code	Description	Frequency Cycles	Battery used
200745	(9-A)	Includes box	18-22	48 Volt
200746	(9-B)	Includes box	18-22	24 Volt

Parts of No. 9-A and No. 9-B Converters

Description	No. 9-A		No. 9-B	
	Stock No.	Code	Stock No.	Code
Vibrator	803471	(3-A)	803472	(3-B)
Coil (Vibrator)	35525		35524	
Transformer	34436		34436	
Impedance Coil	800320	(501)	800320	(501)
Condenser Assembly	800537	(40-A)	800537	(40-A)
Terminal Strip	33965		33965	
Box assembled	34901		34901	

STROMBERG-CARLSON INTERRUPTER MACHINE
New Multiple-Use, High-Low Motor Driven Unit



Front View of Stromberg-Carlson's No. 9 Type Interrupter Machine.
 Dust Cover Removed to Show Motor, Cams, and Drive Shafts.

The Stromberg-Carlson Motor-Driven Interrupter machine — designed by telephone engineers for telephone use, answers a long-felt need in the industry. The engineers' problem was to design a machine that was versatile, easily powered, inexpensive in first cost and easily maintained. Their objective has been accomplished; the Interrupter now stands with the XY Switch and other fine products which have made the name Stromberg-Carlson a symbol for quality with the telephone industry.

Versatility

The need for accurately timing and interrupting a circuit has grown apace with each new substitution of electrical power for the slower, less accurate hand operation. New needs are continually arising, as more manually controlled functions are converted to automatic service. The Stromberg-Carlson Interrupter recognizes the many known uses in telephony: harmonic, superimposed or code ringing, busy signal, alarm, conversation timing, warning tone, automatic cut-off and lock-out. It is adapted for timing sequences in many other industries: laundries, foundries, plastic centers, bakeries. A growing use is with intermittent electric displays.

Construction Features

The unusual feature of the Stromberg-Carlson Interrupter which multiplies its value, is the complete interchangeability of all the working parts.

THE MOTOR, a standard purchased item with specially built-in reduction gearing, can be removed and replaced in 30 seconds. This can be supplied for D.C., or for 50 or 60 cycle, 115 Volt A.C. The two precision-cut couplings mesh securely without adding to motor load.



Interchangeable Motor Unit, furnished in DC, and 50 or 60 cycle AC, showing coupling to shaft.



Removable Snap-Action Switch, showing jack-in feature and mounting screws which also control adjustment.

STROMBERG-CARLSON

PROTECTORS—CENTRAL OFFICE

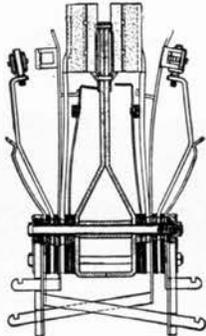
Cook Type

Telephone lines require protection against high potentials and sneak currents. Central office protectors are mounted on main distributing frames in the terminal room of the exchange to afford convenience in testing and maintenance.

When operated, the modern protector opens the circuit, grounds the line and operates an alarm signal. To reset, the operating spring is relatched over the heat coil ratchet. No coil to change, turn or resolder.

Line connections are provided on one side of the protectors, and switchboard connections are provided on the other side. Current carrying parts are insulated with hard rubber and terminals are held in place rigidly by bakelite.

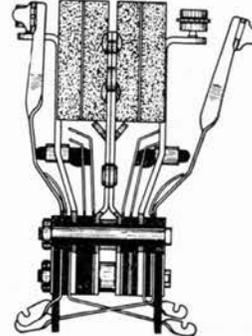
Low resistance heat coils, approximately $3\frac{1}{2}$ ohms, will carry .35 amperes for three hours, and will operate within 210 seconds on .5 ampere in an ambient temperature of 68° F.



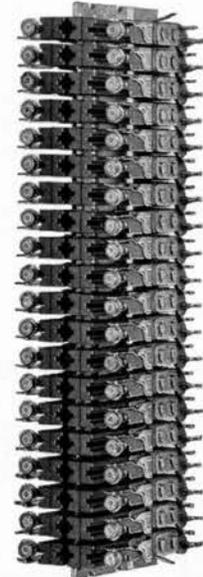
Line Swbd.
Cross Section of No. 3800 Protector



Twenty Pair Bank, No. 3800
Central Office Protector



Line Swbd.
Cross Section of No. 100 Protector



Twenty Pair Bank, No. 100
Central Office Protector

No. 3800 Protector

The protector pairs mount on $\frac{3}{8}$ " centers. The mounting plate is cadmium plated steel and arranged to fasten directly to the main frame shelf channels. Springs are nickel silver of ample strength to give positive operation and permanent pressure between lightning arrester and ground plate. Unit dischargers are standard in these lightning arresters. They are made of two carbons separated by an acetate dielectric and cemented together—air gap .003". They will permanently ground under continuous discharge and can be easily installed or removed.

Temporary disconnects can be made by opening the circuit with a thin insulator inserted between the outside spring and the spring holding the heat coil. The No. 3800 Test Plug is used for testing the outside lines, the heat coils and the switchboard circuit.

No. 3800 Type Cook Protector Cat. No.	Description	Dimensions (Inches)		
		Length	Width	Depth
380-1320	20 Pair bank complete	8 $\frac{5}{8}$	3	4 $\frac{3}{4}$
380-1321	21 Pair bank complete	9	3	4 $\frac{3}{4}$
380-1351	51 Pair bank complete	20 $\frac{1}{4}$	3	4 $\frac{3}{4}$
380-1361	101 Pair bank complete	39	3	4 $\frac{3}{4}$
380-60	No. 3800 Test Plug			
380-30	No. 3800 Heat Coil			
380-130	Unit Discharger with .005" Dielectrics.			

Net weight per 100 pairs—23 pounds.

No. 100 Protector

This protector mounts on $\frac{1}{2}$ " centers per pair. Heavy carbon and heat coil holding springs insure a positive permanent pressure between the lightning arrester carbons and ground. Lightning arresters consist of two grooved carbons separated by an acetate dielectric .005" thick and will permanently ground under continuous discharge.

Temporary disconnects can be made by inserting a tooth-pick through the slot of the carbon to keep the ground and alarm spring from making contact before releasing the operating spring.

The No. 100 Test Plug is used for testing the outside lines, the heat coils and the switchboard circuit.

No. 100 Type Cook Protector Cat. No.	Description	Dimensions (Inches)		
		Length	Width	Depth
360-1210	10 Pair bank complete	5 $\frac{1}{2}$	2	3 $\frac{1}{2}$
360-1220	20 Pair bank complete	10 $\frac{1}{2}$	2	3 $\frac{1}{2}$
360-70	No. 100 Heat Coil			
370-10	No. 100 Test Plug			
41-11	Acetate Dielectric .005"			
41-1281	Carbons			
41-2612	Unit Dischargers			

Net Weight per 100 pairs—17 pounds.

TESTING EQUIPMENT

Testing Equipment—Frequency Meters

These vibrating reed meters have the advantage of being direct-reading by the vibration of tuned reeds when connected across the ringing current supply. They have separate groups of reeds, with five reeds in each group for indicating as many as five different normal frequencies. Portable and switchboard models are standard. The switchboard models are made for front-of-board mounting (No. 5145) and also for flush mounting (No. 5145-F)

Biddle Code No.	Description
5145	Switchboard Model. Mounts on front of board and operates from 115 or 230 Volts. For normal frequencies of 16 2/3, 25, 33 1/3, 50 and 66 2/3 cycles.
5145-F	Switchboard Model. Same as No. 5145 but designed for flush mounting.
5144	Switchboard Model. Same as No. 5145 except normal frequencies which are 20, 30, 42, 54 and 66 cycles. Also operates from 115 or 230 Volts.
5144-F	Switchboard Model. Same as No. 5144 but designed for flush mounting.
6145	Portable Model. Otherwise the same as No. 5145.
6144	Portable Model. Otherwise the same as No. 5144.

Test Bell Boxes

No. 1-A Type Bell Box (see Section B) serves to make rapid routine checks of converter ringing current.

HC Escapement Type

In this type of meter frequencies are measured by counting the impulses over a given period—usually a minute. When tests are made in this way a stop watch can be used to advantage for timing.

H-C Code No.	Description
209010	Escapement frequency meter

No. 433 Type Voltmeters

This is a Weston instrument recommended for accurately measuring AC ringing voltages. The No. 433 AC is a portable model with large scale opening that permits good visibility of the long, hand-calibrated mirror scales. For use on frequencies from 25 to 125 cycles.

Weston Code No.	Description
433	A.C. Portable Voltmeter. Range 300/150. Approximate resistance 22000/11000 Ohms.

INTERRUPTER MACHINES

Stromberg-Carlson Interrupter Machines are designed for long life and economy of operation. The mounting of the No. 1 Interrupter is especially arranged as a unit to be used in connection with the standardized power terminal assembly. The interrupter base is drilled for mounting on 2 1/2 inch centers and is 26 inches long, by 5 1/4 inches wide. It is, therefore, suitable for installation on a standard line relay rack.

The motor used to drive the interrupter shaft is of the alternating current disc type with very low current consumption. An Alnico magnet which may be adjusted by a screw driver, takes care of the slight variations which may be necessary to govern correct speed. The cams which move the springs operate against bronze rollers, thereby reducing friction and wear. The interrupter springs are arranged in pairs, the "break" contact being on one set and the "make" contact on the other. By the proper timing of the actuating springs the "break-make" contacts, necessary for ringing current interruption, is produced.

Standard timing of each ringing circuit is 1 1/2 seconds "On," 4 1/2 seconds "Off". The interrupter spring timing is also arranged so that the ringing of the various frequencies, in multi-frequency sets, does not occur simultaneously, but is spread to occur alternately. The flashing recall contacts operate at 90 changes per minute—45 "On" intervals and 45 "Off" intervals.

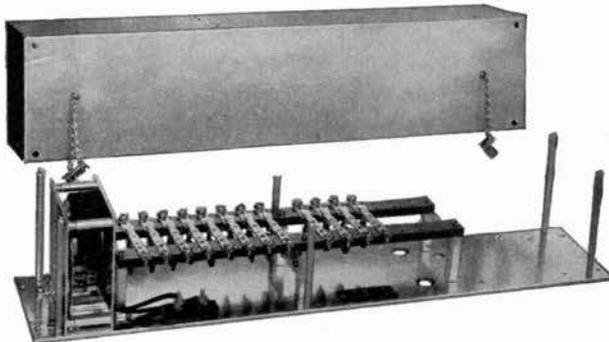
Contacts of the interrupter springs are made of heavy precious metal capable of carrying 15 amperes per contact. The complete machine assembly is mounted on a base of 1/8" sheet steel and the springs are securely fastened on 3/16" sturdy phenolic bars having high insulation. A sheet steel, light finished, dust cover is arranged to enclose all working parts. This cover is securely fastened in place by hexagonal nuts which are chained to the case, thus preventing loss.

Standard equipment for the No. 1 Interrupter is 7 sets of "break-make" contacts for ringing current interruption and 1 set of make contacts for flashing recall. This machine is used with switchboards employing four or five party machine ringing.

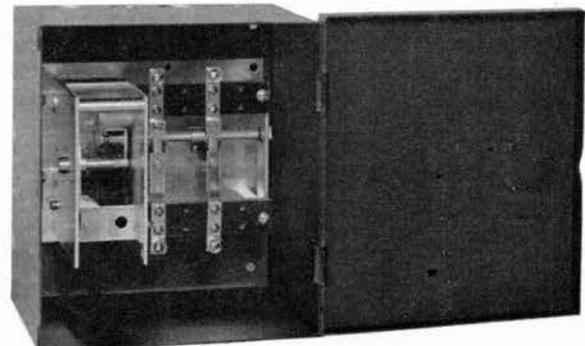
No. 2 and No. 3 Interrupters are single frequency machines, mounted in a small compact steel case with inside dimensions as follows: height 8", width 7", depth 6".

The cases of both the No. 2 and No. 3 Interrupters are finished throughout in a light color. "Knock-Outs" are provided on each side, to permit ready access for wiring. The No. 2 unit provides single frequency interruption only. The No. 3 provides single frequency interruption plus flash recall.

Code No.	Description
1	Used with 4 or 5 party ringing and flash recall
2	Used with single frequency ringing
3	Used with single frequency ringing and flash recall



No. 1 Interrupter with dust cover removed



No. 2 Interrupter with open door

STROMBERG-CARLSON

PROTECTORS—CENTRAL OFFICE

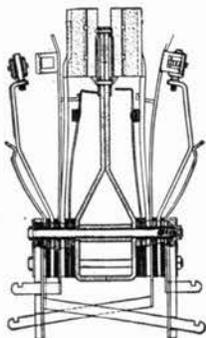
Cook Type

Telephone lines require protection against high potentials and sneak currents. Central office protectors are mounted on main distributing frames in the terminal room of the exchange to afford convenience in testing and maintenance.

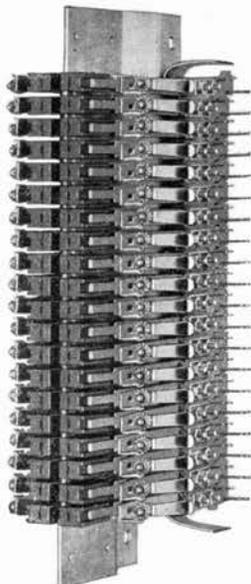
When operated, the modern protector opens the circuit, grounds the line and operates an alarm signal. To reset, the operating spring is relatched over the heat coil ratchet. No coil to change, turn or resolder.

Line connections are provided on one side of the protectors, and switchboard connections are provided on the other side. Current carrying parts are insulated with hard rubber and terminals are held in place rigidly by bakelite.

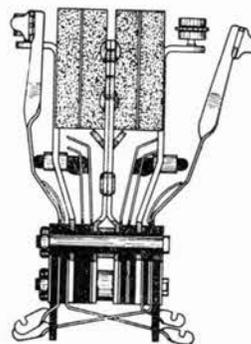
Low resistance heat coils, approximately $3\frac{1}{2}$ ohms, will carry .35 amperes for three hours, and will operate within 210 seconds on .5 ampere in an ambient temperature of 68° F.



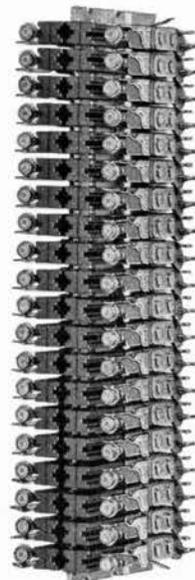
Line Swbd.
Cross Section of No. 3800 Protector



Twenty Pair Bank, No. 3800
Central Office Protector



Line Swbd.
Cross Section of No. 100 Protector



Twenty Pair Bank, No. 100
Central Office Protector

No. 3800 Protector

The protector pairs mount on $\frac{3}{8}$ " centers. The mounting plate is cadmium plated steel and arranged to fasten directly to the main frame shelf channels. Springs are nickel silver of ample strength to give positive operation and permanent pressure between lightning arrester and ground plate. Unit dischargers are standard in these lightning arresters. They are made of two carbons separated by an acetate dielectric and cemented together—air gap .003". They will permanently ground under continuous discharge and can be easily installed or removed.

Temporary disconnects can be made by opening the circuit with a thin insulator inserted between the outside spring and the spring holding the heat coil. The No. 3800 Test Plug is used for testing the outside lines, the heat coils and the switchboard circuit.

No. 3800 Type Cook Protector Cat. No.	Description	Dimensions (Inches)		
		Length	Width	Depth
380-1320	20 Pair bank complete	8 $\frac{5}{8}$	3	4 $\frac{3}{4}$
380-1321	21 Pair bank complete	9	3	4 $\frac{3}{4}$
380-1351	51 Pair bank complete	20 $\frac{1}{4}$	3	4 $\frac{3}{4}$
380-1361	101 Pair bank complete	39	3	4 $\frac{3}{4}$
380-60	No. 3800 Test Plug			
380-30	No. 3800 Heat Coil			
380-130	Unit Discharger with .005" Dielectrics.			

Net weight per 100 pairs—23 pounds.

No. 100 Protector

This protector mounts on $\frac{1}{2}$ " centers per pair. Heavy carbon and heat coil holding springs insure a positive permanent pressure between the lightning arrester carbons and ground. Lightning arresters consist of two grooved carbons separated by an acetate dielectric .005" thick and will permanently ground under continuous discharge.

Temporary disconnects can be made by inserting a tooth-pick through the slot of the carbon to keep the ground and alarm spring from making contact before releasing the operating spring.

The No. 100 Test Plug is used for testing the outside lines, the heat coils and the switchboard circuit.

No. 100 Type Cook Protector Cat. No.	Description	Dimensions (Inches)		
		Length	Width	Depth
360-1210	10 Pair bank complete	5 $\frac{1}{2}$	2	3 $\frac{1}{2}$
360-1220	20 Pair bank complete	10 $\frac{1}{2}$	2	3 $\frac{1}{2}$
360-70	No. 100 Heat Coil			
370-10	No. 100 Test Plug			
41-11	Acetate Dielectric .005"			
41-1281	Carbons			
41-2612	Unit Dischargers			

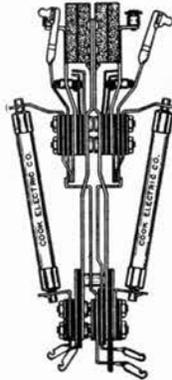
Net Weight per 100 pairs—17 pounds.

STROMBERG-CARLSON

PROTECTORS—CENTRAL OFFICE (Cont.)

No. 105 Protector

This is a combination of the No. 100 Protector with line fuses. Fuses are composition type, 4 3/4" long and blow at 3 amperes. This type of protector is frequently used on toll and long distance lines.



Line Swbd.
Cross Section of No. 105 Protector

No. 105 Type Cook Protector Cat. No.	Description	Dimensions (Inches)		
		Length	Width	Depth
392-1510	10 Pair bank complete	5 1/2	3	7
392-1520	20 Pair bank complete	10 1/2	3	7
360-70	No. 105 Heat Coil			
370-10	No. 105 Test Plug			
41-1281	Carbon			
41-11	Acetate Dielectric .005"			
41-2612	Unit Discharger			
214-2203	Fuse, A-22 Type, 3 Ampere			

Net weight per 100 pairs—41 pounds.

H-36 Type Protector

This protector is built in 10 and 20 pair banks, mounted on metal plates which may be installed on distributing frames. Chiefly used in rural communities where the distribution of light and power circuits does not warrant the use of heat coil type protectors.

Fuses are of the enclosed A-45 composition or A-46 Wood Type which blow at 1 ampere. They are held in place under positive tension by nickel silver springs, but may be easily removed and replaced.

Standard carbon block lightning arresters are provided, which use "U" shaped dielectrics .005 inches thick.

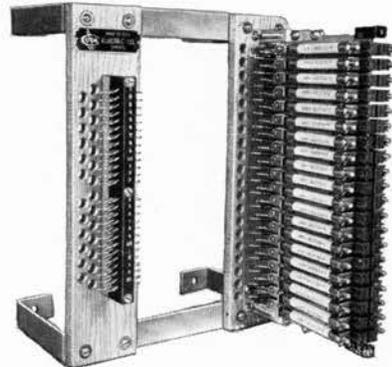
No. H-36 Type Cook Protector Cat. No.	Description	Dimensions (Inches)		
		Length	Width	Depth
296-3610	10 Pair bank complete	5 1/2	1 1/2	5 1/2
296-3620	20 Pair bank complete	10 1/2	1 1/2	5 1/2
306-4501	A-45 Composition Fuse — 1 ampere			
307-4601	A-46 Wood Fuse 1 ampere			
41-2001	Grooved Carbon			
41-3001	Plain Carbon			
41-11	Acetate Dielectric .005"			
41-190	Tru Gap Discharger			

Net weight per 100 pairs—21 pounds.

WALL TYPE DISTRIBUTING FRAMES

Cook Type L-9

The Type L9 Wall Distributing Frame is intended for economical distribution and protection of limited capacity cable and especially for installation in small exchanges.



Type L-9 Wall Distributing Frame

The L-9 Wall Distributing Frame, made in 20, 40, 60, 80, and 100 pair sizes is designed to carry any Cook central office protector. The frame of the L-9 consists of two pieces of hard kiln-dried maple, one drilled and arranged for, and equipped with line terminals: the other drilled and milled for mounting the protectors and two heavy mounting brackets of bar iron finished in durable paint.

Standard Sizes of L-9 Frames

Cable Side	Protector Side
26 Pairs	20 Pairs
52 Pairs	40 Pairs
78 Pairs	60 Pairs
102 Pairs	80 Pairs
130 Pairs	100 Pairs

Equipment

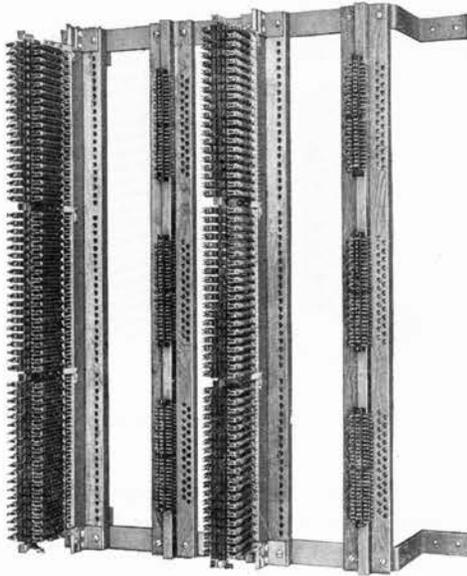
Cat No.	Line Terminals	Protectors	Height	Net Wgt. Pounds
361-1050	20 Pairs	None	1' 1"	10
361-1052	40 Pairs	None	1' 11 1/2"	18
361-1054	60 Pairs	None	2' 10"	32
361-1056	80 Pairs	None	3' 8 1/2"	46
361-1058	100 Pairs	None	4' 7"	60

On a following page is shown the comparable wall distributing frame manufactured by Reliable Electric Co. Stromberg-Carlson recommends either of these frames to its customers. For a more complete description of Protector Equipment and Distributing Frames turn to the Supply Division of this Catalog where they will be found under Section Q.

WALL TYPE DISTRIBUTING FRAMES (Cont.)

Reliable Type

For use where space does not permit the installation of floor type frames, compact wall units employing either the Reliable 303 or 308 Type Switchboard Protectors provide accessible and substantial terminal facilities for small exchanges.



Reliable Wall Distributing Frame
with 303 Protectors

Each unit consists of Switchboard Protector mounting bar and fanning strip in one vertical and one vertical of 112F molded line terminal strips; all mounted on a substantial painted steel frame. Switchboard protectors should be ordered in addition to the unit as follows:

Protectors with carbons and saw-tooth discharge blocks associated with fuses:

Code No.	Description
303-F	Protector, Two No. 106 Fuses (No Heat Coil)
303-H	Protector, Two No. 107 Heat Coil Fuse

Protectors with carbon block and dielectric assemblies associated with fuses:

Code No.	Description
308-F	Protector, Two No. 114 Fuses (No. Heat Coil)
308-H	Protector, Two No. 115 Heat Coil Fuses

NOTE: No alarm systems are provided with above types.

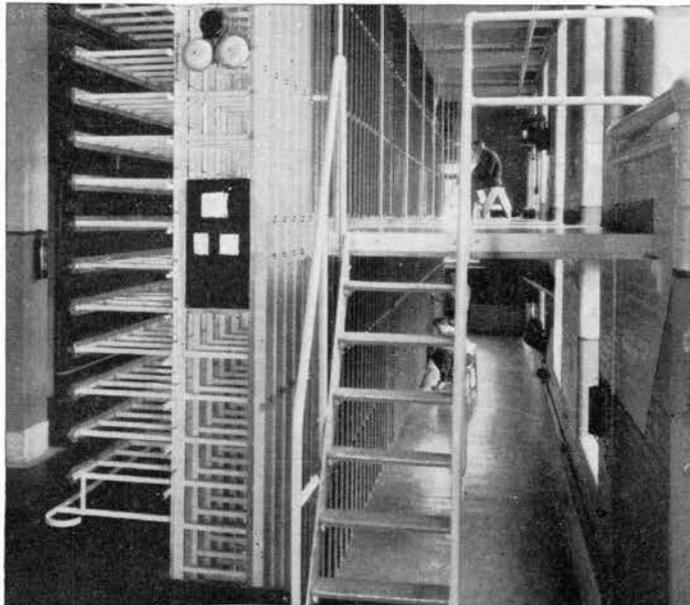
The new Reliable 112-F type line terminal strips are made of high grade precision molded phenolic plastic.

Each strip consists of a fanning type base on which are mounted unit terminal strips containing 20 or 26 solder coated bronze soldering terminals. The base can be furnished with one to six rows of terminal strips.

The sturdy units are molded with a black lustrous finish and provide excellent dielectric qualities with high surface insulation resistance.

The bases, 2 3/4" wide and 8" long, are supplied with interlocking steel brackets for vertical or horizontal installation on main frames, straight brackets for general use.

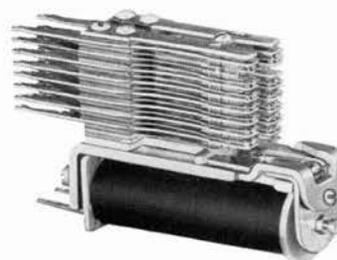
Catalog numbers carry number of rows and number of terminals per row: e.g. 112F 4x26. The top of the terminal block will be numbered as specified.



Typical Protector Installation in a Large Multiple Manual Exchange

STROMBERG-CARLSON

Component Parts



In this section are the component parts and sub-assemblies most frequently ordered for expansion or replacement purposes. Each unit is coded for easy ordering.

CODED PARTS

	Page		Page
Buzzers	88	Patching	18
Cable, Switchboard	29	Receiver	26
Card Frames	63	Switchboard	16
Circuit Plates	5	2 Conductor, Tinsel, Nylon	17
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Impedance	6	Terminal	27
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STROMBERG-CARLSON CODED PARTS

The Right Part

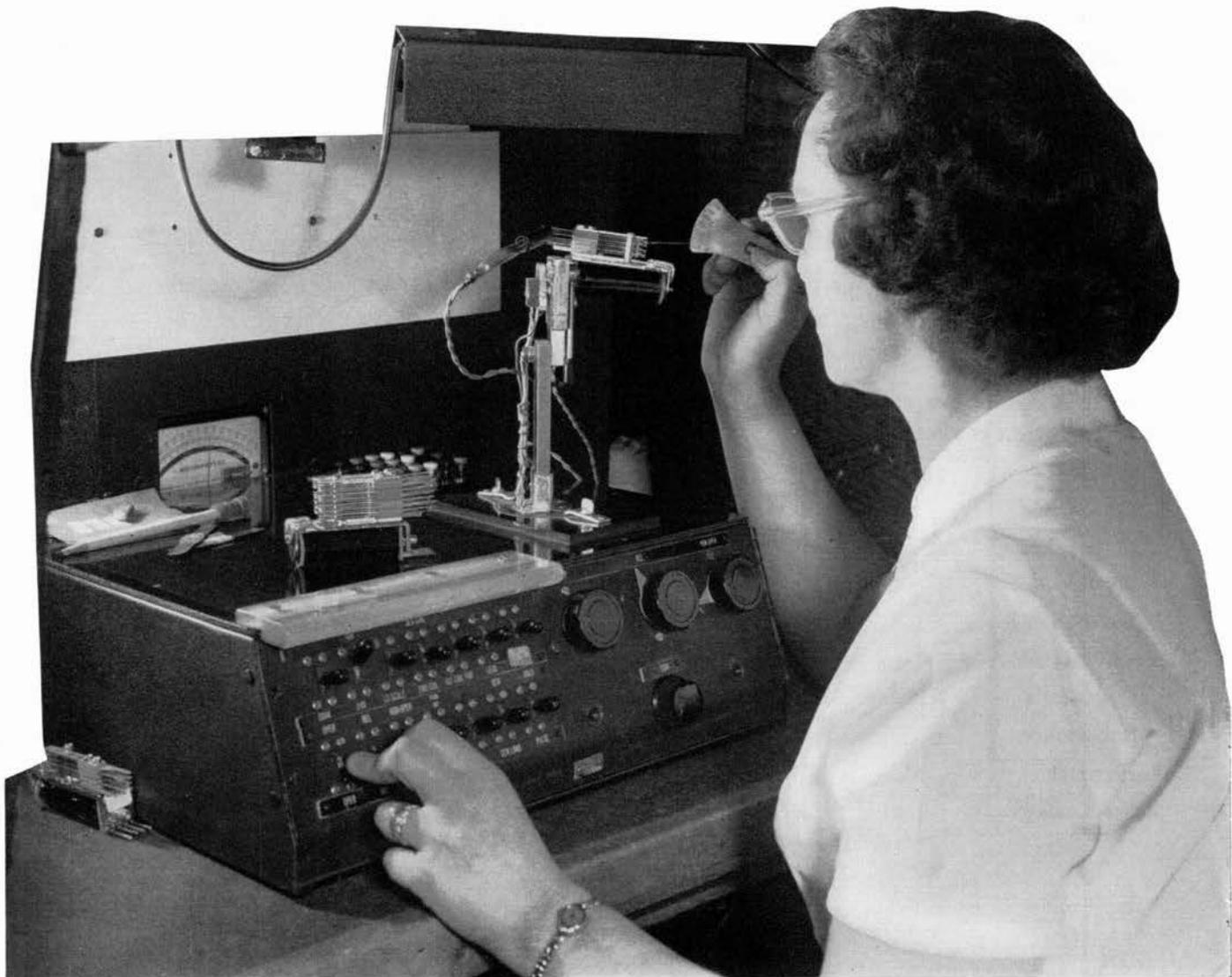
Whether for additions or replacement, only the correct part will perform its proper function in the apparatus. Every effort is made to present in this section complete descriptions of parts so that correct ordering will be easy.

Parts for Older Systems

The practical limitations of catalog size prevent the inclusion of many parts that were once standard but are no longer used in present equipment. If the wanted part is not shown, a reference to the Serial Number of the switchboard or the Code Number of the apparatus will expedite ordering.

Emergency Service

The company will do all in its power to help you prevent service interruptions. Instructions phoned or wired to the Service Manager will be handled as an emergency.



CODED PARTS FOR TELEPHONE AND SWITCHBOARDS

For convenience in ordering replacements or adding to existing equipment, the most generally used parts and sub-assemblies—as well as complete apparatus—have been given code numbers. Code numbers or stock numbers are plainly stamped on the parts, so that replacements can usually be made by number and name of part. The necessary hardware for mounting is included in all shipments under code number.

For additions or replacements on older installations it is advisable to give the type and number of the switchboard, telephone or other equipment for which the apparatus is needed, as the original parts may have been replaced by more modern equivalents. Many items cannot be described in complete detail in this catalog. Your nearest Stromberg-Carlson representative will help you find the parts best suited to your own needs.

The coded parts shown here are arranged alphabetically so that they can be found easily; cross references are given where there might be alternate locations.

BLANKS

Blanks are available for neatly filling unequipped apparatus spaces of switchboard and other telephone equipment. Many different types are made for stock. Blanks which can be furnished are: Drop Blanks, Jack Blanks, Key Blanks, Plug Hole Blanks.



A Typical Key Blank assembled

DROP BLANKS—These blanks are available for covering the space required for one signal only or for groups of 5 or 10 signals on mounting plates used, in standard switchboards.
(Drop Blanks listed with Drops on a following page.)

KEY BLANKS to fill the space of key mountings. Both flush and surface mounting types can be furnished for Nos. 340 and 170 Type Cam Keys.

(Key Blanks listed with keys on a following page.)

JACK BLANKS are available in many sizes and styles for a wide variety of uses.

Many of these blanks are faced with black formica in a smooth, satin finish. Others are finished in golden oak, birch, mahogany, or dull walnut to meet specific needs. Some are edged with a white holly strip.

(Jack Blanks listed with Jacks on a following page.)

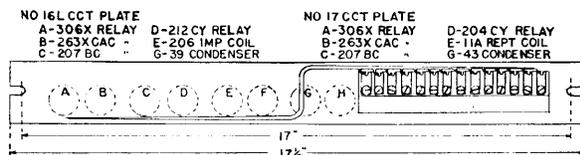
PLUG HOLE BLANKS to fill the space of switchboard plugs, of individual lamp sockets, and of individual round barrel keys.

Plug Hole Blanks are made of black composition material or fibre. They preserve the neat appearance of a switchboard, and prevent dust or dirt from settling in unequipped openings.

(Plug Hole Blanks listed with plugs on a following page.)

CIRCUIT PLATES

Circuit Plates for PBX Switchboards are listed below. Circuit Plates designed for use with Stromberg-Carlson XY Systems are ordered to specification and not described in this section. All Circuit Plates now have light finish.



Typical PBX Circuit Plates

Stock No.	Code	Description
800219-000	(1 AL)	PBX Trunk, Impedance Coil
800220-000	(2 BL)	PBX Trunk, Repeating Coil
800227-000	(6 AL)	PBX Dial Trunk, Impedance Coil
800249-000	(16-L)	PBX Impedance Coil (short)
800250-000	(17-L)	PBX Repeating Coil (long)

(The No. 17-L replaces No. 2 AL)

†800252-000	(19-L)	PBX Impedance Coil (short)
201763-000	(20)	PBX Impedance Coil (short)
201764-000	(21)	PBX Repeating Coil (long)
201021-000	(25)	PBX Impedance Coil (short)
201022-000	(26)	PBX Repeating Coil (long)

†Same as No. 17-L, but will mount an extra condenser.

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COILS—IMPEDANCE

Stock numbers, when associated with code numbers, cover completely assembled coils and parts for mounting. The stock numbers of coils indicate coils only, of the standard resistances specified.

No. 10 Type



This type impedance coil has an open magnetic circuit with two windings, parallel wound. Used in old style key boxes for selective talking, selective ringing intercommunicating systems. No. 4 x 1 1/4" RHIW screw used for mounting.

Stock No.	Code	Approximate Resistance
800265-000	(10-A)	35 x 35 Ohms
800266-000	(10-B)	100 x 100 Ohms

No. 13 Type

No. 13 Type consists of a No. 10-A Impedance Coil mounted on a maple base equipped with terminals. Has open magnetic circuit. One of these coils is used in each old style common talking, selective ringing intercommunicating system for feeding battery current. Mounts with two No. 8 RHIW screws.

Stock No.	Code	Approx. Resistance	Overall Dimensions
800268-000	(13-A)	35 x 35 Ohms	1 3/8" x 2 7/8" x 1 1/32"

No. 20 Type



No. 20 Type Impedance Coils have cross-talk-proof-shells similar to No. 25 Relay Casing. Mount on steel plate uniformly with a pair of No. 200 Type Relays. Used in common battery switchboards.

Stock No.	Code	Ohms Resistance
800280-000	(20-AL)	Broken Mag. Cct. 85 x 85

NOTE—Furnished with aluminum casing.

No. 21 Type

The No. 21-A Type Impedance Coil is mainly used in PBX switchboards on operator's circuits that require a battery feed supply. This coil is usually mounted at the bottom of the key pocket with two screws.

Stock No.	Code	Ohms Resistance	Used On
800281-000	(21-A)	140	PBX Operator's Circuit

No. 24 Type

The No. 24 Type is designed specifically for use as a retardation coil in light duty composite sets. In this application the use of this coil, with suitable circuit modification, will result in improved inductive balance between the signal legs in the side circuit as compared with the present circuit using Type 20AL Impedance Coils. The method of connecting Type 24 coils in a typical composite side circuit is shown below. The construction and magnetic structure for this coil is similar to that of the Type 21 Repeating Coils. Excellent inductance stability is obtained over a range of from 0-75 m.a. DC in the signal legs. It uses the same mounting and shell as for No. 21, No. 11, No. 13 Repeating Coils.

No. 24 Impedance Coils are recommended for use in all new composite circuits. They are recommended as replacements for 20AL coils in present field Composite sets if a pair of coils is to be replaced. In doing this the circuit must be modified as described.

Stock No.	Code	Use	Approximate Total DC Resistance (Ohms) Per Coil
204218-000	24	Composite Coil	105

No. 25 Type

The No. 25 type is designed specifically for use as a retardation coil in filter circuits of vibrator ringing generators. It uses the same mounting and shell as for the No. 21, No. 11 and No. 13 Repeating Coils.

Stock No.	Code	Use
210010-000	25	SA or PA in Filter Circuit of Vibrator Ringing Generator

No. 26 Type

The No. 26 type is designed for use as a retardation coil in the power supply of the tape announcer.

Stock No.	Code	Use
210899-000	26	Power Supply of Tape Announcer

No. 27 Type

The No. 27 type impedance coil is a shunt feed coil for intertoll dialing trunk circuits. Concentric wound. It uses the same mounting and shell as the No. 11 AL.

Stock No.	Code	Use	Approximate Total DC Resist. (Ohms) Per Coil
211677-000	27	Shunt Feed Coil for Intertoll Dialing Trunk Circuits	60 x 60

GENERAL INDEX

A complete alphabetical index with cross references for all the products shown in this section or any of the other sections will be found in the center of this catalog.

COILS—IMPEDANCE (Cont.)

No. 200 Type



Consists of the Stromberg-Carlson standard No. 200 Type Single Wound Relay Coil with iron frame. Has closed magnetic circuit, but requires the No. 25 Relay Casing to become cross-talk-proof. Mounts on steel plate uniformly with No. 200 Type Relays.

Stock No.	Code	Ohms Resistance	Stock No. Coil Wound
800288-000	(201)	5	12276-000
800289-000	(202)	15	12277-000
800290-000	(203)	70	12278-000
800291-000	(204)	100	15491-000
800292-000	(205)	200	12280-000
800293-000	(206)	500	12266-000
800294-000	(207)	1000	12267-000
40715-000	(208)	800	12281-000
800295-000	(209)	1500	12282-000
800296-000	(213)	320	15435-000
800297-000	(214)	2000	15436-000

No. 220 Type

The No. 220 Type Impedance Coil is similar to the No. 200 but equipped with two windings in tandem.

Stock No.	Code	Ohms Resist.	Stock No. Coil Wound
800299-000	(221)	65 x 65	12286-000
800300-000	(222)	100 x 100	12287-000
800301-000	(223)	200 x 200	12288-000
800302-000	(224)	500 x 500	12289-000
800303-000	(225)	1000 x 1000	12290-000
40716-000	(226)	75 x 75	12293-000
800304-000	(228)	8 x 8	12279-000

No. 240 Type

The No. 240 Type Impedance Coil is similar to the No. 200 but with concentric wound coils.

Stock No.	Code	Resistance	Stock No. Coil Wound
800306-000	(243)	100 x 350 N.I.	15197-000
201126-000	(245)	500 x 2000 N.I.	15199-000
800307-000	(249)	500 x 5000 N.I.	28268-000

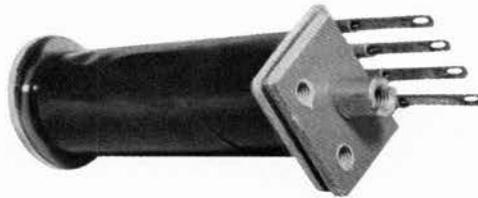
No. 300 Type



The No. 300 Type, Iron-clad cross-talk-proof Impedance Coil is used with No. 200 Relay and No. 25 Casing.

Stock No.	Code	Ohms Resistance	Winding	Stock No. Coil Wound
800309-000	(303)	50	Single	28725-000
800310-000	(304)	100	Single	15491-000
800311-000	(306)	500	Single	12266-000
800313-000	(321)	25 x 25	Tandem	28814-000
800314-000	(322)	100 x 100	Tandem	12287-000
800315-000	(323)	200 x 200	Tandem	12288-000
800316-000	(325)	1000 x 1000	Tandem	12290-000
800317-000	(326)	50 x 50	Tandem	12291-000
800318-000	(352-L)	100 x 100	Parallel	34430-000

Type "A" Relay Impedance Coil



These impedance coils mount like Type "A" Relays. They are used in XY Systems with Stock No. 36676-000 Bracket which will mount two coils of this type or one coil and one condenser.

The following coils are assembled without armatures and are inductively wound:

**Single Wound Coil
One Inductive Winding**

Complete Coil Stock No.	Ohms Resistance	Stock No. Coil Wound
36298-000	1350	36817-000
36299-000	560	36815-000
36300-000	350	36814-000
36302-000	2120	(single) 36818-000
36304-000	27	36808-000
36307-000	220	36813-000
36309-000	2700	36851-000
36310-000	214	36873-000
205350-000	100	36811-000
205351-000	850	36816-000
205353-000	140	36812-000
205354-000	67	36810-000
205355-000	1310	36875-000
205357-000	5500	36820-000
205358-000	250	36847-000
205360-000	8600	36821-000
205361-000	220	36813-000
205364-000	514	36871-000
205366-000	500	36848-000
205367-000	10	208529-000
205369-000	140	208530-000
205370-000	7	36805-000

**Concentric Wound Coil
Two Inductive Windings**

Complete Coil Stock No.	Ohms Resistance	Stock No. Coil Wound
36308-000	514 x 2020	36887-000
36291-000	2.5 x 130	36889-000
36292-000	38.7 x 38.4	36890-000
36295-000	0.10 x 200	36898-000
36305-000	200 x 200	200005-062
36301-000	1310 x 2020 (concentric)	36884-000
36303-000	79 x 2020 (concentric)	36893-000
205352-000	200 x 200	200005-072
205356-000	3 x 490	36925-000
205359-000	200 x 200	200005-072
205362-000	1000 x 1000	36958-000
205365-000	332 x 470	36205-000
205368-000	332 x 1200	36886-000
*205363-000	100 x 100	36985-000
205371-000	200 x 200	200005-072

*Equipped with armatures

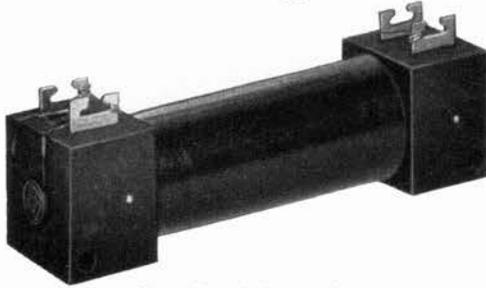
**Parallel Wound Coil
Two Inductive Windings**

Complete Coil Stock No.	Ohms Resistance	Stock No. Coil Wound
36293-000	175 x 175	36961-000
36296-000	1200 x 1200	36969-000
36297-000	280 x 280	36963-000
36306-000	1060 x 1060	36954-000

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COILS—INDUCTION

No. 44 Type



No. 44 Type Induction Coil

The No. 44-A Induction Coil is used in No. 896 and D-2843 Telephones, No. 1180 Desk Set Boxes and in No. 105 and No. 125 Switchboards. The No. 44-B is used in the booster talking circuits of No. 1155 and No. 1157 Wall Telephones and No. 1156 Desk Set Box. The No. 44-D is used in anti-side-tone circuits. The No. 44-E is used in switchboards in the busy test portion of operator's circuits. Mounting space $4\frac{3}{8}$ " x $1\frac{1}{8}$ " x $1\frac{1}{8}$ ".

Stock No.	Code	Windings	Approximate Resistance		
			Primary	Secondary	Tertiary
800424-000	(44-A)	2	2.2 Ohms	12.9 Ohms	None
800425-000	(44-B)	2	14.3 Ohms	8.9 Ohms	None
800427-000	(44-D)	3	11.3 Ohms	62.0 Ohms	56.0 Ohms
800428-000	(44-E)	2	2.59 Ohms	106.9 Ohms	None

No. 45 and No. 46 Types



No. 45 Ind. Coil



No. 46-A Ind. Coil

Coils of this type are of a design resembling that used in highly efficient radio audio transformers. Three windings are used in anti-side-tone circuits, correctly proportioned to give the best results in transmitting and receiving service. The windings are well insulated and then treated to exclude moisture. The laminations are butted and clamped with their edges in line.

The No. 45-A (23124-000) Induction Coil is used in the anti-side-tone circuits of Nos. 1210, 1211, 1212 and No. 1191 Telephones.

The No. 45-B (25677-000) Induction Coil is used in the circuit of the magneto telephone No. 1207.

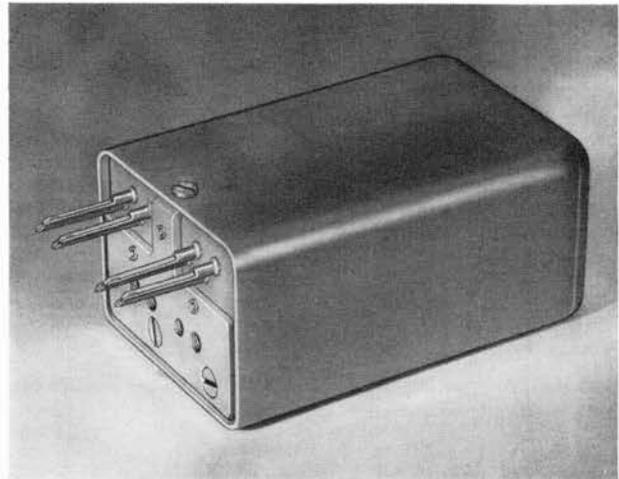
The No. 46-A (32943-000) Induction Coil is used in the anti-side-tone circuits of Nos. 1222 and 1223 Telephones.

The No. 46-B Induction Coil is used in magneto telephones or in telephones with local battery talking and common battery signalling.

Stock No.	Code	Windings		Tertiary			
		Primary	Secondary				
23124-000	(45-A)	3	8.0 Ohms	29.0 Ohms	44 Ohms		
			296 Turns	579 Turns	405 Turns		
			No. 32 AWG	No. 34 AWG	No. 36 AWG		
Turns Ratio, Coils 1-2:3-4 as 1:1.9							
25677-000	(45-B)	2	.74 Ohms	9.5 Ohms			
			87 Turns	375 Turns	None		
			No. 26 AWG	No. 30 AWG			
Turns Ratio, Coils 1-2:3-4 as 1:4.3							
32943-000	(46-A)	3	536 Turns	378 Turns	213 Turns		
			No. 33 AWG	No. 34 AWG	No. 38 AWG		
		Turns Ratio, Coils 1-2:3-4:5-6 as 2.5:1.8:1					
800432-000	(46-B)		Primary	Secondary	Tertiary	Non-Ind.	
		4	70 Turns	296 Turns	157 Turns	49 Turns	
			No. 30 AWG	No. 34 AWG	No. 36 AWG	No. 36 AWG	
		Turns Ratio, Coils 1-2:3-4 as 1:4.3					

No. 48-A Induction Coil

(Replaces No. 47-A Coil on new work only)



No. 48-A Induction Coil

Designed for use in high efficiency operator's circuits. Line and receiver windings are balanced to permit locating the coil remote from the operator's set jack. Same physical size and mounting as No. 11, 13 and 21 Repeating Coils.

Terminals	Windings	Stock No. (207866-000)	Nominal DC
			Resistance, Ohms
Primary	7-8		1.8
½ Line	1-3		14.6
½ Line	2-4		16.4
Receiver (Bal)	3-4		450.
Test	5-6		12.7

Ratio of Windings Referred to Primary (7-8)

Winding	Turns Ratio
1-3	2.08
2-4	2.08
3-4	2.38
5-6	1.325

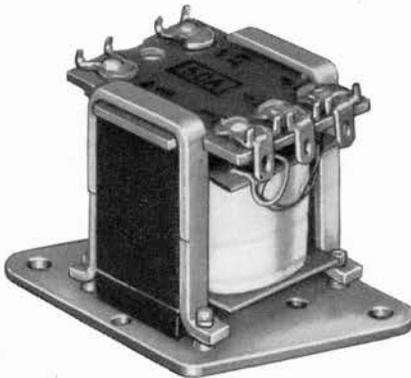
COILS—INDUCTION (Cont.)

No. 49 Type

No. 49-A and 49-B Type Induction Coils are used in PBX and Multiple Switchboards. Both the Nos. 49-A and 49-B coils are used for odd and even busy tests. The difference between them is that the No. 49-B coil is equipped for mounting on an XY circuit plate, where the No. 49-A is not.

Stock No.	Code	First Winding	Second Winding
208105-000	(49-A)	150 Turns 4 Ohms	1,000 Turns Non Inductive
208106-000	(49-B)	150 Turns 4 Ohms	1,000 Turns Non Inductive

No. 50 Type

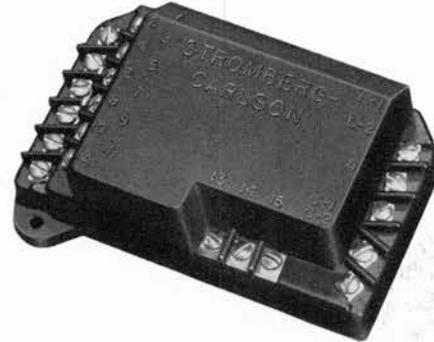


The No. 50-A Type Induction Coils are used in PBX and Multiple Switchboard circuits, replacing the former No. 47-A Induction Coil. The windings on the No. 50-A are electrically equivalent to those in the former No. 47-A, but the difference lies in the fact that the line and receiver windings are unbalanced.

Stock No.	Code	First Winding	Second Winding	Third Winding
212463-000	(50-A)	140 Turns 1.89 Ohms No. 28 DE	582 Turns 27.3 Ohms No. 33 DE	332 Turns 450 Ohms No. 38 DE

Note: Turns Ratio, coils 3-4: 1-2 as 4.16:1
4-5: 1-2 as 2.37:1

Induction Coil and Capacitor Assemblies



This assembly consists of induction and capacitor units embedded in a sealed plastic housing filled with hydrolene which is a viscous, tar-like compound. This process assures complete protection against moisture and the excessive humidity of hot climates.

Screw terminals, properly numbered, are mounted at each end of the housing for connecting the line and handset cords, and also the wiring from the induction coil and capacitors.

Used with both common battery and magneto equipment, this compact unit will mount in present types of desk set boxes as well as wall and desk type handset telephones. This adaptation for various purposes assures operating convenience and economy, especially in changing instruments from one type of service to another.

Stock No. 200595-000 Assembly is used as follows:

Type of Service	Desk Set	Wall Set	D.S. Box
Common battery	1243, 1247	1250	1260
Magneto	1248	1258	1268

Stock No. 208359-000 Assembly is used as follows:

Common battery	1443, 1447	1450	1460
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Stock No. 210558-000 Assembly is used as follows:

Common Battery	1543, 1573	—	1560
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Stock No. 211155-000 Assembly is used as follows:

Common Battery	1575	—	—
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Stock No. 210640-000 Assembly is used as follows:

Common Battery	1543W	—	—
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Stock No. 208669-000 Assembly is used as follows:

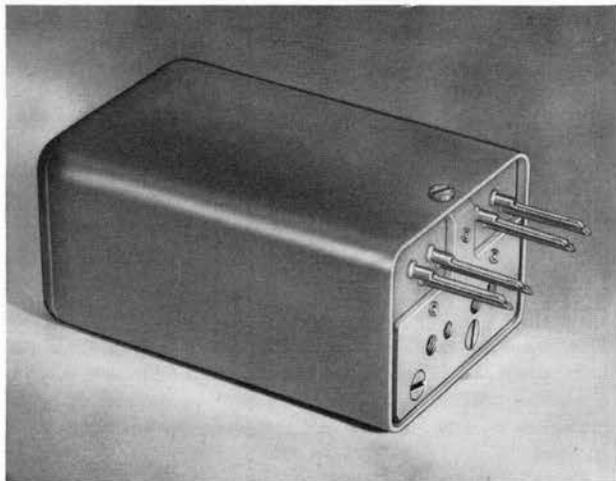
Common Battery	1544	—	—
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Revised 1-1-61

COILS-REPEATING

No. 11-A Talk-Through Type



No. 11, 13 and 14 Repeating Coils
Aluminum Casing

A highly efficient "Talk-Through" Type Repeating Coil for toll service, also for cord, trunk and other circuits, where it is necessary to establish connections between dissimilar lines, such as—common battery to magneto, grounded to metallic, and unbalanced to balanced. The high frequency bridged loss, when used for the above-mentioned purposes, is remarkably low—approximately 0.4 miles of standard cable.

This Repeating Coil has four concentric windings, brought out to eight terminals, and mounts on steel plates uniformly with the Nos. 200 or 500 Type Relays.

Dimensions of case over terminals: Length, $4\frac{25}{32}$ " ; width, $2\frac{7}{64}$ " ; height, $1\frac{55}{64}$ " .

Stock No.	Code	Use	Resistance Between Terminals
800436-000	(11-AL)	Common	Ter. 1 and 2—15.6 Ohms
		Battery	Ter. 3 and 4—16.5 Ohms
		Exchange	Ter. 5 and 6—19.4 Ohms
			Ter. 7 and 8—20.2 Ohms
			Turns Ratio: Coils 1-2:3-4 as 1:1
			Turns Ratio: Coils 5-6:7-8 as 1:1

No. 13-AL and No. 13-ALF Non-Ring-Through Talk-Through Type

A Non-Ring-Through, Talk-Through Repeating Coil, unexcelled for talking efficiency as well as Non-Ring-Through properties; guaranteed to prevent the passage of sufficient ringing current through a cord circuit to operate either a ring-off signal or to tap a ringer on any subscriber's telephone. Similar in appearance to the No. 11-A Repeating Coil. Occupies the space of one relay casing, and mounts on steel plates with the same mounting centers as employed for the No. 200 Type Relays. Dimensions of case over terminals: Length, $4\frac{25}{32}$ " ; width, $2\frac{7}{64}$ " ; height, $1\frac{55}{64}$ " .

Stock No.	Code	Use	Resistance Between Terminals
800440-000	(13-AL)	On universal	Ter. 1 and 2—15.6 Ohms
		Cord Circuits and	Ter. 3 and 4—16.5 Ohms
		on Magneto	Ter. 5 and 6—19.4 Ohms
		Switchboards.	Ter. 7 and 8—20.2 Ohms
			Turns Ratio: Coils 1-2:3-4 as 1:1
			Turns Ratio: Coils 5-6:7-8 as 1:1

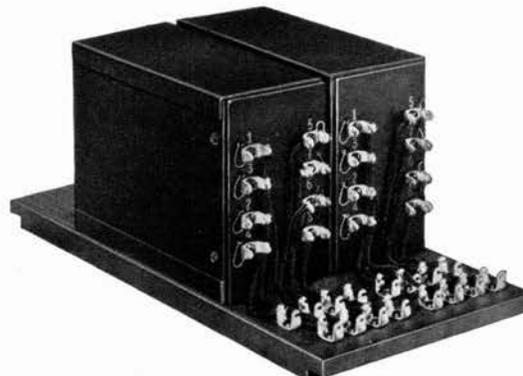
No. 14-A Repeating Coil

Same size and mounting as No. 11 and No. 13 Repeating Coil. Used as a monitoring coil in operators' circuits.

Mounts uniformly with a pair of No. 200 Type Relays under one aluminum relay casing.

Stock No.	Code	Description
800443-000	(14-AL)	Monitor Impedance Turns Ratio: 1:5

No. 15 Type Repeating Coil



No. 15-BX Repeating Coil

Number 15 Type Repeating Coils are made up of No. 18-A Type Units. See Description of the No. 18 Repeating Coil for coil characteristics.

Stock No.	Code	Description
800447-000	(15-BL)	Same as No. 18-A except mounts on flat surface. Designed for outdoor use.
800449-000	(15-BYL)	Uses 1 No. 15-BL Coil mounted on wood sub-base for Phantom use. Length, $8\frac{3}{4}$ " ; width, $2\frac{1}{2}$ " ; height, $4\frac{1}{4}$ " .
800448-000	(15-BXL)	2 No. 15-BL Coils mounted on wood sub-base for Phantom use. Length, $10\frac{3}{4}$ " ; width, $4\frac{7}{8}$ " ; height, $4\frac{1}{4}$ " .

The Nos. 15-BX Stock No. 800445-000 and 15-BY Stock No. 800446-000 are the same as the 15-BL and 15-BYL except for the finish of the can.

No. 16 Type Repeating Coil

Stock No.	Code	Description
800450-000	(16-AL)	Ring-Through, Talk-Through, and Phantom Coil, with built in 40 Ohm Resistances. Used extensively as kick coil when Common Battery Telephones are employed on Magneto lines.

No. 17 Type Repeating Coil

This Repeating Coil is used as a tone coupler, such as for the All Links Busy tone in Relaydial. Its construction is similar to the No. 13-AFL previously described. Mounts uniformly with a pair of 200 type relays under one casing.

Stock No.	Code	Description
800452-000	(17-AL)	Used for Tone Coupler Turns Ratio: 5-6:1-2-7-8 as 16:1

NOTE—Furnished with aluminum casing.

REPEATING COILS (Cont.)
No. 18 Type Repeating Coils

This Repeating Coil is the same as No. 15, on preceding page, less mounting base. The No. 18 Type Repeating Coils are used to derive Composite, Simplex, and Phantom groups in those cases where 20 c.p.s. ring-through is required. This coil is a very efficient design for the dual purpose of talking and ringing transmission, yielding low transmission loss and high ringing efficiency. The 5-6, 7-8 line windings are made up of twisted pair conductor accurately balanced for resistance for the purpose of deriving phantom circuits. The coil is encased in a cross talk proof steel shell. It normally mounts from the terminal block end on one No. 85 or two No. 87 Relay Mounting Strips. The side of the case is drilled and tapped for No. 8-32 machine screws for securing to a shelf or a wood base. Dimensions of case over terminals: Length, 6 $\frac{1}{8}$ " ; width, 2 $\frac{7}{64}$ " ; height, 3 $\frac{13}{16}$ ".

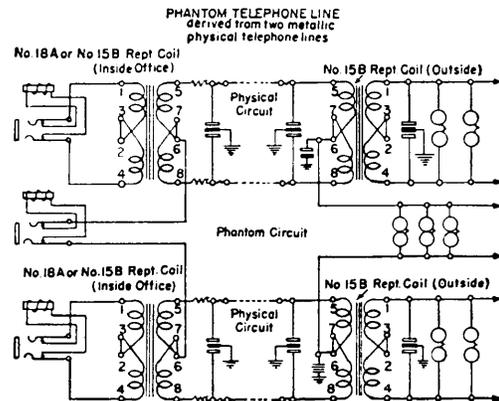
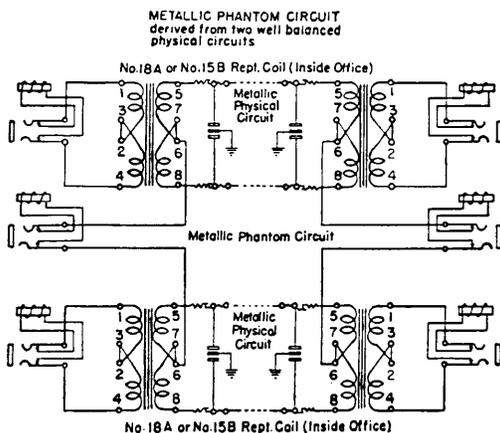
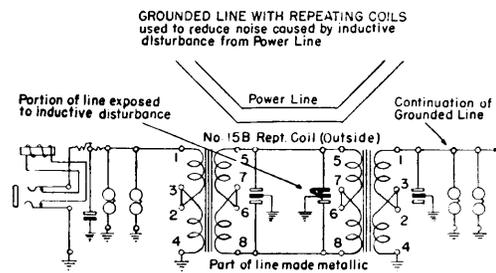
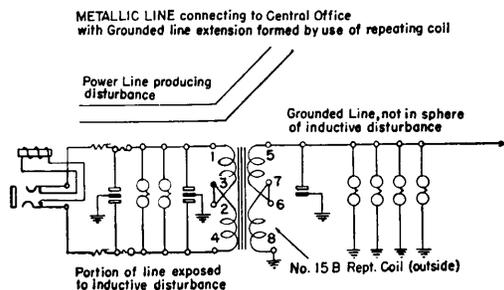
Type 18 Repeating Coils are made in two impedance ratios. The No. 18-A is a 1:1 ratio coil and is designed for use between terminations 600 Ohms and 600 Ohms or between 900 Ohms and 900 Ohms. The No. 18-B is a 1:1.5 ratio coil and is designed for use between 600 Ohm office and 900 Ohm line or between 900 Ohm office and 1350 Ohm line.

Stock No.	Code	Balanced Windings	Approximate Resistance between Terminals	
800453-000 (18-A)		5-6, 7-8	1-2,—14 Ohms	5-6,—15 Ohms
			3-4,—14 Ohms	7-8,—15 Ohms
800454-000 (18-B)		5-6, 7-8	1-2,—14 Ohms	5-6,—20 Ohms
			3-4,—14 Ohms	7-8,—20 Ohms
800455-000 (18-C)		1-2, 3-4	1-2,—1200 Ohms	5-6,—1200 Ohms
			3-4,—1200 Ohms	7-8,—1200 Ohms

The No. 18-F coil is identical to the No. 18-A, employing the same windings, except that part of the iron has been removed from the magnetic circuit. It is used in those 20 c.p.s. ring-down circuits where reversed battery is supplied to the winding for supervisory purposes and where the higher inductance of the No. 18-A is not suitable. The No. 18-F may be used successfully in such circuits with small sacrifice in ringing efficiency.

Stock No.	Code	Balanced Windings	Approximate Resistance between Terminals
200934-000 (18-F)		5-6, 7-8	Same as 18-A

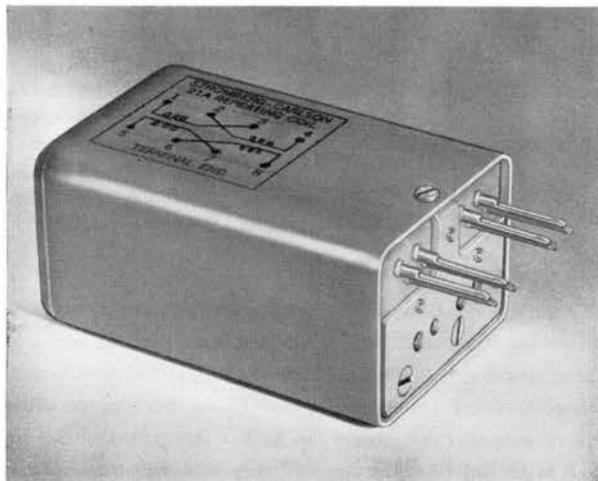
Typical Circuit Diagrams, showing Use of No. 15, No. 18 and No. 21 Type Repeating Coils.



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REPEATING COILS (Cont.)

No. 21 and No. 22 Type



The No. 21 Repeating Coil

The No. 21 Repeating Coils are a new series of low loss repeating coils designed particularly for talk through service in Phantom, Simplex and Composite circuits. These coils replace the No. 18 Type Coils in all applications where 20 c.p.s. ring through is not required; the advantages are lower transmission loss, smaller space requirements, and greater economy. Type No. 21 coils are essentially non-ring through at 20 c.p.s.

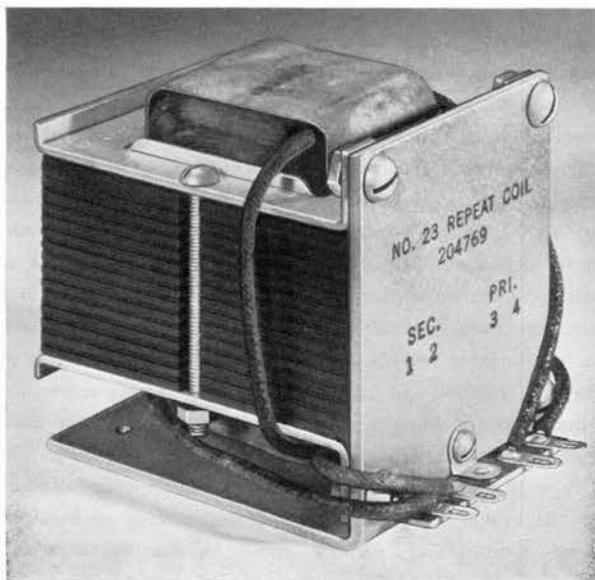
In addition to their low loss features, these coils have been designed to stand up under extreme service requirements. The core is of high permeability nickel steel with controlled air gaps. The windings are on molded phenolic spools, insulated with non-corrosive materials and having all leads individually brought out through vinyl tubing. Primary and secondary windings are parallel wound and line windings are accurately balanced for resistance. All coils must withstand a breakdown test of 1500 volts between the conductors of parallel windings before leaving our factory. The coils are enclosed in a cross talk proof aluminum shell. Size and mounting are identical with Stromberg-Carlson No. 11 and No. 13 Type Repeating Coils.

The No. 22 Type Repeating Coils are structurally identical with the No. 21 Type coils. Whereas the No. 21 coils are specially selected to fit extremely close balance requirements for use in deriving phantom and simplex circuits, the No. 22 Type coils are not so specifically selected. These are used on all other types of general circuit applications where a low loss coil is desired.

The stability of design in both types is such that 100 m.a. may be supplied without adversely affecting transmission performance.

Stock No.	Code	Impedance Ratio 5-7,6-8/1-3,2-4
203925-000	21-A	1:1
203926-000	21-B	1.5:1
203927-000	21-C	1:1.5
207065-000	21-AS	1:1
207066-000	21-BS	1.5:1
207067-000	21-CS	1:1.5
207649-000	22-A	1:1
207650-000	22-B	1.5:1
207651-000	22-C	1:1.5
207632-000	22-AS	1:1
207648-000	22-BS	1.5:1
207633-000	22-CS	1:1.5

No. 23 Type



No. 23 Repeat Coil Assembly

The No. 23 Repeating Coil is a new addition to the line of Stromberg-Carlson repeating coils which have wide general use in addition to the primary purpose for which they were designed. In general the No. 23 coil is used for the purpose of isolating the 16 2/3 c.p.s. ringing generator in reverting call circuits. This transformer has been designed to deliver a secondary voltage equal to the primary or generator voltage under an average ringing load of 90 milliamperes. The maximum load capacity is 150 milliamperes. Of open type construction, the assembly is comprised of a transformer secured to a bracket and wired to a terminal strip. The laminations of the transformer and all leads are impregnated against moisture. The bracket is of heavy gauge galvanized steel; on the face the terminal designations are clearly stamped, as well as the code number, for easy identification. Overall space requirements are 3 1/4" x 3 1/8" x 2 1/2". Four No. 8-32 tapped holes on 2 3/16" x 1 1/2" centers are provided on the side of the bracket for mounting purposes.

Terminals	Nominal Secondary Resistance (Ohms)
Primary, 3-4	50
Secondary, 1-2	
Stock No.	Code
204769-000	23

Terminations (Ohms)	Balanced Windings Connect to Line	Approximate Resistance of Windings (Ohms)	
		5-7,6-8 Each	1-3,2-4 Each
900-900	5-7, 6-8	8.3	5.7
1350-900	5-7, 6-8	12.9	5.7
600-900	5-7, 6-8	5.4	5.7
900-900	5-7, 6-8	8.3	5.7
1350-900	5-7, 6-8	12.9	5.7
600-900	5-7, 6-8	5.4	5.7
900-900	5-7, 6-8	8.3	5.7
1350-900	5-7, 6-8	12.9	5.7
600-900	5-7, 6-8	5.4	5.7
900-900	5-7, 6-8	8.3	5.7
1350-900	5-7, 6-8	12.9	5.7
600-900	5-7, 6-8	5.4	5.7

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REPEATING COILS (Cont.)

No. 24 Type

The No. 24 Repeating Coils are designed for use as a two coil hybrid in conjunction with telephone voice repeaters. Various winding ratios are provided to match the nominal 600 ohm input and output terminations to various line facilities found in the telephone outside plant. The magnetic structure is composed of "L" type laminations of high nickle magnetic alloy to reduce

the series losses and to improve winding balance. Air gaps are provided to eliminate saturation effects from DC signaling currents in the line. Over-all size, 2 1/8" long by 1 5/8" wide.

Stock No.	Code	Impedance Ratio	Line Facility Range of Nom. 1000cps Impedance
		12-5, 6-11, 10-3, 4-9, 8-1, & 2-7	
216919-000	24A	1.20/1	below 465 Ohms
216920-000	24B	2.00/1	465-780 Ohms
216921-000	24C	3.38/1	780-1185 Ohms
216922-000	24D	4.60/1	above 1185 Ohms

COILS—RESISTANCE

Stromberg-Carlson resistance coils have a sufficiently large carrying capacity and radiating surface to prevent overheating when used in the circuits for which they are designed. These resistance coils are wound non-inductively upon rigid and heat conducting core with special high grade resistance wire.

No. 10 Resistance Coil, Single Wound

No. 10 Type Resistance Coils can be used on the same mountings as No. 200 Type Relays. The parts for mounting should be ordered separately as Stock No. 203539-000 Package Assembly which includes one each of the following items:

Stock No. 525063-000 Hex Nut Stock No. 525643-000 Washer
Stock No. 1096-000 Bushing Stock No. 6019-000 Washer

*Coil Only Stock No.	Code	Resistance Ohms
15710-000	(10-A)	1000
15711-000	(10-B)	3000
15714-000	(10-C)	100
15715-000	(10-D)	200
15712-000	(10-E)	50
15713-000	(10-F)	2000
49994-000	(10-G)	375
49993-000	(10-H)	500
49995-000	(10-I)	140
41172-000	(10-J)	5000
40719-000	(10-K)	400

* Does not include parts for mounting.

No. 11 Resistance Coil, Double Wound

Similar to the No. 10 Type in design and method of mounting but with the two non-inductive concentric wound coils. Order Package Assembly Stock No. 203539-000 for mounting parts which are the same as for No. 10 Type Resistance Coil.

*Coil Only Stock No.	Code	Concentric Wound Ohms Resistance	
		Inner	Outer
202252-000	(11-A)	1100	15000
202253-000	(11-B)	500	1000
202254-000	(11-C)	50	250
202255-000	(11-D)	100	500
15716-000	(11-E)	1000	10000
202256-000	(11-F)	200	600
202257-000	(11-G)	600	600
15717-000	(11-H)	50	50
202258-000	(11-I)	1500	1500
202259-000	(11-J)	1000	1500
202260-000	(11-K)	200	400
202261-000	(11-L)	25	1500
202262-000	(11-M)	50	1500
202263-000	(11-N)	1500	350
15718-000	(11-O)	200	1000
202264-000	(11-P)	300	1000
202265-000	(11-R)	240	240
201116-000	(11-S)	400	400
33756-000	(11-T)	10	1000
35035-000	(11-U)	500	10000
41652-000	(11-W)	250	250
40718-000	(11-X)	200	200
41173-000	(11-Y)	240	240, 140
41817-000	(11-Z)	15	600

*Coil Only Stock No.	Code	Concentric Wound Ohms Resistance	
		Inner	Outer
41818-000	(11-AA)	1000	1000
41819-000	(11-AB)	500	350
42529-000	(11-AC)	750	10000
42530-000	(11-AD)	400	10000
49972-000	(11-AE)	300	300, 300
205898-000	(11-AF)	1000	2000

Nos. 12, 13 and 14 Resistance Coils

These Resistance Coils are designed to mount similarly to the No. 500 Type Relay and are non-inductively wound.

* Does not include parts for mounting.

No. 12—Single Wound

Stock No.	Code	Winding Data—Ohms Res.
800493-000	(12-A)	320
800494-000	(12-B)	350
800495-000	(12-C)	500
800496-000	(12-D)	750
800497-000	(12-E)	1000
800498-000	(12-F)	1500
800499-000	(12-G)	2000
800500-000	(12-H)	200
800501-000	(12-I)	100
800502-000	(12-J)	50
800503-000	(12-K)	25
42827-000	(12-L)	4000
203387-000	(12-M)	1200

No. 13—Double Wound

Stock No.	Code	Winding Data, Ohms Res.		
		Primary	Secondary	Tertiary
800504-000	(13-A)	50	50	
800505-000	(13-B)	200	200	
800506-000	(13-C)	240	240	
800507-000	(13-D)	320	320	
800508-000	(13-E)	400	400	
800509-000	(13-F)	500	500	
800510-000	(13-G)	1000	1000	
800511-000	(13-H)	1500	2000	
800512-000	(13-I)	10000	350	
800513-000	(13-J)	10000	500	
800514-000	(13-K)	10000	750	
800515-000	(13-L)	10000	1000	
800516-000	(13-M)	100	100	
200010-000	(13-N)	18000	18000	
202095-000	(13-O)	10000	10000	
203565-000	(13-P)	500	800	

No. 14—Triple Wound

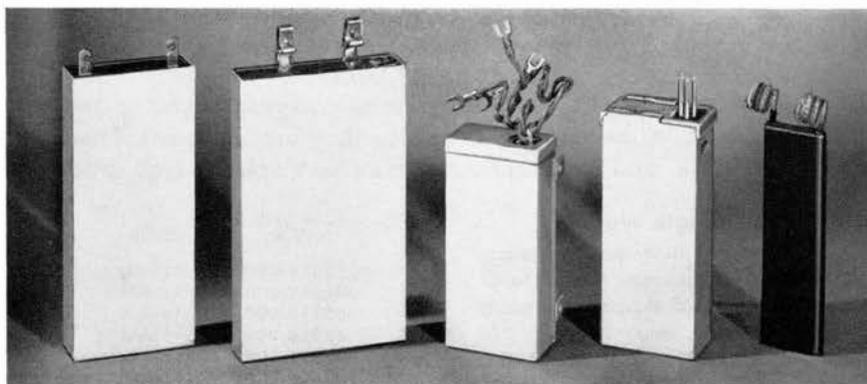
Stock No.	Code	Winding Data, Ohms Res.		
		Primary	Secondary	Tertiary
800517-000	(14-A)	240	240	140
200402-000	(14-B)	500	500	500

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CONDENSERS—CAPACITORS

Stromberg-Carlson condensers are designed to withstand a working temperature of 140° Fahrenheit. This is a much higher temperature than that to which the majority of condensers are subjected in actual use.

Tests are made for breakdown, capacitance and insulation resistance before assembly and these same tests are repeated in the completed assemblies before they are released. Insulation resistance of all types is 500 megohm-microfarads.



Style B

Style D

Style G

Style L

Style C

Standard ratings of Stromberg-Carlson condensers which are in accordance with the National Electrical Manufacturer's Association standards, are as follows:

Voltage	Direct Current				
	200	350	525	750	1000
Working	400	700	1050	1500	2000
Test					

Style B—Unmounted Type

Equipped with metal clips for mounting. Used in Booster Circuits of old type telephones and desk set boxes.

Stock No.	Code	Capacity	Use
800521-000	(21-L)	1 mf.	1155, 1157,950, Tels. 1156, 1158, Desk Set Box
800522-000	(22-L)	2 mf.	Misc. Telephones
800524-000	(24-L)	1 mf.	948 Desk Set Box
800525-000	(25-L)	1 mf.	Telephone & Radio

Can Dimensions

21-L:	4 ⁷ / ₁₆ x 2 ¹³ / ₁₆ x 5 ⁵ / ₁₆ "	24-L:	4 ⁷ / ₁₆ x 2 ¹ / ₃₂ x 1 ¹³ / ₁₆ "
22-L:	Same	25-L:	3 ⁵ / ₁₆ x 2 ¹ / ₃₂ x 1 ¹³ / ₁₆ "

Style C—Unmounted Type

Has insulated wire terminals and black cloth cover.

Stock No.	Code	Capacity	Dimensions
800520-000	(20)	0.4 mf.	3 ¹ / ₂ " x 1" x 1 ¹⁵ / ₆₄ "

Used with Nos. 6, 11 and 19 Handsets (Test Sets)

Style D—Unmounted Type

Has light finished metal case with Fahnestock clips. Dimensions: 4⁷/₁₆" x 2¹³/₁₆" x 5⁵/₁₆".

Stock No.	Code	Capacity	Use
800526-000	(26-T)	0.5 mf.	Sure-Ring (Receiver) Circuit Nos. 896, D-2843 Telephones Nos. 327, 1180 Desk Set Boxes

Style E—Unmounted Type

Metal case with light finish. Dimensions: 4¹⁵/₁₆" x 4¹³/₃₂" x 3¹/₄". Mounts with metal clips.

Stock No.	Code	Capacity	Use
800527-000	(27-L)	5.0 mf.	Ringng Converters

Style F—Unmounted Type

Same as Style B but has 3 terminals. Used on old types of anti-side-tone wall telephones and desk set boxes.

Stock No.	Code	Capacity	Use
800533-000	(36)	1 mf. and 1 mf.	Ringng Converters
800534-000	(37)	1 mf. and 2 mf.	1155-A, 1157-A Telephones 1156-A, 1167 Desk Set Box

Can Dimensions: 4⁷/₁₆" x 2¹³/₁₆" x 5⁵/₁₆".

Style G—Interior Handset Type

Used in the base of desk and suspended type handset telephones and desk set boxes. Has metal case with light finish.

Dimensions: 3¹¹/₃₂" x 1¹/₁₆" x 7⁵/₁₆".

Stock No.	Code	Capacity	Use
33970-000	(48)	1.85 & 1 mf.	1222, 1223 Telephones; 1230 D.S. Box
34524-000	(49)	1.85 & 2 mf.	1233 Telephone
34917-000	(50)	1.85 mf.	1232 Telephone

Style H — Unmounted Type

Metal case with light finish. Dimensions: 2³/₈" x 1¹/₂" x 5⁵/₁₆".

Stock No.	Code	Capacity	Use
800547-000	(51)	1 mf. & 500 Ohm N.I.	Converter (Rad. Elim.)

STROMBERG-CARLSON

CONDENSERS—CAPACITORS (Cont.)

Style M—Relay Mounting Plate Type



Style M condensers are used in current switchboards and for all new work. These condensers mount the same as No. 200 Type Relays and will fit in No. 25 Relay Casings in which the casing proper is 4 inches long. Style M Condensers replace, but are not interchangeable with, former Style J (Code Nos. 38 to 44-A) which are used in old type Switchboards and mount in shorter relay casings. The terminal boards of these condensers are covered with Mitchell Rand No. 3738 to reduce surface leakage in high humidities.

Can dimensions: 3 3/4" high x 1 21/32" wide x 2 1/32" deep.

Stock No.	Code	Capacity
42370-000	(55M)	1 mf.
42371-000	(56M)	2 mf.

Stock No.	Code	Capacity
48346-000	(57M)	3 mf.
42372-000	(58M)	4 mf.
42373-000	(59M)	1 mf.—1 mf.
42374-000	(60M)	1 mf.—2 mf.
42375-000	(61M)	2 mf.—2 mf.
42376-000	(62M)	1 mf.—500 Ohms N.I.
49955-000	(63M)	.05 mf.—600 Ohms N.I.
200765-000	(64M)	.05 mf.
202466-000	(65M)	.02 mf.—.02 mf.
202463-000	(66M)	.05 mf.—.05 mf.
202464-000	(67M)	1 mf.—0.5 mf.
203850-000	(68M)	1 mf.—200 Ohms N.I.
203863-000	(69M)	2 mf.—22 Ohms N.I.
204410-000	(70M)	2 mf.—33 Ohms N.I.
204710-000	(71M)	2 mf.—39 Ohms N.I.
205524-000	(72M)	2 mf.—2000 Ohms N.I.
205562-000	(73M)	1 mf.—600 Ohms N.I.
207248-000	(74M)	1 mf.—47 Ohms N.I.
209322-000	(75M)	.5 mf.—150 Ohms N.I.
209323-000	(76M)	.5 mf.—150 Ohms N.I. (2)
211307-000	(77M)	1 mf.—200 Ohms N.I. (2)
213447-000	(78M)	2 mf.—39 Ohms N.I. (2)
214242-000	(79M)	2 mf.—33 Ohms N.I. (2)
214282-000	(80M)	1 mf.—520 Ohms N.I. (2)
216858-000	(81M)	2 mf.—910 Ohms N.I.
212717-000	(82M)	2 mf.—200 Ohms N.I.
211849-000	(83M)	2 mf.—620 Ohms N.I.
216953-000	(84M)	1 mf.—510 Ohms (N.I.) x 2 mf.—910 Ohms N.I.
217035-000	(85M)	2 mf. x 1 mf.—510 Ohms N.I.
217327-000	(86M)	1 mf.—910 Ohms N.I.
217328-000	(87M)	2 mf.—33 Ohms N.I. x 2 mf.—39 Ohms N.I.
217840-000	(88M)	1 mf.
218165-000	(89M)	1 mf.—620 Ohms N.I. x 1 mf.—620 Ohms N.I.
200040-055	(91M)	1 mf.



Revised 1-1-61

DURATEX SWITCHBOARD CORDS

The conductors of Stromberg-Carlson switchboard cords are made in ribbon form from No. 37 AWG hard-drawn bronze alloy wire which is held to strict specifications. Before being used these ribbons are carefully tested for tensile strength, electrical resistance and maximum flexibility to make conductors of high conductivity and long-wearing qualities. The following step-by-step operations are examples of the care and thoroughness which have been important factors in building the reputation that the Stromberg-Carlson name has always had for dependable cord products.

1 — To make up a conductor strand two bronze alloy ribbons are spiraled in opposite directions around a cotton thread in a manner to cause the thread to take up all tension. The ribbons overlap to insure strength and conductivity. This type of strand construction produces conductors which are free from noise after long, hard use.

2 — Six of these strands are then wound around a strong center thread to form one conductor. Flexibility to a major degree is the result. Resistance in talking conductors is 0.9 ohms per 6 feet of cord length.

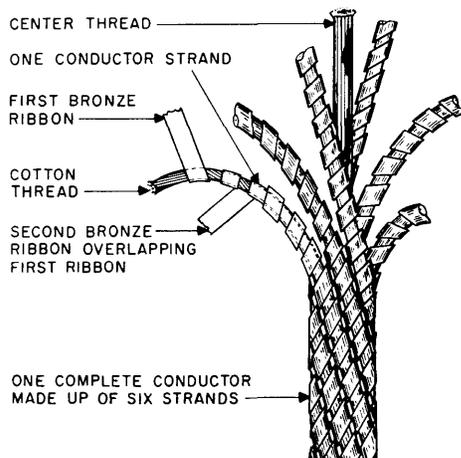
3 — Two servings of celanese are next applied and then an outer cotton braid with a colored tracer. This provides a moisture proof insulation which remains flexible and offers effective resistance to dampness and moisture caused by constant handling.

4 — The insulated conductors are then twisted together like the strands of a rope with proper fillers to form a round core.

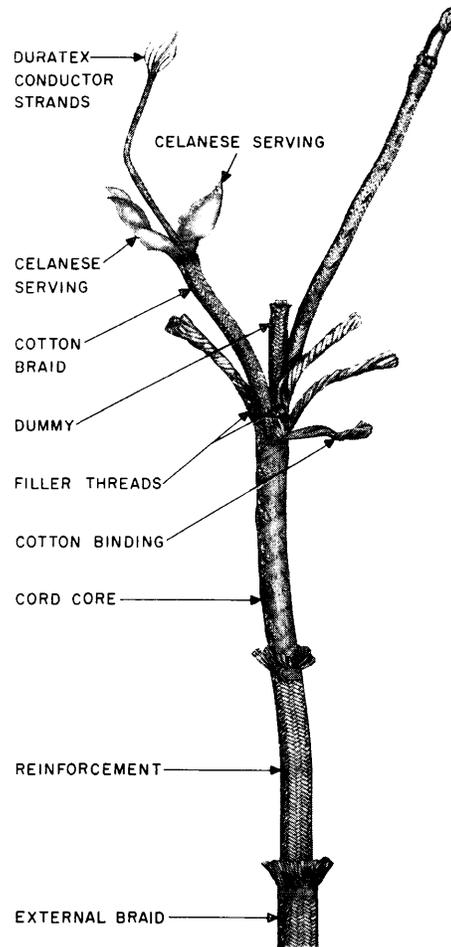
5 — The core thus formed is kept in its original shape by the application of a cotton binder.

6 — At the end next to the plug a reinforcing braid is applied to offset the effects of severe bending when the cord is used.

7 — An outside braid of high tenacity nylon yarn, in standard colors of white, green, red or black, is then applied over the entire length of the cord, with the exception of the conductor terminating ends.



Single Conductor — Enlarged 10 Times



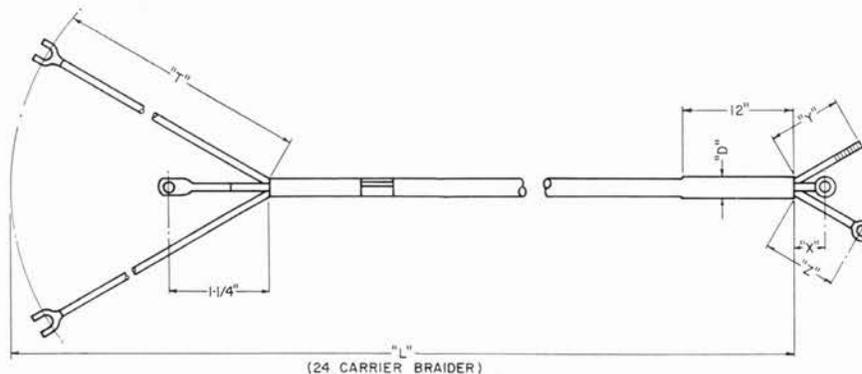
Two Conductor Switchboard Cord

The two illustrations show more clearly than words the quality that is built into Stromberg-Carlson Duratex cords. These cords are built to last and, when used properly, will give long trouble-free service.

Coding of Switchboard and Patching Cords

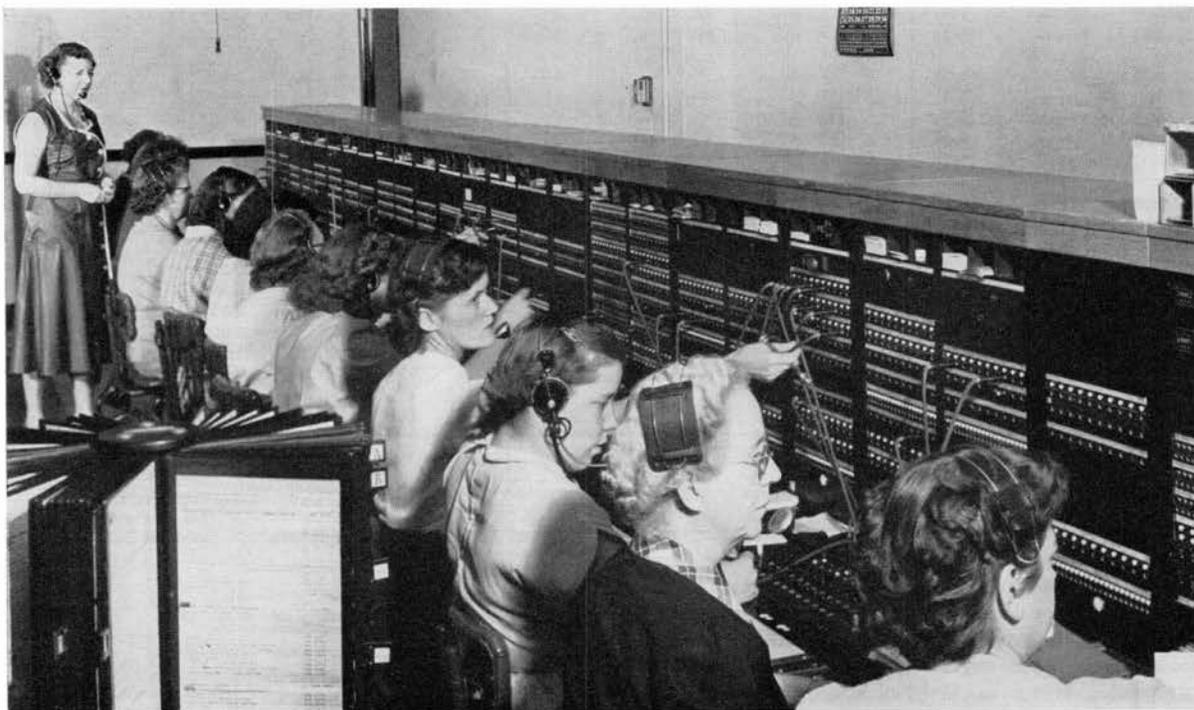
The first letter — S, P or O denotes either switchboard, patching or operator's cord. The subsequent numeral indicates the number of conductors in the particular cord.

DURATEX SWITCHBOARD CORDS (Con't.)



2 Conductor, Tinsel Type—Outer Nylon Braid

Stock No.	Color	Code	Length	DIMENSIONS					D		Used with Plug No.
				T	X	Y	Z	max.	min.		
212140-000	Red	(S-2)	6'	4 1/2"	_____	1"	1 3/16" ± 1/16"	.240"	.230"	36, 37	
212141-000	White	(S-2)	5'	4 1/2"	_____	1"	1 3/16" ± 1/16"	.280"	.260"	56-R, 56-XR	
212142-000	White	(S-2)	6'	4 1/2"	_____	1"	1 3/16" ± 1/16"	.280"	.260"	56-R, 56-XR	
212143-000	White	(S-2)	5'	4 1/2"	_____	1"	1 3/16" ± 1/16"	.305"	.285"	10, 32, 42, 43	
212144-000	White	(S-2)	6'	4 1/2"	_____	1"	1 3/16" ± 1/16"	.305"	.285"	10, 32, 42, 43	
212145-000	White	(S-2)	5'	6" ± 1/8"	_____	1"	3/4" ± 1/8"	.312"	.302"	S-1, Kellogg, 3, 42, 70, 109, 138 and Leich 3 61, 62, W.E.'s 27, 32, 47, 53, 65	
212146-000	White	(S-2)	6'	6" ± 1/8"	_____	1"	3/4" ± 1/8"	.312"	.302"		
212147-000	White	(S-2)	5'	5"	3/8" ± 1/32"	1"	1 3/16"	.325"	.315"		

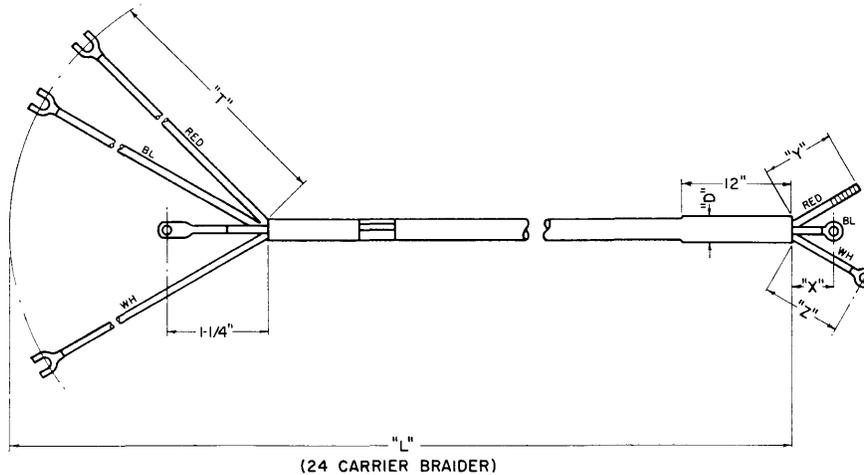


Stromberg-Carlson Switchboard Cords will provide long, trouble-free service on toll and PBX boards.

STROMBERG-CARLSON

Revised 1-1-61

DURATEX SWITCHBOARD CORDS (Con't.)



3 Conductor, Tinsel Type—Outer Nylon Braid

Stock No.	Color	Code	Length	DIMENSIONS								Used with Plug No.	
				T	X		Y	Z		D			
					max.	min.		max.	min.	max.	min.		
212120-000	White	(S-3)	5'	6 1/2"	1/2"	7/16"	1"	1"	1 5/16"	.280"	.260"	53, 53-X, 54, 54-G, 54-N, 55, 55-N.	
212121-000	Green	(S-3)	5'	6 1/2"	1/2"	7/16"	1"	1"	1 5/16"	.280"	.260"		
212122-000	Red	(S-3)	5'	6 1/2"	1/2"	7/16"	1"	1"	1 5/16"	.280"	.260"		
212123-000	White	(S-3)	6'	6 1/2"	1/2"	7/16"	1"	1"	1 5/16"	.280"	.260"		
212124-000	Green	(S-3)	6'	6 1/2"	1/2"	7/16"	1"	1"	1 5/16"	.280"	.260"		
212125-000	Red	(S-3)	6'	6 1/2"	1/2"	7/16"	1"	1"	1 5/16"	.280"	.260"		
212126-000	White	(S-3)	7'	6 1/2"	1/2"	7/16"	1"	1"	1 5/16"	.280"	.260"		
212127-000	Green	(S-3)	7'	6 1/2"	1/2"	7/16"	1"	1"	1 5/16"	.280"	.260"		
212128-000	White	(S-3)	5'	5"	1 7/32"	—	1"	1 7/32"	—	.305"	.285"		59, W.E.'s 110 and Kellogg 191
212129-000	Green	(S-3)	5'	5"	1 7/32"	—	1"	1 7/32"	—	.305"	.285"		
212130-000	White	(S-3)	6'	5"	1 7/32"	—	1"	1 7/32"	—	.305"	.285"		
212131-000	Green	(S-3)	6'	5"	1 7/32"	—	1"	1 7/32"	—	.305"	.285"		
212132-000	Red	(S-3)	6'	6 1/2"	5/8"	9/16"	1"	1 1/8"	1 1/16"	.280"	.260"		
209784-000	White	(S-3)	3'	6 1/2"	5/8"	9/16"	1"	1 1/8"	1 1/16"	.280"	.260"	63, 64, 65-R, 65-XR	
209785-000	White	(S-3)	5'	6 1/2"	5/8"	9/16"	1"	1 1/8"	1 1/16"	.280"	.260"		
209786-000	White	(S-3)	6'	6 1/2"	5/8"	9/16"	1"	1 1/8"	1 1/16"	.280"	.260"		
209787-000	White	(S-3)	7'	6 1/2"	5/8"	9/16"	1"	1 1/8"	1 1/16"	.280"	.260"		
209788-000	Red	(S-3)	5'	6 1/2"	5/8"	9/16"	1"	1 1/8"	1 1/16"	.280"	.260"		
209789-000	Red	(S-3)	6'	6 1/2"	5/8"	9/16"	1"	1 1/8"	1 1/16"	.280"	.260"		
209790-000	Red	(S-3)	7'	6 1/2"	5/8"	9/16"	1"	1 1/8"	1 1/16"	.280"	.260"		
209791-000	Green	(S-3)	5'	6 1/2"	5/8"	9/16"	1"	1 1/8"	1 1/16"	.280"	.260"		
209792-000	Green	(S-3)	6'	6 1/2"	5/8"	9/16"	1"	1 1/8"	1 1/16"	.280"	.260"		
209793-000	Green	(S-3)	7'	6 1/2"	5/8"	9/16"	1"	1 1/8"	1 1/16"	.280"	.260"		
209794-000	Black	(S-3)	6'	6 1/2"	5/8"	9/16"	1"	1 1/8"	1 1/16"	.280"	.260"		

PATCHING CORDS

Duratex Patching Cords for connecting a number of telephones to a trunk for two-way night service are made only as required.

Construction of these cords are such that a plug may be terminated at one end for connection to the trunk multiple. On the other end of this arrangement, as many plugs as desired may be terminated for connection to PBX station multiple.

The following cords have proved so generally applicable that they have been coded and stocked. In ordering, specify stock number, code and length. All Patching Cords are white.

Stock No.	Code	Length	Trimmed for No. of Plugs (Bridged End)	Plugs Used
203805-000	P-3	3'	1	65
203828-000	P-3	3'	3	65
205673-000	P-3	5'	1	65 or 63
207991-000	P-3	6'	1	65
200322-910	P-3	5'	1	59
200322-960	P2-1	6'	1	61
200322-970	P4-1	6'	1	62H

SWITCHBOARD CORD AND PLUG ASSEMBLIES

The following switchboard cords and plug assemblies are available and are carried in stock as standard items.

Two Conductor Cords and Plugs

Stock No.	Code	Length	Color	Plug
42623-000	(S-2)	5'	White, assembled to	No. 56-XR
42462-000	(S-2)	5'	White, assembled to	No. 42
42463-000	(S-2)	6'	White, assembled to	No. 42

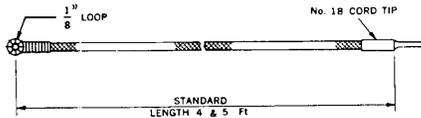
Three Conductor Cords and Plugs

Stock No.	Code	Length	Color	Plug
42936-000	(S-3)	5'	White, assembled to	No. 65-XR
42935-000	(S-3)	6'	White, assembled to	No. 65-XR
44096-000	(S-3)	6'	Red, assembled to	No. 65-XR
44098-000	(S-3)	6'	Black, assembled to	No. 65-XR
44100-000	(S-3)	6'	Green, assembled to	No. 65-XR

Patch Test Cords and Plug Assemblies

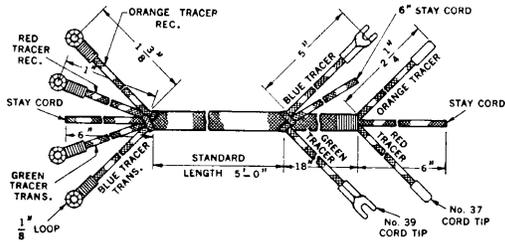
Stock No.	Code	Length	No. Cond.	Plug
200322-019	(PT6-1)	10'	6	No. 59 Twin Plug & Cook 3800 Test Plug
200322-099	(PT6-2)	15'	6	No. 59 Twin Plug & Cook 3800 Test Plug

DURATEX OPERATOR'S CORDS



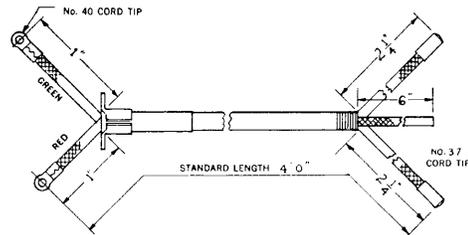
Stock No.	Code	Length	Description
800632-000	(O-1)	5'	Single Conductor

Used with operator's suspended type transmitters.



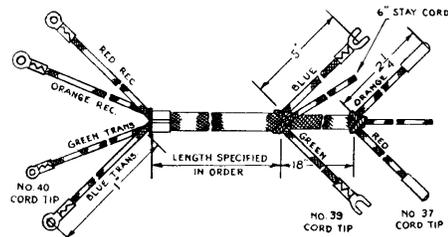
Stock No.	Code	Length	Description
800645-000	(O-4)	5'	4 Conductors

Used with No. 4 Operator's Breast Plate Sets that have old style No. 23 Plug.



Stock No.	Code	Length	Description
202926-000	(O-2)	4'	2 Conductors

Used with No. 66 Plug and No. 29 Receiver.



Stock No.	Code	Length	Description
200320-109	(O-4)	5'	4 Conductors

Used with Operator's Breast Plate Sets that have new style No. 66 Plug.

DURATEX INSTRUMENT CORDS

All Stromberg-Carlson instrument cords are made with straight lay conductors and an external covering of either Nylon Braid or Neoprene jacket.

Line and handset cords listed are used on all current types of Stromberg-Carlson telephones. In these cords the conductors are individually insulated with extruded polyvinyl chloride compound of contrasting colors to make a thoroughly waterproof cord that will give long and continuously reliable service, even in the dampest climates.

Other Duratex Cords, such as those for telephone receivers and miscellaneous use, are also made with straight lay conductors. These cords have a distinguishing external braid of black nylon yarn and each conductor has a celanese cotton insulation with colored tracer.

Duratex Instrument Cords described on the following pages are identified by various code numbers in which numerals and letters are used to denote the following features:

- Letters — D, H or C and R indicate class of service.
- D — Denotes desk type line cords for handset telephones and desk stands.

H or C — Denotes handset cords for telephones and handset pieces.

R — Denotes receiver cords.

The numeral — Denotes number of conductors.

MISCELLANEOUS CORDS: This type of cord is used on Stromberg-Carlson ironclad telephones. The outside braid is of black nylon yarn. The cord is coded "2-I," where the number designates the number of conductors and the subsequent letter indicates its use in ironclad telephones.

TERMINAL CORDS: This type of cord is designated by a letter "T," a number and another letter. The letter "T" indicates use as a terminal cord, the numeral indicates the number of conductors, and the last letter denotes type of finish.

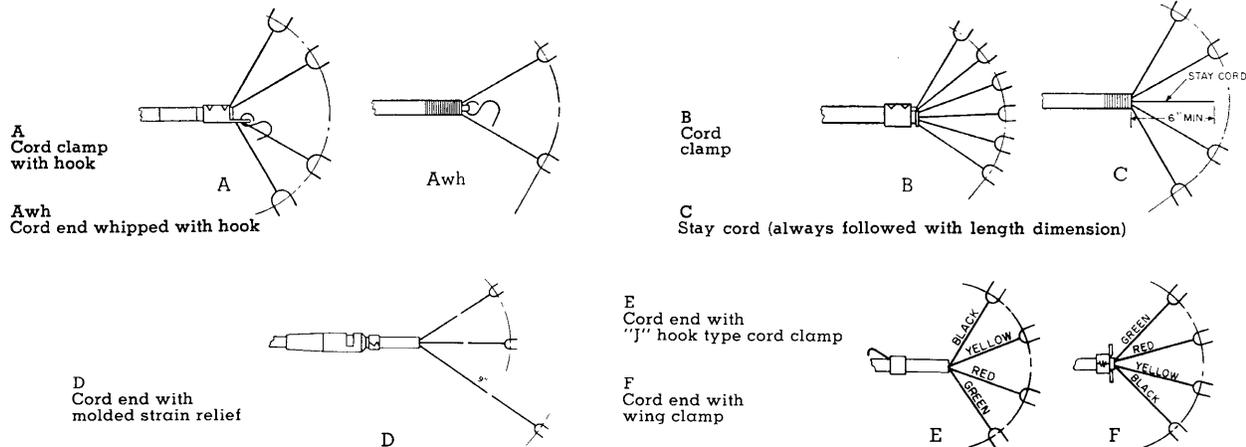
Line drawings and other data on Duratex Instrument Cords will be found on succeeding pages under the following headings:

- Handset cords
- Desk stand (line) cords
- Receiver cords
- Miscellaneous cords
- Terminal cords

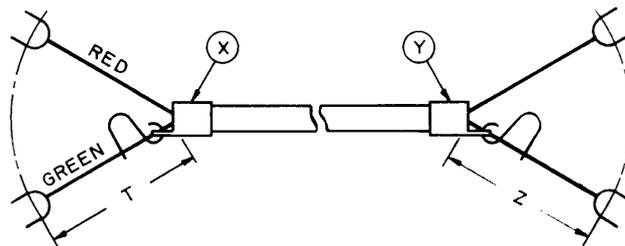
Revised 1-1-61

INSTRUMENT CORDS

To better understand the subsequent tables, the following have been devised:



DURATEX HANDSET CORDS

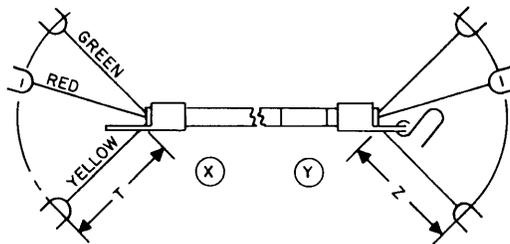


2 Conductor—Nylon Braid

Stock No.	Code	Length	DIMENSIONS				Handsets Used On
			T	X	Y	Z	
213377-000	(WCN-2A)	20"	4½"	A	A	3"	1532 Telo., Type "D" Test Desk

2 Conductor—Neoprene Jacket

Stock No.	Code	Length	DIMENSIONS				Handsets Used On
			T	X	Y	Z	
216939-000	(WCR-2F)	4' 6"	1⅜"	AwH	AwH	7"	22-R

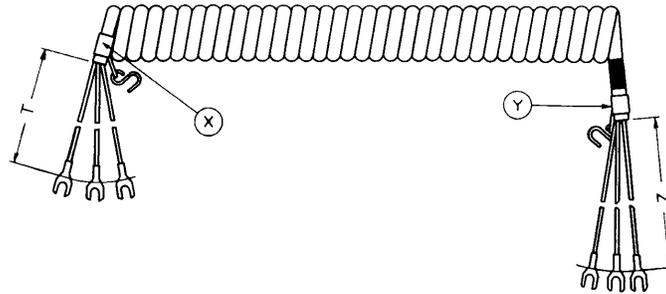


3 Conductor—Neoprene Jacket

Stock No.	Color Key	Code	Length	DIMENSIONS				Handsets Used On
				T	X	Y	Z	
211305-000	Blk.	(WCR-3J)	4' 6"	1⅞"	B	A	3"	26-C
216940-000	Blk.	(WCR-3F)	4' 6"	1⅞"	B	A	7"	20-R
211373-000	Blk.	(WCR-3K)	4' 6"	10" (1), 3¼" (2)	B	A	3"	27-C

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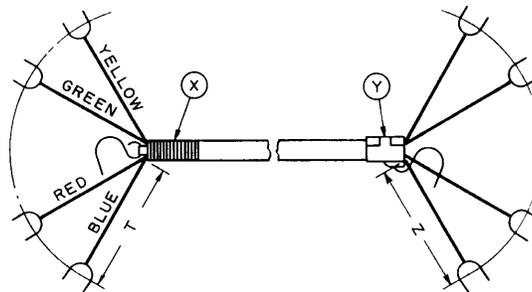
DURATEX HANDSET CORDS (Con't.)



3 Conductor—Coiled Kords*

Stock No.	Code	Length	DIMENSIONS				Color	Used On
			T	X	Y	Z		
211300-000	(WCK-3J)	8 1/2"	1 3/4" ± 1/8"	D	A	3" ± 1/8"	Black	26D
213117-000	(WCK-3JG)	8 1/2"	1 3/4" ± 1/8"	D	A	3" ± 1/8"	Gray	26D
211375-000	(WCK-3K)	10"	(1) 9", (2) 3" ± 1/8"	D	A	3" ± 1/8"	Black	27D
213119-000	(WCK-3KG)	10"	(1) 9", (2) 3" ± 1/8"	D	A	3" ± 1/8"	Gray	27D
213429-000	(WCK-3KB)	10"	(1) 9", (2) 3" ± 1/8"	D	A	3" ± 1/8"	Brown	27D
213928-000	(WCK-3KA)	10"	(1) 9", (2) 3" ± 1/8"	D	A	3" ± 1/8"	Green	27D
213929-000	(WCK-3KC)	10"	(1) 9", (2) 3" ± 1/8"	D	A	3" ± 1/8"	Ivory	27D
213930-000	(WCK-3KD)	10"	(1) 9", (2) 3" ± 1/8"	D	A	3" ± 1/8"	Red	27D
213931-000	(WCK-3KE)	10"	(1) 9", (2) 3" ± 1/8"	D	A	3" ± 1/8"	Yellow	27D
213932-000	(WCK-3KF)	10"	(1) 9", (2) 3" ± 1/8"	D	A	3" ± 1/8"	Blue	27D
213933-000	(WCK-3KH)	10"	(1) 9", (2) 3" ± 1/8"	D	A	3" ± 1/8"	Beige	27D
218914-000	(WCK-3KI)	10"	(1) 9", (2) 3" ± 1/8"	D	A	3" ± 1/8"	White	27D
218915-000	(WCK-3KJ)	10"	(1) 9", (2) 3" ± 1/8"	D	A	3" ± 1/8"	Aqua Blue	27D
218916-000	(WCK-3KK)	10"	(1) 9", (2) 3" ± 1/8"	D	A	3" ± 1/8"	Pink	27D
200305-101	(PCK-3K)	10"	(1) 8" + 3/4" - 1/4", (2) 2 1/4" ± 1/8"	D	A	3" ± 1/8"	Blue	31D
200305-102	(PCK-3K)	10"	(1) 8" + 3/4" - 1/4", (2) 2 1/4" ± 1/8"	D	A	3" ± 1/8"	Beige	31D
200305-103	(PCK-3K)	10"	(1) 8" + 3/4" - 1/4", (2) 2 1/4" ± 1/8"	D	A	3" ± 1/8"	Brown	31D
200305-104	(PCK-3K)	10"	(1) 8" + 3/4" - 1/4", (2) 2 1/4" ± 1/8"	D	A	3" ± 1/8"	Gray	31D
200305-105	(PCK-3K)	10"	(1) 8" + 3/4" - 1/4", (2) 2 1/4" ± 1/8"	D	A	3" ± 1/8"	Green	31D
200305-106	(PCK-3K)	10"	(1) 8" + 3/4" - 1/4", (2) 2 1/4" ± 1/8"	D	A	3" ± 1/8"	Ivory	31D
200305-107	(PCK-3K)	10"	(1) 8" + 3/4" - 1/4", (2) 2 1/4" ± 1/8"	D	A	3" ± 1/8"	Red	31D
200305-108	(PCK-3K)	10"	(1) 8" + 3/4" - 1/4", (2) 2 1/4" ± 1/8"	D	A	3" ± 1/8"	Yellow	31D
200305-309	(PCK-3K)	10"	(1) 8" + 3/4" - 1/4", (2) 2 1/4" ± 1/8"	D	A	3" ± 1/8"	Black	31D
200305-310	(PCK-3K)	10"	(1) 8" + 3/4" - 1/4", (2) 2 1/4" ± 1/8"	D	A	3" ± 1/8"	White	31D
200305-311	(PCK-3K)	10"	(1) 8" + 3/4" - 1/4", (2) 2 1/4" ± 1/8"	D	A	3" ± 1/8"	Aqua Blue	31D
200305-312	(PCK-3K)	10"	(1) 8" + 3/4" - 1/4", (2) 2 1/4" ± 1/8"	D	A	3" ± 1/8"	Pink	31D
200305-810	(PCK-3P)	9"	(1) 2 7/8", (2) 3 5/8"	A	D	(1) 9", (2) 2 1/4"	White	34
200305-811	(PCK-3P)	9"	(1) 2 7/8", (2) 3 5/8"	A	D	(1) 9", (2) 2 1/4"	Blue	34
200305-812	(PCK-3P)	9"	(1) 2 7/8", (2) 3 5/8"	A	D	(1) 9", (2) 2 1/4"	Pink	34
200305-814	(PCK-3P)	9"	(1) 2 7/8", (2) 3 5/8"	A	D	(1) 9", (2) 2 1/4"	Beige	34
200305-815	(PCK-3P)	9"	(1) 2 7/8", (2) 3 5/8"	A	D	(1) 9", (2) 2 1/4"	Turquoise	34

*Note: Standard Coiled Kords extend to a length of 6 ft. Special cords, black only, are available that extend to 8 ft., 10 ft., 12 ft., and 15 ft.

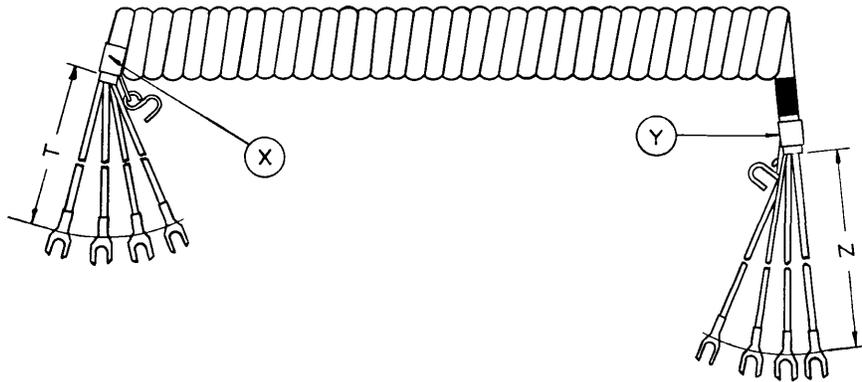


4 Conductor—Neoprene Jacket

211745-000	(WCR-4J)	4' 6"	1 7/8"	B	A	3"	26-E
216941-000	(WCR-4F)	4' 6"	1 7/8"	B	A	7"	21-R
211884-000	(WCR-4K)	4' 6"	10" (2), 3 1/4" (2)	B	A	3"	27-E
212593-000	(WCR-4L)	4' 6"	9" (2), 1 1/2" (2)	B	A	3"	28-B

Revised 1-1-61

DURATEX HANDSET CORDS (Con't.)



4 Conductor—Coiled Kords*

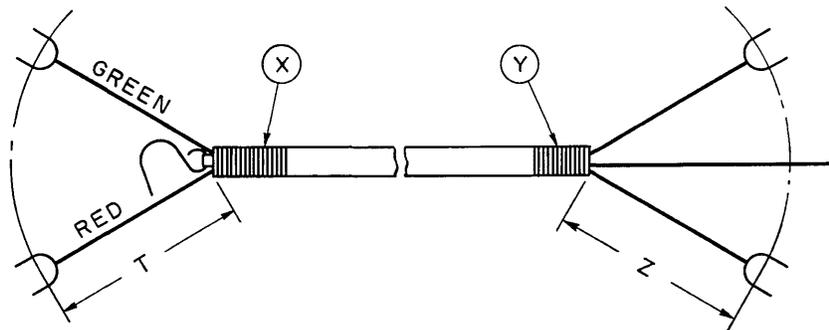
Stock No.	Code	Length	DIMENSIONS				Handsets Used On
			T	X	Y	Z	
212498-000	(WCK-4J)	8½"	1⅞" ± ⅛"	A	A	3¼" ± ⅛"	28-C (Black)
218819-000	(WCK-4JG)	8½"	1⅞" ± ⅜"	A	A	3¼" + ¼" - ⅛"	28-C (Gray)

*Note: Standard Coiled Kords extend to a length of 6 ft. Special cords, black only, are available that extend to 8 ft., 10 ft., 12 ft., and 15 ft.

DURATEX DESK STAND CORDS

Stromberg-Carlson Duratex Desk Stand Cords are covered with Nylon or Neoprene jacket which adds long life to the cord and also resists the tendency to kink or knot. These coverings com-

bined with the cord's straight-lay construction prevent wear from abrasion, add to the convenience of the users of the instruments and increase ultimate satisfaction.

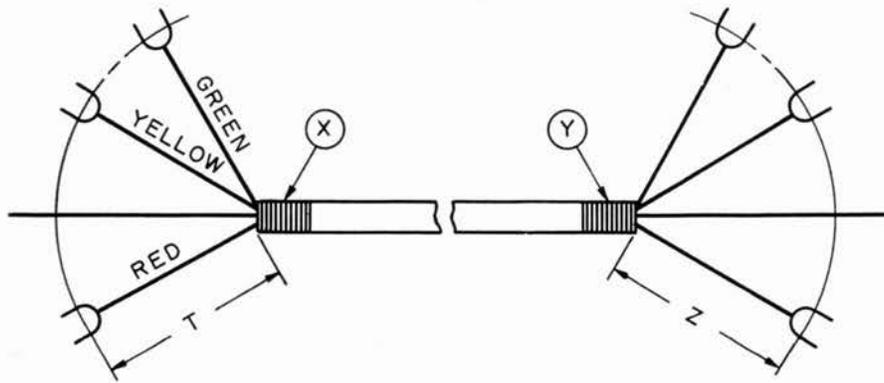


2 Conductor—Nylon Braid

Stock No.	Code	Length	DIMENSIONS				Telephones Used On
			T	X	Y	Z	
217117-000	(WDR-2G)	6'	7"	A	A	4½"	1179, 1212 and 1222

STROMBERG-CARLSON

DURATEX DESK STAND CORDS (Con't.)



3 Conductor—Neoprene Jacket

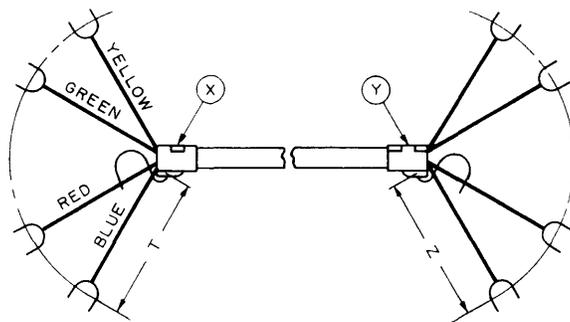
Stock No.	Color Key	Code	Length	DIMENSIONS				Telephones Used On
				T	X	Y	Z	
211304-000	Black	(WDR-3J)	6'	2½"	A	B	1⅝"	1543, 1543-W, 2-1543, 1544-B, 1443, 1443-S, 1444-B
213914-000	Green	(WDA-3J)	6'	2½"	A	B	1⅝"	1543-W, Green
213462-000	Brown	(WDB-3J)	6'	2½"	A	B	1⅝"	1543-W, Brown
213915-000	Ivory	(WDC-3J)	6'	2½"	A	B	1⅝"	1543-W, Ivory
213916-000	Red	(WDD-3J)	6'	2½"	A	B	1⅝"	1543-W, Red
213917-000	Yellow	(WDE-3J)	6'	2½"	A	B	1⅝"	1543-W, Yellow
213918-000	Blue	(WDF-3J)	6'	2½"	A	B	1⅝"	1543-W, Blue
212867-000	Gray	(WDG-3J)	6'	2½"	A	B	1⅝"	1543-W, Gray, & G-1543
213919-000	Beige	(WDH-3J)	6'	2½"	A	B	1⅝"	1543-W, Beige
217118-000	Black	(WDR-3K)	6'	7"	A	A	7"	1197, 1198 and 1207
217119-000	Black	(WDR-3L)	6'	7"	A	A	1⅝"	1212
218925-000	Aqua Blue	(WDI-3J)	6'	2½"	A	B	1⅝"	1543-W, Aqua, Blue
218926-000	Pink	(WDJ-3J)	6'	2½"	A	B	1⅝"	1543-W, Pink
218927-000	White	(WDK-3J)	6'	2½"	A	B	1⅝"	1543-W, White



Cords are constructed carefully to provide long life and dependable service.

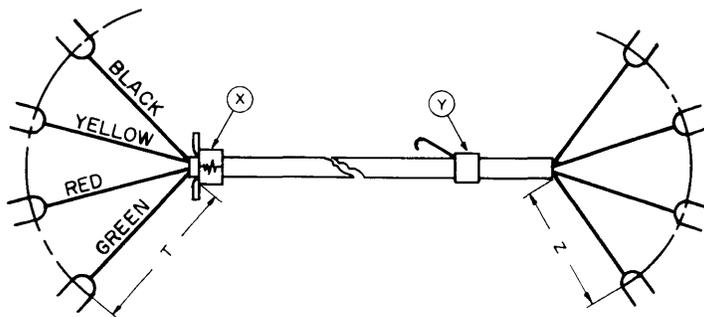
Revised 1-1-61

DURATEX DESK STAND CORDS (Con't.)



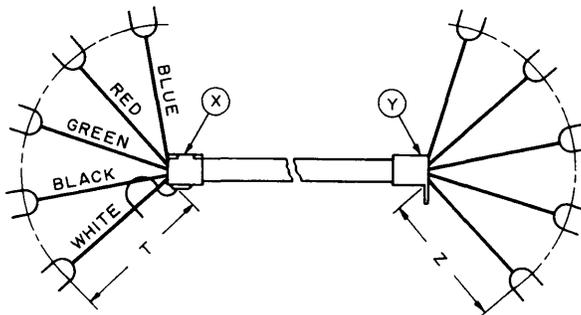
4 Conductor—Neoprene Jacket

Stock No.	Color Key	Code	Length	DIMENSIONS				Telephones Used On
				T	X	Y	Z	
211746-000	Black	(WDR-4J)	6'	2½", 3½", 4½", 7½"	A	B	1⅝"	1544-C 1544 Dial Executive's Phone
211747-000	Blue	(WDR-4K)	6'	2½", 3½", 4½", 7½"	A	A	7"	
214285-000	Gray	(WDG-4J)	6'	2½", 3½", 4½", 7½"	A	A	1⅝"	



4 Conductor—Vinyl Plastic Jacket

Stock No.	Color Key	Code	Length	DIMENSIONS				Used On
				T	X	Y	Z	
200315-410	White	(WDV-4P)	6'	2¾", 2¼", 6½", 4¾"	E	F	4½"	1600
200315-411	Blue	(WDV-4P)	6'	2¾", 2¼", 6½", 4¾"	E	F	4½"	1600
200315-412	Pink	(WDV-4P)	6'	2¾", 2¼", 6½", 4¾"	E	F	4½"	1600
200315-414	Beige	(WDV-4P)	6'	2¾", 2¼", 6½", 4¾"	E	F	4½"	1600
200315-415	Turquoise	(WDV-4P)	6'	2¾", 2¼", 6½", 4¾"	E	F	4½"	1600

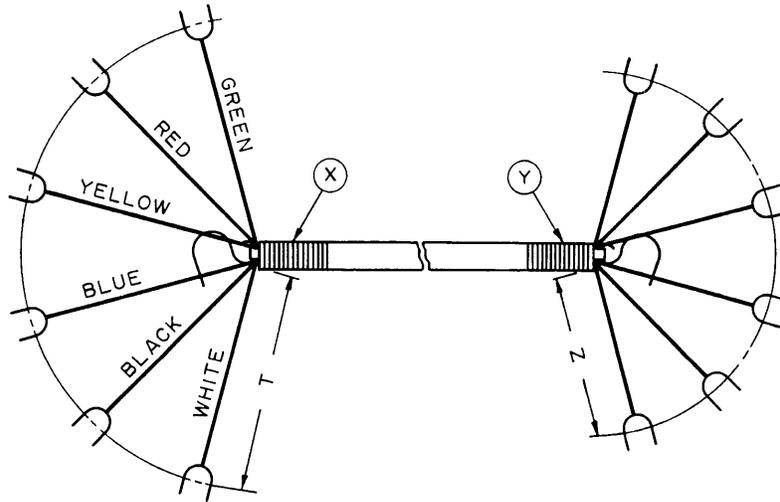


5 Conductor—Nylon Braid

Stock No.	Code	Length	DIMENSIONS				Telephones Used On
			T	X	Y	Z	
217116-000	(WDN-5C)	6'	4½"	C-6" min.	C-6" min.	4½"	1183, 1189 Special Telephone Instruments
211237-000	(WDN-5A)	6'	5"	A	B	4"	
213249-000	(WDN-5B)	6'	2½"	A	B	4"	

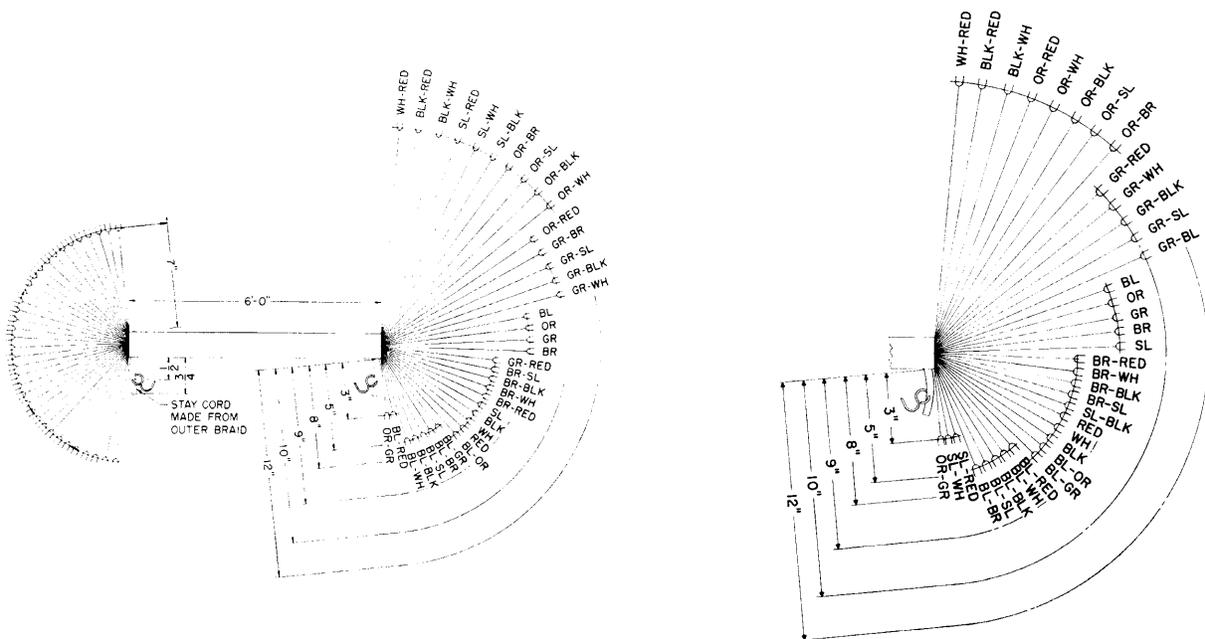
STROMBERG-CARLSON

DURATEX DESK STAND CORDS (Con't.)



6 Conductor—Nylon Braid

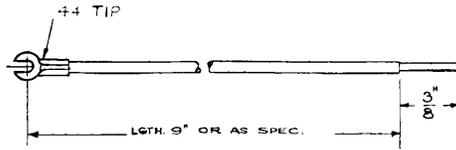
Stock No.	Code	Length	DIMENSIONS				Telephones Used On
			T	X	Y	Z	
209952-000	(WDN-6G)	6'	4"	Awh	Awh	3"	1473, 1573
212936-000	(WDN-6H)	6'	5"	Awh	B	4"	1573
212938-000	(WDN-6J)	6'	9" (3), 2½" (3)	Awh	Awh	4"	Special Telephone
217115-000	(WDN-6K)	6'	9" (2), 7" (4)	Awh	Awh	7"	1444-P, 1544-P, 1244-T, 1222-T
213921-000	(WDN-6GG)	6'	4"	Awh	Awh	3"	G-1573
219461-000	(WDN-6KG)	6'	9" (3), 2½" (3)	Awh	Awh	4"	1544-P, 1444-P, 1244-T, 1222-T



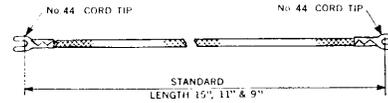
36 Conductor—Vinyl Plastic

Stock No.	Color	Code	Length	No. of Conductors	Telephones Used on
200315-109	Black	(WDV-36A)	6'	36	1575-A, 1575-B
200315-204	Gray	(WDV-36A)	6'	36	1575W-A1, 1575W-B1

DURATEX TERMINAL CORDS



T-1-D



T-1-E

T-1-D

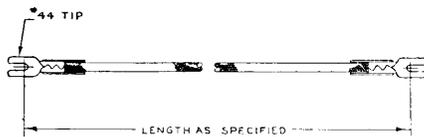
Stock No.	Length	Color	Stock No.	Length	Color
44350-000	3"	Br.	44158-000	9"	Or.
800658-000	4"	Br.	44159-000	9"	Wh.
44138-000	4"	Blk.	44194-000	11"	Br.
44139-000	4½"	Blk.	44160-000	12"	Br.
44141-000	4½"	Or.	44343-000	12"	Red
44142-000	4½"	Br.	208702-000	7"	Red
44143-000	5"	Blk.	44195-000	13"	Br.
44144-000	5"	Red	208703-000	7"	Grn.
44145-000	5"	Br.	207359-000	5"	Grn.
44146-000	5½"	Br.	208704-000	7"	Or.
44147-000	5½"	Blk.	208705-000	7"	Bl.
44148-000	7"	Blk.	207360-000	6"	Wh.
44149-000	6"	Grn.	200605-000	4¾"	Red
44150-000	6"	Bl.	212050-000	6"	Yel.
44151-000	6"	Br.	212049-000	6"	Or.
44152-000	6"	Red	212574-000	7"	Yel.
44153-000	6½"	Red	216977-000	3½"	Blk.
44154-000	9"	Blk.	216978-000	3½"	Red
44155-000	9"	Br.	216979-000	3½"	Or.
44156-000	9"	Red	216980-000	3½"	Br.
44157-000	9"	Grn.	217892-000	8"	Sl.
219535-000	2¾"	Bl.	219563-000	5½"	Red
219562-000	5"	Wh.	219564-000	4"	Bl.

Used on Nos. 1191, 1192 Telephones.

T-1-H

Stock No.	Length	Color	Stock No.	Length	Color
800662-000	9"	Br.	44354-000	11"	Br.
44355-000	15"	Br.	218103-000	9"	Red
218104-000	9"	Grn.			

Used with No. 17 transmitting arm.



T-1-L

T-1-L

Stock No.	Code	Length	Description
212707-000	(T-1-L)	3½"	Black

Used with No. 210278 Receiver.

T-1-K

Stock No.	Length	Color	Stock No.	Length	Color
210270-000	9"	Red	218105-000	4½"	Blk.
210271-000	9"	Grn.	218106-000	4½"	Or.
800656-000	6"	Br.	218107-000	4½"	Br.

T-1-M

T-1-E

Stock No.	Length	Color	Stock No.	Length	Color
44161-000	3"	Br.	44191-000	8"	Red
44162-000	4"	Blk.	800659-000	9"	Br.
44163-000	4"	Br.	44169-000	9"	Red
44176-000	4½"	Grn.	44170-000	9"	Wh.
44164-000	4½"	Red	44171-000	9"	Sl.
44165-000	5"	Br.	44172-000	9"	Grn.
44166-000	5"	Blk.	44173-000	9"	Blk.
44178-000	5"	Or.	44174-000	11"	Br.
44167-000	5"	Gr.	44175-000	15"	Br.
44180-000	5"	Red	203053-000	3¼"	Grn.
44181-000	6"	Br.	203054-000	5½"	Red
44182-000	6"	Grn.	203055-000	5½"	Wh.
44183-000	6"	Wh.	203056-000	1¾"	Red
44184-000	6"	Red	212048-000	9"	Yel.
44185-000	6"	Blk.	213587-000	10"	Grn.
44186-000	6"	Or.	201786-000	10"	Red
44187-000	6"	Bl.	202238-000	3¼"	Red
44188-000	8"	Grn.			
44189-000	8"	Or.			
44190-000	8"	Bl.			

Used with Nos. 12, 13, 14 Handsets, and Nos. 7, 10, 15, 17 Transmitters.

T-1-N

Stock No.	Length	Color	Stock No.	Length	Color
219551-000	10⅞"	Br.	219594-000	5"	Br.
219552-000	10⅞"	Red	219595-000	5"	Red
219553-000	10⅞"	Wh.	219596-000	5"	Wh.
219554-000	10⅞"	Grn.	219597-000	5"	Grn.

Used with #31 & 34 Handsets and 1600 Series Telephones.

CORDAGE

Stromberg-Carlson Duratex Cordage covered with either black nylon yarn or neoprene jacket is available to those who wish to make up their own cords in off-standard lengths.

Stock No.	Description	Covering
20237-000	Single Conductor	Black Nylon Yarn
20727-000	Two Conductors	Black Nylon Yarn
20758-000	Three Conductors	Black Nylon Yarn
20587-000	Four Conductors	Black Nylon Yarn
20809-000	Three Conductors	Neoprene
20824-000	Four Conductors	Neoprene

COTTON SLEEVING

Brown cotton sleeving — wax finish.

Stock No.	Inside Diameter	Feet Per Lb. Approx.
20031-000	¾ in.	1250
20032-000	⅞ in.	380
20033-000	⅝ in.	300

Revised 1-1-61

CORD ADJUSTERS

Provides a means to neatly adjust cord lengths so that cord weights hold cords taut. Made of black fibre—4½ ins. long, by 1 in. wide.



No. 6 Cord Adjuster

Stock No.	Code	Description
12018-000	(6)	Standard 2 and 3 conductor switchboard cords.

CORD FASTENERS

Brass punching—designed for drive-fit, through terminal rack, with tinned eyelet for soldering to switchboard cable, and screw terminal for connecting to switchboard cords. No. 36 Cord Tip fits either fastener.



No. 4 Cord Fastener

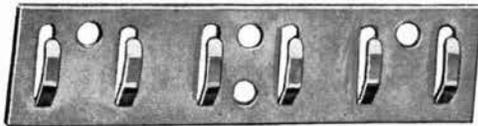


No. 5 Cord Fastener

Stock No.	Code	For Use On	Length
800667-000	(4)	Terminal Racks	1¾ in.
800668-000	(5)	Switchboards	1¾ in.
800669-000	(6)	Switchboards	1¾ in.

CORD HOOKS

To suspend switchboard cords from tip of stay cord and thereby remove strain from conductors. No. 4 Type mounts hooks on ½ centers.



No. 4A Cord Hooks

Stock No.	Code	Description
7921-000	(2)	Standard switchboard cord, single hook
16008-000	(4-A)	Standard switchboard cords, six hooks
16357-000	(4-B)	Standard switchboard cords, four hooks
16358-000	(4-C)	Standard switchboard cords, two hooks

CORD WEIGHTS

A standard Cord Weight for all types of regular switchboard cords, sufficiently heavy to restore cords to their respective places when plugs are withdrawn from jacks. Consists of a brass pulley wheel and a 9 oz. single pulley weight, armoured with steel casing. Dimensions—4 x 1²⁹/₃₂ x ¾". Wheel—7/8 x ¼".



No. 6

Stock No.	Code	Description
800707-000	(6)	Cord Weight

CORD TIPS

Cord tips are used to terminate cord and other conductors in a manner convenient for making electrical connections.

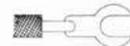


No. 9 No. 14 No. 17 No. 18

Stock No.	Code	Description
4877-000	(9)	For Nos. 10, 32, 42, 56, and 57 Type Plugs. Uses Stock No. 5729-000 or a No. 2 Screw. Hole Drill—No. 43, Opening—3/32 in.
5171-000	(14)	For Nos. 33, 34, 53, 54, and 55 Type Plugs. Uses Stock No. 8300-000 or a No. 1 Screw. Hole Drill, No. 48. Opening—3/4 in.
6916-000	(17)	Used on old style desk set cords. Connects to Magneto Desk Set Boxes using lock nut binding post. Spade opening 3/16 in. Fits Screws Nos. 8 or 10.
8312-000	(18)	For Stromberg-Carlson Receiver and Desk Set Cords and on telephone cords of other manufacture. Tip diameter—.081 in.



No. 20



No. 24

Stock No.	Code	Description
8446-000	(20)	For switchboard cord, stay cord. Holds cords on cord hooks. Hole—1/32 in.
8898-000	(24)	Transmitter Cord. Clamps under No. 4 Screw in base of desk stand.



No. 25



No. 34

Stock No.	Code	Description
8899-000	(25)	For stay cords. Connects cord to receiver cord tip.
28856-000	(34)	Used as Test Clip on Combination Telephone line cords.



No. 35

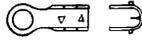


No. 37

Stock No.	Code	Description
11870-000	(35)	For desk and handset telephone cords. Spade opening—1/8 in. Fits No. 4 Screw.
15642-000	(37)	Used on radio receiver cords and special cordage terminals.

STROMBERG-CARLSON

CORD TIPS (Cont.)



No. 40

Stock No.	Code	Description
38336-000	(40)	Non-soldering piercing type, used at plug end of switchboard cords. Screw hole drill size $\frac{3}{32}$ ", length $\frac{7}{64}$ ". Takes No. 2 screw.



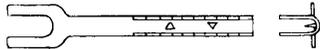
No. 41

Stock No.	Code	Description
38337-000	(41)	Non-soldering piercing type, used at plug end of switchboard cords. Screw hole drill size $\frac{3}{32}$ ", length $\frac{1}{32}$ ". Takes No. 2 screw.



No. 42

Stock No.	Code	Description
38338-000	(42)	Non-soldering piercing type, used at plug end of switchboard cords. Screw hole drill size $\frac{1}{8}$ ", length $\frac{2}{64}$ ". Takes a No. 4 screw.



No. 43

Stock No.	Code	Description
38334-000	(43)	Non-soldering piercing type, used on switchboard cords at cord fastener terminals. Spade opening slot $\frac{1}{64}$ ", length $1\frac{1}{32}$ ". Takes No. 4 screw.

Stock No.	Code	Description
216975-000	(46)	Non-soldering type, spade tip, used on line cords, .578" long.
217687-000	(47)	Non-soldering type, spade tip, used on TIE cords, $\frac{33}{64}$ " long.
217775-000	(48)	Non-soldering type, eyelet tip, used on TIK cords, .516" long.

Consult your nearest Stromberg-Carlson representative for advice on combining orders to take advantage of quantity price discounts.

*Du Pont's registered trademark.

SWITCHBOARD CABLE

All standard Stromberg-Carlson switchboard cable has tinned copper wires with "Mylar"* polyester film and single cotton insulation. Cable with braided cover is indicated by the letter B affixed to the code number.

All cable from 10 to 50 pairs inclusive, has one spare pair, and 100 pairs of cables have two spare pairs. The 10-triple and 20-triple cable have one spare triple.

No. 22 AWG Pairs

Code No.	Stock No.	Pairs	Approx. Diam. In.
105-B	(203726-000)	4	$\frac{17}{64}$
104-B	(201109-000)	11	$\frac{9}{32}$
106-B	(203728-000)	6	$\frac{19}{64}$
71-B	(800164-000)	10	$\frac{3}{8}$
66-B	(800157-000)	20	$\frac{15}{32}$
84-B	(800176-000)	25	$\frac{17}{32}$
108-B	(203734-000)	32	$\frac{37}{64}$
109-B	(203736-000)	40	$\frac{21}{32}$
90-B	(800185-000)	50	$\frac{45}{64}$
110-B	(203730-000)	75	$\frac{55}{64}$
91-B	(800189-000)	100	1

No. 22 AWG Triplets

Code No.	Stock No.	Triplets	Approx. Diam. In.
72-B	(800166-000)	10	$\frac{15}{32}$
65-B	(800155-000)	20	$\frac{9}{16}$
76-B	(800168-000)	20	$1\frac{3}{16} \times \frac{3}{8}$

No. 22 AWG Quads

Code No.	Stock No.	No. of Quads	Approx. Diam. In.
116-B	(203554-000)	4*	$\frac{23}{64}$

*This cable has no spares.

No. 22 AWG Pairs and Singles

Code No.	Stock No.	No. Pairs	No. Singles	Diam. In.
107-B	(203732-000)	10	10	$\frac{7}{64}$
113-B	(203785-000)	20	20	$\frac{37}{64}$
114-B	(204802-000)	20	20	$\frac{3}{8} \times .800$
102-B	(801201-000)	9	2	$\frac{13}{32}$
103-B	(800202-000)	11	2	$\frac{13}{32}$

No. 22 AWG Singles and Triplets

Code No.	Stock No.	Singles	Triplets	Approx. Diam. In.
68-B	(800161-000)	20	20	$\frac{21}{32}$
69-B	(800163-000)	20	20	$\frac{7}{8} \times \frac{1}{2}$

No. 20 AWG Pairs

Code No.	Stock No.	No. Pairs	Approx. Diam. In.
111-B	(203738-000)	5	$\frac{25}{64}$
112-B	(203740-000)	10	$\frac{31}{64}$

No. 18 AWG Cable (Toll)

Pairs			
Code No.	Stock No.	Pairs	Approx. Diam. In.
86-B	(800179-000)	10	$\frac{15}{32}$
85-B	(800178-000)	20	$\frac{5}{8}$

Generator Cable

No. 87-B cable has "Mylar"* polyester film and cotton over No. 22 AWG tinned wire conductors. No. 88-B cable has No. 18 AWG rubber-covered and cotton braided individual conductors.

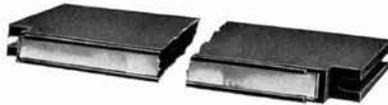
Code No.	Stock No.	No. Singles	Wt/1000'	Approx. Diam. In.
87-B	(800180-000)	6	58	$\frac{1}{4}$
88-B	(800184-000)	6	90	$\frac{5}{16}$

Revised 1-1-61

DESIGNATION STRIPS

No. 2 Type

These Designation Strips are used principally in multiple switchboards in connection with trunk jacks. They consist of a maple mounting block and a metal card holder with cellulose acetate protector.



No. 2 Designation Strip

Stock No.	Code	Used With	Dimensions
800708-000	(2)	109 Jack	Face Length— $10\frac{15}{32}$ " Width— $\frac{1}{2}$ " Mounting Centers— $10\frac{15}{16}$ " Jack Fastener—No. 15

No. 5 Type

Designation Strips of this type have metal card holders and acetate protectors. They are arranged for screwing directly to the face of a switchboard, plugboard or keyshelf.



No. 5 Designation Strip

Stock No.	Code	Use	Length	Width	†Finish
800710-000	(5)	Plug Shelf	$\frac{1}{2}$ "	$\frac{1}{2}$ "	Pol. Nickel
800730-000	(24)	Keyboard	Specify	$\frac{1}{2}$ "	BLK. Japan
33764-000		Swbd.	$10\frac{23}{64}$ "	.373"	Brass

†Dull black finishes will be provided when necessary.

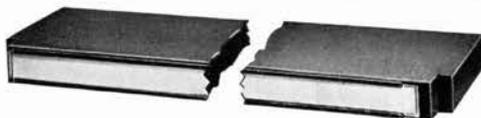
No. 14 Type

A type of Designation Strip consisting of a maple mounting block with a designation card, and an acetate protector—both held in place by three nickel plated screws. No. 14 is designed for use with eight panel multiple switchboards, and No. 16, which is similar to the No. 14, is used with six panel switchboards. Mounted with No. 17 Jack Fastener.



No. 14 Designation Strip

Stock No.	Code	Used With	Dimensions
800715-000	(14)	127 Jack	Face Length— $7\frac{15}{32}$ " Width— $\frac{3}{8}$ " Mounting Centers— $8\frac{3}{8}$ "
800717-000	(16)	130 Jack	Face Length— $10\frac{1}{8}$ " Width— $\frac{1}{2}$ " Mounting Centers— $11\frac{1}{16}$ "



No. 15 Designation Strip

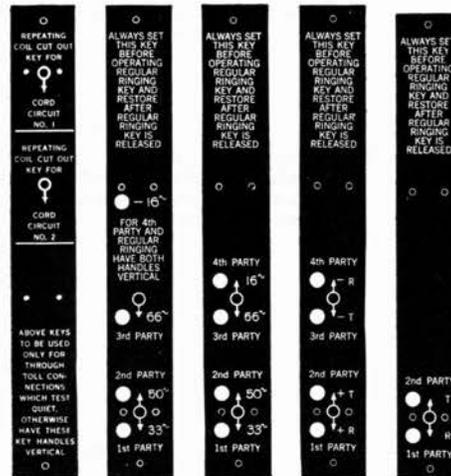
No. 15 Type

These Designation Strips consist of a dull black finished metal holder and celluloid protector, mounted on maple mounting block. The No. 15 Designation Strip is used in 8 panel multiple switchboards, and the No. 17 Designation Strip is used in PBX Switchboards and 6 panel multiple switchboards. Requires No. 17 Jack Fastener.

Stock No.	Code	Used With	Dimensions
800716-000	(15)	127 Jack	Face Length— $7\frac{15}{32}$ " Width— $\frac{5}{16}$ " Mounting Centers— $8\frac{3}{8}$ "
800718-000	(17)	130 Jack	Face Length— $10\frac{1}{8}$ " Width— $\frac{1}{2}$ " Mounting Centers— $11\frac{1}{16}$ "
800728-000	(22)	Same as	No. 15, except has slot at rear for sheet metal fire screen.
800731-000	(25)	127 Jack	Face Length— $7\frac{15}{32}$ " Width— $\frac{1}{2}$ " Mounting Centers— $8\frac{3}{8}$ "
481367-000	(34)	93-A 94-A Jack Mtg.	Face Length— $16\frac{15}{16}$ " Width— $\frac{1}{2}$ " Mounting Centers— $17\frac{15}{16}$ "

No. 19 Type

This type consists of a metal mounting plate with a car designation strip, and celluloid protector strip, held in place by four nickel plated screws. Used on magneto Non-Multiple switchboards.



No. 19 No. 19-A No. 19-B No. 19-C No. 19-D

Stock No.	Code	Use	Dimensions
800719-000	(19)	Keyboard of No. 105 Switchboard designating cord circuit operation.	Length— $7\frac{1}{4}$ " Width—1" Mtg. Centers— $6\frac{13}{16}$ "
800720-000	(19-A)	Keyboard of No. 105 Switchboard with Harmonic Master Key.	Same as No. 19
800721-000	(19-B)	Keyboard of No. 105 Switchboard with Harmonic Master Key.	Same as No. 19
800722-000	(19-C)	Keyboard of No. 105 Switchboard with Pulsating Master Key.	Same as No. 19
800723-000	(19-D)	Keyboard of No. 105 Switchboard with divided circuit Master Key.	Same as No. 19

DESIGNATION STRIPS (Cont.)

No. 20 Type

The No. 20 Type is shorter than the No. 19, but is of similar design. Used on PBX Switchboards to indicate the operation of the key cams.

Stock No.	Code	Use	Dimensions Length Width
800724-000	(20)	Manual PBX Trunk	5½" 1"
800725-000	(20-A)	Dial PBX Trunk	5½" 1"
800726-000	(20-B)	Magneto PBX Trunk	5½" 1"
800727-000	(20-C)	PBX Swbd.-Plug Trunk	
800736-000	(30-A)	PBX—Cords, Jack Trunk	5½" 1"
800737-000	(30-B)	PBX—Cords, Jack Trunk	5½" 1"
800738-000	(31-A)	PBX—Cords, Jack Trunk	6½" 1"
		2 Pty. Ringing—	
47268-000	(32)	No. 125 Swbd.	5½" 1⅞"
47269-000	(32-A)	4 Pty. with Hand Gen. No. 125 Swbd.	5½" 1"
47270-000	(32-B)	4 Pty Harmonic— No. 125 Swbd.	5½" 1"
47271-000	(32-C)	5 Pty. and Reverse— No. 125 Swbd.	5½" 1⅞"
47272-000	(32-D)	5 Pty.—No. 125 Swbd.	5½" 1⅞"
201011-000	(33)	Cord cct. operation—PBX	6½" 1"
205059-000	(35)	No. 127 PBX Switchboard	
207252-000	(36)	No. 127 PBX Switchboard	6½" 1"

No. 23 Type

These designations consist of a dull black finished holder and a celluloid protector. Made to fasten to wood surfaces with 3 No. 128 Wood Screws. Used on No. 115 Lamp Signal Magneto Switchboards.

Stock No.	Code	Used	Dimensions Length Width
8000729-000	(23)	115 Swbd.	10⅞" ⅝"

No. 26 Type

These designations consist of a dull black finished holder with a semi-transparent protector. They mount directly in front of No. 121 Lamp Sockets so that only pin points of light show through for trunk signal service. Push fit in face of lamp socket.

Stock No.	Code	Used with	Dimensions	
			Length	Width
800732-000	(26)	121 L.S.	7½"	3¼"
800733-000	(27)	20 per	10⅞"	3¼"
800734-000	(28)	10 per	10⅞"	3¼"
800735-000	(29)	20 per	7½"	3¼"

DIALS AND DIAL MOUNTINGS

DIALS

Stromberg-Carlson Dials

For Stromberg-Carlson Dials and Dial Parts, designed to fit not only Stromberg-Carlson Telephone Instruments, but those of any other American make, see Section A of this catalog.



DIAL MOUNTINGS

Switchboard Type Mounting

The simple screw operated clamp plus the cable connection enable this dial mounting to accommodate all standard dials. The mount can also, without any changes, be placed in either the horizontal or vertical plane.

The Stromberg-Carlson Dial Mounting is very simple, small in size, light in weight, and furnished in an attractive black wrinkle finish.

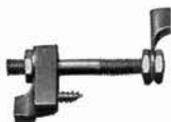
When ordering specify 211205-000, No. 3 Switchboard Dial Mounting Assembly.

Note—On certain switchboards, when fully equipped on the keyshelf, space can be gained by using a simple base block. Consult our representative who can specify the necessary block for your needs.

Suspended Telephone Type Mounting

For mounting a Stromberg-Carlson Dial on suspended type telephones already in the field, specify No. 200820-000 (143-A) Dial Mounting.

DISTRIBUTING BARS



No. 1-A Distributing Bar



No. 3 Type Distributing Bar

No. 1-A Type

A single point distributing bar with terminal lugs for front and back connections. Used chiefly to terminate power leads in PBX Switchboards.

Stock No.	Code	Points	Used on
800751-000	(1-A)	1	Terminal boards of PBX Switchboard to connect with battery supply.

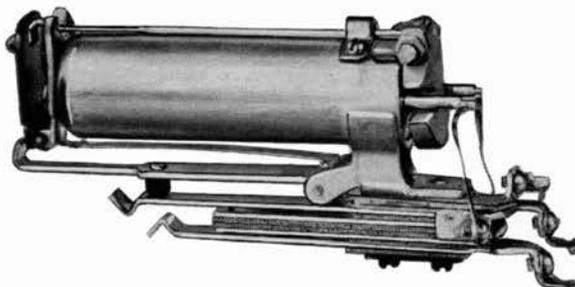
No. 3 Type

This distributing bar is used for connecting a given number of wires to a common source of current or to a common ground. Provides convenient means of opening circuits for testing purposes. Consists of a drawn brass bar, screws, and tinned terminal lug. Used on switchboard terminal boards.

Stock No.	Code	Points	Length
800741-000	(3)	4	2⅝"
800743-000	(5)	6	3⅝"
800745-000	(7)	8	4⅝"
800746-000	(8)	10	5⅝"
800748-000	(10)	14	7⅝"
800749-000	(11)	16	8⅝"
800750-000	(12)	20	10⅝"

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LINE AND CLEAR-OUT DROPS



Nos. 18, 23 and 25 Type Line Drops

These line signals consisting of a combined plug-restoring drop and jack unit are used in present Stromberg-Carlson magneto switchboards such as the No. 125 with floor cabinet in which the drops are mounted in groups of ten and the No. 126 Wall Type which is arranged for mounting in groups of five.

The No. 18 Type is equipped with contacts for regular night alarm service only but provision is made for adding the necessary contact assembly for code alarm service in case this feature is required at some future time.

The No. 23 Type equipped with separate contacts for both regular night alarm and code alarm signals. In other respects these two types use the same parts for both the drop and jack assemblies and both take the No. 56-X 2-Conductor Plug.

The No. 25 Type Drop is similar to the No. 18 except that it has the third conductor for sleeve connection. Used for busy test.

The No. 18 and 23 Type Drops are of unit construction, consisting of double cut-off jacks with long, rugged springs combined with a complete drop signal having a shutter that is automatically restored when the operator plugs into the jack. The design permits easy removal of drop coils, jacks and other assembly parts which is a desirable feature from the standpoint of maintenance. The construction throughout is simple and durable and this, together with the use of properly selected materials, assures successful resistance against the constant wear-and-tear to which all line signals are subjected.

Nos. 18, 23, 25 and 26 Type Line Drops Less Mounting Plates

Stock No.	Code	Resistance Ohms	Type Alarm	Plug Used	No. of Drops per strip
801788-000	(18-A)	200	Regular	No. 56-X	10
801789-000	(18-B)	500	Regular	No. 56-X	10 or 5
801790-000	(18-C)	600	Regular	No. 56-X	10
* 49608-000	(18-D)	200-200 1500 N.I.	Regular	No. 56-X	10
801798-000	(23-B)	500	Reg. & Code	No. 56-X	10
*204819-000	(23-D)	200-200 1500 N.I.	Reg. & Code	No. 56-X	10
202063-000	(25-B)	500	Regular	No. 53.	10
206392-000	(26-B)	500	Regular	No. 56, 65R	10

*Center Tap Coils for Push Button ringing on metallic lines.

Nos. 18 and 23 Line Drops, when furnished without mountings, do not include the following parts which are furnished only when ordered with fully equipped mounting plates:

Stock No.	Description
27271-000	Metal Sleeve (Jack)
27188-000	Insulating Sleeve
27297-000	Washer (Sleeve)
37196-000	Spacer
37469-000	Bushing

Nos. 18 and 23 Type Line Drops With Mounting Plates

Nos. 18 and 23 Type Drops on fully equipped mounting plates of ten each will be carried in stock for additions to No. 125 Switchboards that are now in service.

Stock No.	Description
40134-000	10—No. 801789-000 (18-B) Drops (500 Ohms) mounted on 1—No. 37197-000 (147) Drop Mounting Plate
49612-000	10—No. 49608-000 (18-D) Drops (100-100 Ohms) mounted on 1—No. 37197-000 (147) Drop Mounting Plate
40133-000	10—No. 801798-000 (23-B) Drops (500 Ohms) mounted on 1—No. 37197-000 (147) Drop Mounting Plate
200434-000	5—No. 200429-000 (Special No. 18-B) Drops (500 Ohms) mounted on 1—No. 200435-000 Drop Mounting Plate

NOTE: In ordering drops, specify required numbering.



10 No. 18 Drops on No. 147 Drop Mounting Plate

No. 21 Type Clear-Out (Ring-Off) Drop

The No. 21 Clear-Out Signal is a drop unit only of the same construction as the drop used in the combined drop and jack line signals. These drops are manually restored and are used as clear-out signals in the No. 125 and No. 126 Switchboards.

Stock No.	Code	Resistance	Description
801793-000	(21-A)	200 Ohms	Clear-Out Signal (Less Jack)
801794-000	(21-B)	500 Ohms	Clear-Out Signal (Less Jack)
801795-000	(21-C)	600 Ohms	Clear-Out Signal (Less Jack)
* 49609-000	(21-D)	100-100 Ohms	Clear-Out Signal (Less Jack)

*For push button signalling on metallic lines.

Coils for Nos. 18, 21, 23 and 25 Standard Types of Complete Drops

No. 18 Type Line signal (Regular alarm only) No. 56 Plug
No. 23 Type Line signal (Regular and code alarm) No. 56 Plug
No. 21 Type Clear-out signal (No jack) No Plug

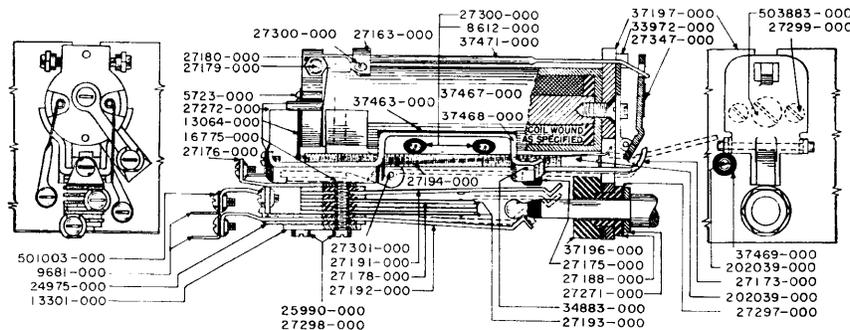
Stock No.	Resistance	Use
27186-000 Coil only	200 Ohms	Nos. 18-A, 21-A Drops
49142-000 Coil only	100-100 Ohms	No. 21-D Drop
49143-000 Coil only	200-200 1500 N.I.	Nos. 18-D, 23-D Drops
35427-000 Coil only	500 Ohms	Nos. 18-B, 21-B, 23-B, 25-B, 26-B Drops
35428-000 Coil only	600 Ohms	Nos. 18-C, 21-C Drops

NOTE: No. 49948-000 Impregnated 500 Ohm Coils are used with No. 18-B and 21-B line and clear-out drops in the No. 126 Wall Type Switchboard.

COMBINED DROP AND JACKS UNITS

Parts of Nos. 18 and 23 Type Drops (Less Coils)

Stock No.	Description	Use	Stock No.	Description	Use
503883-000	Screw	Coil retaining screw	(a) 27301-000	Pin	Used with No. 27173-000 Spring
8612-000	Washers (2)	Used with bracket screws	27347-000	Number plate	Shutter (specify number)
9681-000	Connectors (4)	Jack Springs	33972-000	Shutter assembly	Drop assembly
501003-000	Screws	Used with connectors	(a) 34883-000	Stud	Jack assembly
(a) 13301-000	Plate	Spring pileup (Top)	(b) 37196-000	Spacer	Used with No. 37468-000 Bracket
(a) 24975-000	Insulation (5)	Spring pileup	(a) 37463-000	Insulation	Drop Coil
(a) 25990-000	Screws (2)	Spring pileup	(a) 37467-000	Shell	Used With No. 37465-000 Rod
27163-000	Saddle	Drop shell	(a) 37468-000	Bracket	Mounting Plate
(a) 27173-000	Spring	Shutter restoring	(b) 37469-000	Bushing	Drop assembly
(a) 27175-000	Separator	Spring pileup	37471-000	Armature assembly	(Code alarm) consisting of—
(a) 27176-000	Terminal	Used with No. 27194-000 Spring	(a) 37523-000	Contact assembly	1 No. 37465 Rod, 1 No. 13064 Spring 1 No. 5723 Screw
(a) 27178-000	Insulations (2)	Spring pileup	(a) 49768-000	Screws (2)	Used with No. 37468-000 Bracket
27179-000	Screws (2)	Armature	(a) 49769-000	Bushings (2)	Used with No. 49768-000 Screws
27180-000	Nuts (2)	Armature	202039-000	Rod assembly	Code alarm
(b) 27188-000	Insulating sleeve	Jack assembly	501003-000	Screws (6)	Used with No. 9681-000 Connectors
(a) 27191-000	Spring assembly	Ring conductor	503883-000	Screw	Coil retaining screw
(a) 27192-000	Spring assembly	Tip conductor	(a) A basic assembly of these parts may be ordered under Stock No. 200578-000 which does not include regular or code alarm contacts but does include jack and associated parts.		
(a) 27193-000	Spring assemblies (2)	Inner contacts	(b) These parts are assembled with the strip on which the drops are mounted. See "Drop Mountings."		
(a) 27194-000	Spring assembly	Regular night alarm			
(b) 27271-000	Jack (Metal bushing)	Drop and Jack unit			
27272-000	Connectors (2)	Terminals			
(b) 27297-000	Washer	Jack sleeve			
(a) 27298-000	Bushings (2)	Used with No. 25990-000 Screws			
27299-000	Screws (2)	Drop shutter			
27300-000	Screws (2)	Used with No. 37468-000 Bracket			
27300-000	Screw	Used with No. 27163-000 Saddle			



Parts of Nos. 18 and 23 Type Drops

Drop Mounting Plates

Stock No.	Code	Description	Use
*37197-000	(147)	Mounts 10 No. 18 or 23 Line Drops	No. 125 Swbd.
37198-000	(148)	Mounts 10 No. 21 Clear-Out Drops	No. 125 Swbd.
39860-000	(149)	Mounts 10 No. 24 Line Drops	No. 106 Swbd.
200435-000	—	Mounts 5 No. 18 or 23 Line Drops	No. 126 Swbd.

*No. 37197-000 (147) Drop Mounting Plate is assembled with the following parts:

- 10 No. 27271-000 Metal Bushings (Jack)
- 10 No. 27188-000 Insulating Sleeves
- 10 No. 27297-000 Washers (sleeve)
- 1 No. 37196-000 Spacer
- 10 No. 37469-000 Bushings

Drop Blanks

Stock No.	Code	Type Drop	No. of Drops Covered	Used
37194-000	(42)	18, 23	10	No. 125 Magneto Switchboard
200476-000	—	18, 23	5	No. 126 Magneto Switchboard
27327-000	(41)	23	1	Nos. 125, 126 Magneto Swbds.
40728-000	(43)	18	1	Nos. 125, 126 Magneto Swbds.

Drop Blanks—Steel

Stock No.	Code	Fills the space of—
8308-000	(33)	1 No. 11 Drop
8400-000	(34)	5 No. 11 Drops

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FORMER DROPS

No. 11 Type Combined Drops and Jacks

This is a line signal used on replaced magneto switchboards such as the No. 105 and A-11741 types which have been superceded respectively by the No. 125 and No. 126.

The No. 11 Unit consists of a combined Jack and complete drop that mounts in strips of five. This drop is used for replacements only as all magneto boards that are now standard are equipped with No. 18 or No. 23 Type Line Drops.

Single drop measures $4\frac{7}{8}$ " x $1\frac{3}{32}$ " x $1\frac{1}{16}$ ". The No. 140 drop strip mounts 5 drops: $7\frac{3}{64}$ " x $1\frac{1}{16}$ ".

The No. 12 type drop—less jack—is the clearing-out signal associated with the No. 11 type line drop. On present types of magneto boards the No. 21 type clearing-out is used in place of the No. 12.

Special Coil

No. 28442-000 is a double wound balanced drop coil that is interchangeable with the standard single wound coil of the No. 11 Drop. This coil reduces power line inductive interference and is used on lines that have push button telephones for ringing central.



No. 11 Drop
on No. 140 Drop Mounting

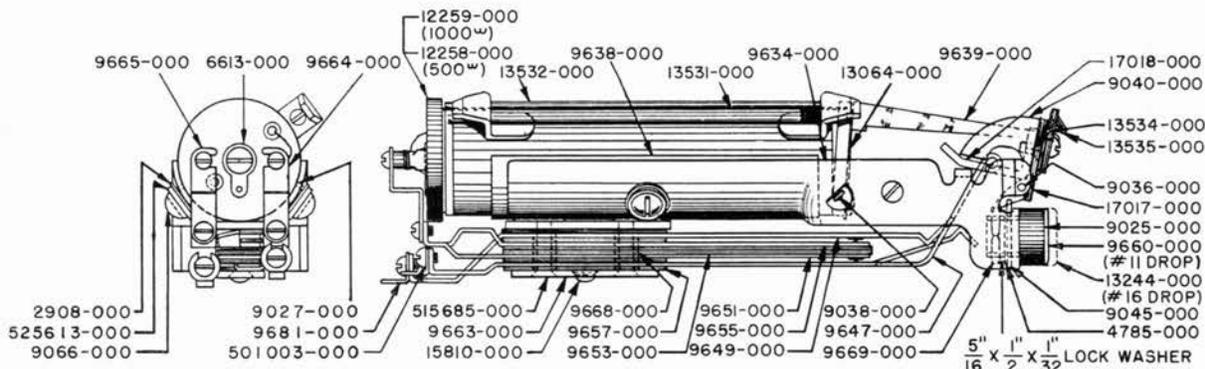
Stock No.	Code	Use	Resistance
801771-000	(11-A)	Line Signal in former Magneto Swbds.	500 Ohms
801773-000	(11-F)	Same as 11-A	1000 Ohms
801775-000	(12-A)	Clear-Out Signal (has no jack)	500 Ohms
801777-000	(12-F)	Same as 12-A	1000 Ohms
801781-000	(14-A)	Same as 12-A	500 x 500 Ohms
801782-000	(16-A)	Same as 11-A except takes No. 53 Plug	500 Ohms
801784-000	(16-F)	Same as 16-A	1000 Ohms
801785-000	(17-A*)	Takes No. 53 Plug	500 Ohms
801787-000	(17-F*)	Takes No. 53 Plug	1000 Ohms

* In these drops the jack sleeve is terminated for busy test on multiple or cord circuit functions.

Parts of Nos. 11, 16, 17 Line Drops

Nos. 12 and 14 Clear-Out Drops

Stock No.	Description	Used on Drop Nos.	Stock No.	Description	Used on Drop Nos.
2908-000	Washers (2)	11, 12, 14, 16, 17	9660-000	Bushing (Jack)	11
4785-000	Washer	11, 16, 17	9663-000	Clamp Plate	11, 16, 17
525613-000	Washer	11, 12, 14, 16, 17	9664-000	Connector	11, 16, 17
6613-000	Terminal	11	9665-000	Connector	11, 16, 17
515685-000	Screw	11, 16, 17	9668-000	Bushings (2) Spring	11, 16, 17
9025-000	Bushing	11, 16, 17	9681-000	Connectors (2)	11, 16, 17
9027-000	Bushing (2) Frame	11, 12, 14, 16, 17	501003-000	Screws 4—RHBM	11, 16, 17
9036-000	Pin	11, 12, 14, 16, 17	12258-000	Coil—500 Ohms	11-A, 12-A, 16-A, 17-A
9038-000	Pin	11, 12, 14, 16, 17	12259-000	Coil—1000 Ohms	11-F, 12-F, 16-F, 17-F
9045-000	Washer	11, 16, 17	12260-000	Coil—500-500 Ohms	14-A
9066-000	Screws (2)	11, 12, 14, 16, 17	13064-000	Spring (Armature)	11, 12, 14, 16, 17
9634-000	Frame assembled	11, 12, 14, 16, 17	13244-000	Bushing (Sleeve)	16, 17
9638-000	Insulation	11, 12, 14, 16, 17	13531-000	Rod Assembly	11, 12, 14, 16, 17
9639-000	Armature	11, 12, 14, 16, 17	13532-000	Shell Assembly	11, 12, 14, 16, 17
9647-000	Spring (Jack)	11, 16, 17	13534-000	Number Plate	11, 12, 14, 16, 17
9649-000	Spring (Jack)	11, 16, 17	13535-000	Protector	11, 12, 14, 16, 17
9651-000	Spring Assembly (contact)	11, 16, 17	15810-000	Button	11, 16, 17
9653-000	Insulations (Long spring) 2	11, 16, 17	17016-000	Shutter	11, 12, 14, 16, 17
9655-000	Spring Assembly (contact)	11, 16, 17	17017-000	Frame	11, 16, 17
9657-000	Insulations (short spring) 4	11, 16, 17			



STROMBERG-CARLSON

EXTENSION BELLS

See Supply Catalogue for No. 53 Loud Ringing Extension Bell.

FUSES

250 Volt Enclosed Fuse — Ferrule Type

Stock No.	Overall Length	Operates On	Stock No.	Overall Length	Operates On
41036-000	2"	3 Amp.	41042-000	2"	30 Amp.
41037-000	2"	6 Amp.	41043-000	3"	35 Amp.
41038-000	2"	10 Amp.	41044-000	3"	40 Amp.
41039-000	2"	15 Amp.	41045-000	3"	45 Amp.
41040-000	2"	20 Amp.	41046-000	3"	50 Amp.
41041-000	2"	25 Amp.	41047-000	3"	60 Amp.

Protection Fuses

These are link-type fuses with coppered terminals that are used principally for protecting power circuits.

Stock No.	Code	Amp. Rating	Screw Centers	Replaces	Used on
801560-000	(1)	3	1"	G-179	Connecting Racks
801562-000	(4)	10	1"	G-174	Relay Racks

GONGS

The two-toned (Hi-Lo) bells furnish a clear and pleasing tone which compels attention without being objectionable. Ringers that are used on the 1248-58-68 Magneto Telephones continue to use two-coil ringers with the gong mounting as part of the ringer assembly.

The following gongs are used with Stromberg-Carlson Ringers:

Stock No.	Size	Finish	No. of Telephone
*28569-000	1 3/4"	Brass	1210, 1211, 1212, 1222, 1223, 1242, 1243, 1247, 1248, 1258 Handset Tels.
*28570-000	1 3/4"	Brass	1260, 1268 Desk Set Boxes
9888-000	2"	Brass	903, 904, 965, 1122, 1163-IC Tels. and 1192 Handset Telephones

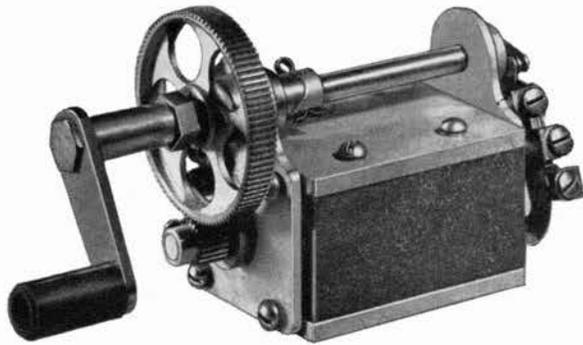
12047-000	2 1/2"	Black	896, 1155, 1157, D-2843 Tels. 327, 1156, 1158, 1167, 1180 and 1230 Desk Set Boxes.
24604-000	3 5/16"	Black	1191 Telephone, 1209 Desk Set Box
8437-000	4"	Brass	890, 950 Iron-Clad Telephones.
207742-000	2"	Brass	Hi Toned for 1400 and 1500 Series Telephones
207743-000	2"	Brass	Lo Toned for 1400 and 1500 Series Telephones

*28569-000 and 28570-000 are used in pairs. The material is of different thickness to produce a two-tone effect.

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HAND GENERATORS

No. 64 Streamlined Type



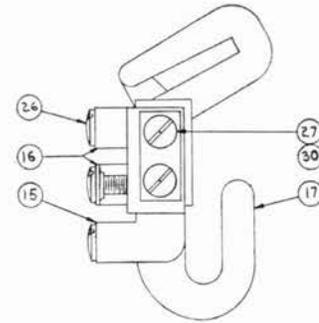
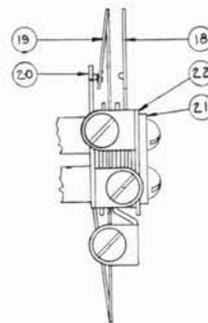
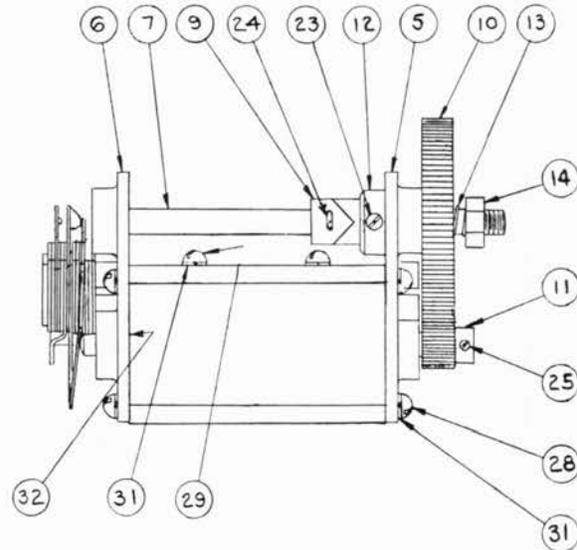
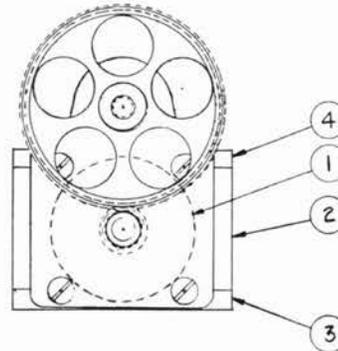
No. 64 Alnico Hand Generator

The No. 64 is a compact Alnico magnet generator used in our magneto telephones and in our switchboards for emergency ringing. While occupying a much smaller space, it is fully as powerful as the bulky, old style 5-bar generator.

The No. 64 is an adaptation of the generator that has been used over a period of years for government requirements and has proved entirely dependable under every possible condition that can be encountered in actual service operation.

This generator furnishes a surplus of ringing current, with ample voltage at all loads. Precision design and accurately made assembly parts have produced a smooth motion that assures long life and economical service.

Stock No.	Code	Description	Use
201678-000	(64)	Alnico Generator	No. 1248, 1258 Telephones No. 1268 Mag. Desk Set Box All types of switchboards



Assembly Parts—No. 64 Generator

Drawing Item No.	Stock No.	Description
1	201679-000	Armature assembly
	204859-000	Crank assembled
	203459-000	Crank assembly
	207593-000	Crank assembly
	11730-000	Crank assembly
2	201690-000	Magnets
3	201691-000	Field pole plate (Bottom)
4	201692-000	Field pole plate (Top)
5	201693-000	Bearing plate
6	201694-000	Bearing plate
7	201695-000	Generator Shaft assembly
9	201697-000	Cam (over shaft)
10	201698-000	Large Gear
11	201699-000	Pinion (Small Gear)
12	201700-000	Collar (over large gear sleeve)
13	201701-000	Spiral spring (Next to large gear)
14	201702-000	Spring retainer (Hex nut)
15	201704-000	Terminal (Shunt)
16	201703-000	Terminals (2) Shunt
17	201705-000	Spring (Next to Armature)
18	201706-000	Contact Spring Assembly (Shunt)
19	201707-000	Contact Spring Assembly (Shunt)
20	201709-000	Contact Spring Assembly (Shunt)
21	201711-000	Screw Plate
22	201713-000	Insulations (4) Springs
23	204462-000	Set Screw (Collar)
24	245-000	Cotter pin (Cam)
25	501853-000	Screw (Pinion to shaft)
26	503623-000	Terminal Screws (3)
27	504053-000	Screws (2) Screw plate

Drawing Item No.	Stock No.	Description
28	505453-000	Screws (8) Bearing plates
29	204326-000	Screws (4) Top field plate
30	201712-000	Bushings (2) Shunt
31	526132-000	Split lock washer (12) Bearing and top plates
32	201718-000	Thrust washers (As required)
	204816-000	Complete Shunt Spring Assembly

Specify 201678-000 (64) Alnico Generator and adapter for replacement of discontinued No. 38 Type (5-bar) on the following types of former magneto sets: D-2843, D-2844, 896 Wall Telephones and 1180 Desk Set Box.

HAND GENERATORS (Cont.)

Parts for Replacing the No. 62-A Generator with the No. 64 Generator

Stock No.	Telephones Used On	Description
208830-000	890	Generator Assembly (Mounting) (Includes No. 64 Generator, one 208832-000 Block, and four 508052-000 screws)
208834-000	890	Package Assembly (Includes two 512700-000 screws, one 207593-000 Crank Assembly, one 207595-000 Gland, one 207596-000 Gland, one 207601-000 washer, two 504052-000 screws and Instruction Sheet 208836-000)
208829-000	963	Generator Assembly (Includes No. 64 Generator, one 208831-000 Block, and four 508052-000 screws)
208833-000	963	Package Assembly (Includes one 208837-000 spacer, one 207593-000 crank assembly, one 207595-000 gland, one 207596-000 gland, one 207601-000 washer and instruction sheet 208835-000)

Crank Shafts for Switchboard Generators

The following generator crank shafts are designed for switchboard use:

Stock No.	Code	Length	Generator	Swbd. No.
800774-000	(2)	18 1/2"	53	102
800775-000	(3)	16"	38	105
203555-000		19 3/8"	64	120, 127, 128, 106
13287-000		17 1/2"	64	125
465-000		1 1/4"	64	121

No. 963 Ironclad Generator

This is a No. 64 generator mounted in a corrosion proof iron housing with a gasket-sealed door. It is designed for bell signaling systems underground or in locations exposed to elements.

Stock No.	Code	Description	Use
802047-000	(963)	Ironclad Hand Generator	Low voltage signal systems.

HOLLY STRIPS



No. 3 Holly Strip

White Holly Strips mount between jack strips. Used for segregating multiple jacks in banks of 100.

Stock No.	Code	Used With	Dimensions	Material
6984-000	(3)	109 Type Jacks	Length, 10 15/32" Width—1/2" Thickness, 1/16" Jack Mounting Cntrs, 10 15/16"	White Holly with Lacquered Edges
13116-000	(15)	No. 127 Jack	Length, 7 19/32" Width—3/8" Thickness, 1/16" Jack Mounting Centers, 8 3/8"	White Holly
13444-000	(16)	No. 130 Jack	Length, 10 3/8" Width—1/2" Thickness, 1/16" Jack Mounting Cntrs, 11 1/16"	White Holly with Lacquered Edges

NOTE: No. 15 mounts with 3 No. 22 x 1/4" R.H. Brass Escutcheon Pins.

HOOKSWITCHES AND HOOKS

No. 41 Type Hookswitch



No. 41 Type Hookswitch

This assembly consists of a removable hook for long hand receiver, stamped steel frame and springs of nickel silver. Two types of spring combinations are available. The finish is black.

Stock No.	Code	Description	Use
801956-000	(41-B)	Hookswitch	Common battery and magneto wall sets
801957-000	(41-G)	Hookswitch	Intercommunicating wall sets

The No. 41-B and No. 41-G assemblies are the same with the exception of the spring combinations.

Hookswitches for Handset and Desk Telephones

These should be ordered by giving the type of telephone with which they are used, for example, hookswitch (spring assembly) for No. 1543 or No. 1575 Multi-Line Telephone.

Hookswitches Less Hooks

Stock No.	Used with Hookswitch No.	Used on Wall Sets Magneto	Common Battery
13824-000	41-B	896, D-2843	1155, 1157
13825-000	41-G		*903, 1163

*Selective Talking, Selective Ringing I.C. Systems

Stock No.	Used on Suspended Telephone Sets Common Battery Handset Type
19136-000	1201 and 1234
34522-000	1232 and 1233

Hooks Only

Stock No.	Hook	Hookswitch Used (Less Hook)
27677-000		Stock No. 13824-000 on hand set telephones
24093-000		Stock No. 19136-000, 34522-000 on handset telephones
211360-000		1532, 1533, 1534 Series Telephones

Parts of Complete Hookswitch for Ironclad Telephones

Stock No.	Description
10818-000	Hook Assembly
8457-000	Spring Assembly
8465-000	Plunger

See "Telephone" Section, Ironclad Telephones.

Revised 1-1-61

JACKS

The essentials of a good jack are long life and reliable spring pressure that insures low contact resistance in transmission circuits. Stromberg-Carlson Jacks possess these qualities.

Whether jacks are furnished individually or in strips, they are equipped with the best nickel-silver springs and are insulated with phenolic fibre of a quality that will not give under pressure. This provides firm spring assemblies which will keep their original adjustment.

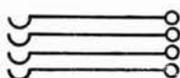
When jacks are mounted on strips they are assembled in groups of ten or twenty; and are equipped with dull finished facestrips, either plain, or with white line divisions, or drilled for party line indicators. State the type and code number of the mountings when ordering jacks in strips. Jack fasteners are not included, but must be ordered separately.

OPERATOR'S AND INDIVIDUAL JACKS

Operator's Jacks



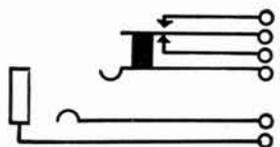
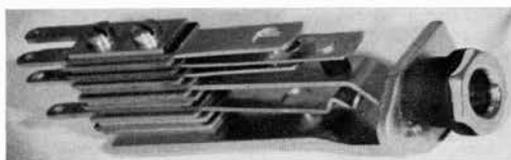
No. 93 Jack Assembly



Spring Combination, 93 Jack

Stock No.	Code	Description
801082-000	(93)	Standard operator's cut-in jack for all multiple and non-multiple switchboards. Mounts below key shelf on lock rail. Shape — Oblong Face. Finish — Black Enamel. Takes either No. 23 or newer type No. 66 four-point plug. All four points are used with operator's sets having breast plate transmitters but only two points are required for operator's sets having suspended type transmitters.
801083-000	(93-B)	Similar to 93 except that it has a one break contact.

Individual Jacks



No. 140 Jack Spring Combination

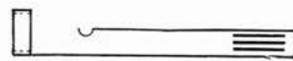
Stock No.	Code	Description
49907-000	(140)	Used as a Transfer Jack in three position No. 105 Type Magneto Switchboards to transfer calls from one position to another. Shape—Hexagonal Face. Finish—Nickel Polished. Length— $3\frac{3}{4}$ ". Face Dimensions— $\frac{1}{2}$ ". Mounting Centers—Horizontal— $\frac{15}{16}$ ". Vertical— $\frac{3}{4}$ ". Plug required—No. 42 two conductor, No. 57 two conductor, or No. 55 three conductor plug.

NOTE—No. 140 Jack may be furnished either individually mounted or 5 per strip on No. 84 or No. 85 Mountings. The No. 84 Mounting is drilled for both a jack and a No. 121 Lamp Socket. The No. 85 Mounting is drilled for the jack only. These mountings will mount in place of a strip of 5 No. 11 Type drops.

Stock No.	Code	Description
200707-000	(140)	Jacks, No. 84 Mounting—5 per strip, with 121 Lamp Sockets.
801177-000	(140)	Jacks, No. 85 Mounting—5 per strip.

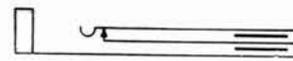
Toll Test Jacks

Toll Test Jacks are used primarily for terminating toll lines. They are mounted in pairs or singly in accordance with the circuits. When mounted in pairs a twin type plug is used for test purposes. When mounted singly two or three conductor plugs are used.



No. 144 Spring Combination

Stock No.	Code	Description
801179-000	(144)	Individual jack. Mounts on panel $\frac{9}{16}$ " thick, requires $\frac{15}{32}$ " drill hole. Used with No. 60 two-conductor plug.
202815-000	(144-A)	Same, except adjusted for No. 61 two-conductor plug.

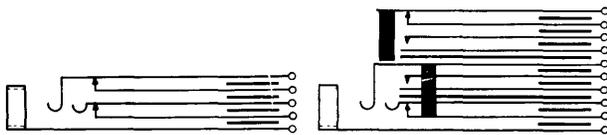


No. 145 Spring Combination

Stock No.	Code	Description
801181-000	(145)	Same type as No. 144 except spring combination. Adjusted for No. 59 three-conductor plug.
801182-000	(145-A)	Same as No. 145, adjusted for No. 61 two-conductor plug.

STROMBERG-CARLSON

INDIVIDUAL JACKS (Cont.)



No. 154 Spring Combination

No. 155 Spring Combination

Stock No.	Code	Description
801188-000	(154)	Same type as No. 144, except spring combination. Takes No. 59 three-conductor plug.
801189-000	(154-A)	Same as No. 154, adjusted for No. 61 two-conductor and No. 62 twin plugs.
801190-000	(155)	Same type as No. 144, except spring combination. Takes No. 59 three-conductor plug.
800069-000	(155-A)	Same as No. 155, adjusted for No. 61 two-conductor and No. 62 twin plugs.



No. 158 and No. 159 Spring Combination

No. 160 Spring Combination

Stock No.	Code	Description
802598-000	(158)	An individual jack of the same general construction as the No. 144. Used in the 120 PBX Switchboards. Takes No. 53 or No. 65 Plug.
802599-000	(159)	Similar spring combination and construction to No. 158. Used in No. 115 Lamp Signal Magneto Switchboards. Takes No. 61 Plug.
802600-000	(160)	An individual double cut-off line jack used in No. 120 PBX Switchboards. Oxidized bronze finish. Takes No. 53 or 65, three-conductor Plug.

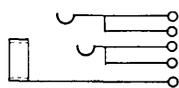


No. 161 Spring Combination

Stock No.	Code	Description
802601-000	(161)	An individual jack with tip, ring and sleeve conductors and local break-make. Oxidized bronze finish. Takes No. 53 or No. 65 three-conductor Plug. Used on trunk circuit No. 120 PBX Switchboards.



No. 165 Jack Spring Combination



No. 166 Jack Spring Combination

Stock No.	Code	Description
201562-000	(165)	An individual Jack taking No. 53 or No. 65 three conductor Plug. Similar to No. 161, with one make contact.
202488-000	(166)	An individual jack. Takes No. 55 or No. 63 three conductor plug. Double cut-off type, similar to No. 154. Used in XY Switching Systems.

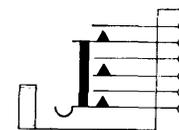


No. 167 Jack Spring Combination

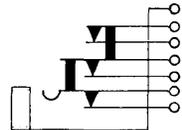


No. 168 Jack Spring Combination

Stock No.	Code	Description
203015-000	(167)	An individual jack taking No. 61 two conductor plug. Sleeve length $\frac{3}{8}$ ".
204251-000	(167-A)	Individual jack. Takes No. 59 three conductor plug. Sleeve length $\frac{3}{8}$ ".
203016-000	(168)	Similar to the No. 167 except for spring combination. Takes No. 61 two conductor plug. Sleeve length $\frac{3}{8}$ ".
204252-000	(168-A)	Individual jack. Takes No. 59 three conductor plug. Sleeve length $\frac{3}{8}$ ".

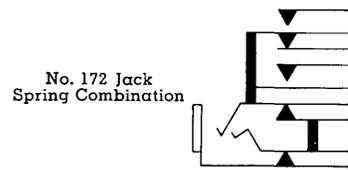


No. 170 Jack Spring Combination

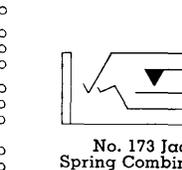


No. 171 Jack Spring Combination

Stock No.	Code	Description
204308-000	(170)	Individual jack taking No. 59 three conductor plug. Sleeve length $\frac{3}{8}$ ".
204309-000	(171)	Similar to No. 170 except for spring combination. Takes No. 59 three conductor plug. Sleeve length $\frac{3}{8}$ ".

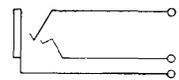


No. 172 Jack Spring Combination



No. 173 Jack Spring Combination

Stock No.	Code	Description
209147-000	(172)	Individual type jack taking a No. 56 three conductor plug. Sleeve length $\frac{1}{2}$ ".
209212-000	(173)	Also an individual type jack taking a No. 59 three conductor plug. Sleeve length $\frac{3}{8}$ ".

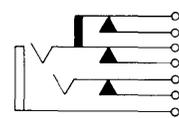


No. 174 Jack Spring Combination

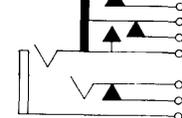


No. 177 Jack Spring Combination

Stock No.	Code	Description
213971-000	(174)	Individual type jack taking a No. 65 three conductor plug. Sleeve length $\frac{1}{2}$ ".
218436-000	(177)	Individual type jack taking a No. 59 three conductor plug.



No. 178 Jack Spring Combination



No. 179 Jack Spring Combination

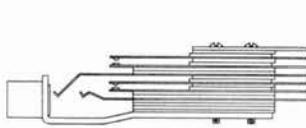
Stock No.	Code	Description
218437-000	(178)	Individual type jack taking a No. 59 three conductor plug.
218438-000	(179)	Individual type jack taking a No. 59 three conductor plug.

Revised 1-1-61

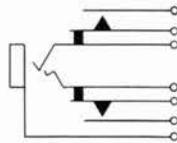
INDIVIDUAL JACKS (Cont.)

Toll Test Jacks (Cont.)

Stock No.	Code	Description
202680-019	(180)	Individual type jack taking a No. 65 three conductor plug.
202690-031	(181)	Used with multiple No. 99 Mounting. Takes a No. 65R or 65XR plug.



No. 180 Jack Spring Combination



No. 181 Jack Spring Combination

Thin Panel Mounting Jacks

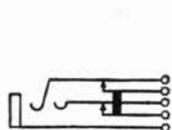


Typical Jack—(No. 147)

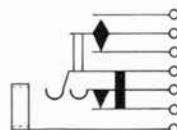
The Nos. 147, 151 and 152 type Jacks are all the same general design, the only difference being in the spring combinations used. They are made to mount on panels varying from $\frac{1}{8}$ " to $\frac{1}{4}$ " in thickness by proper adjustment of a nut associated with the Jack frame.

The Jacks are held in place on the front of the panel by a hexagon nut. When this nut is fully drawn down, the frame of the Jack is pressed against the panel to make a rigid mounting.

Stock No.	Code	Plug Used
801183-000	(147)	No. 59 (3 Cond.) Nos. 60, 61 (2 Cond.)
801184-000	(148)	No. 59 (3 Cond.) No. 60 (2 Cond.)



No. 147 Jack Spring Combination

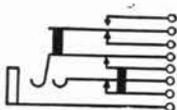


No. 148 Jack Spring Combination

801185-000	(151)	No. 59 (3 Cond.) Nos. 60, 61 (2 Cond.)
801186-000	(152)	No. 59 (3 Cond.) Nos. 60, 61 (2 Cond.)



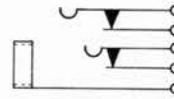
No. 151 Jack Spring Combination



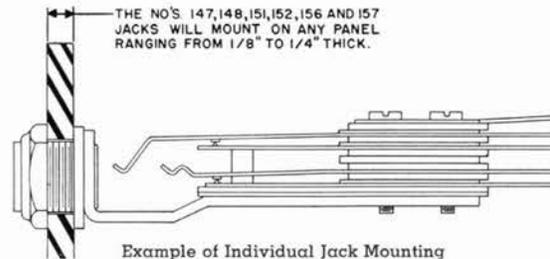
No. 152 Jack Spring Combination

The Nos. 156 and 157 type Jacks are also furnished with an associated finishing nut similar to the one used with the Nos. 147, 151 and 152 types. They are used as test jacks in multiple switchboards and, except for taking different plugs, the No. 156 and No. 157 are the same.

Stock No.	Code	Plug Used
800072-000	(156)	No. 65 (3 Conductor)
802597-000	(157)	No. 54 (3 Conductor)



No. 156 and No. 157 Spring Combination



Example of Individual Jack Mounting

Wall Outlet Type

Conveniently mounted in walls for extension telephone service. Uses standard single gang outlet box and plastic wall plate equipped with two conductor jack; escutcheon marked "Telephone." Used to advantage with all Handset Telephones on metallic (two wire) circuits.

Stock No.	Code	Description
25856-000		Telephone Plug-in Jack Assembly, includes outlet plate with jack assembly, outlet box—2" x 2" x 3" and Plate—2 $\frac{3}{4}$ " x 4 $\frac{1}{2}$ ".
25960-000		Plug-in Jack Assembly, less outlet box Used with No. 60 Plug

Toll Test Jack Mountings

These mountings are used for placing Nos. 144, 145, 154 and *155 Jacks on panels in groups of 24 and 48. The material is black hard rubber, each strip being equipped with one designation strip. Two No. 22 Jack Fasteners are used for mounting. No. 93 Mounting is drilled for 4 No. 19 Number Plates, and No. 94 is drilled for 2 Number Plates.

Stock No.	Code	Description
200966-000	(93)	Mounting 48 For Toll Test Panels (17 $\frac{13}{16}$ " over-all length)
200967-000	(94)	Mounting 24 For Toll Test Panels (17 $\frac{13}{16}$ " over-all length)
	(93)	Mounting—Less designation strip
	(94)	Mounting—Less designation strip
204271-000	(93-A)	Mounting 48 Toll Test Panel (18 $\frac{5}{16}$ " over-all length)
204272-000	(94-A)	Mounting 24 Toll Test Panel (18 $\frac{5}{16}$ " over-all length)

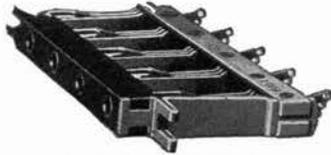
When jacks are mounted at the factory an additional charge is made. Number plates and plug hole blanks for unequipped jack spaces are extra and are not furnished unless specified.

*No. 155 Jacks require vacant spaces between jacks on account of the size of their spring pile-ups. Other jacks mount in adjacent mounting holes of the No. 93 or No. 94 Jack Mounting.

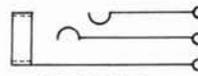
JACKS MOUNTED IN STRIPS

No. 109 Jack

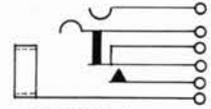
Used as multiple jacks for additions to former standard Stromberg-Carlson Switchboards. Face length— $10\frac{15}{32}$ " , Width— $\frac{1}{2}$ " , Mounting Centers— $10\frac{15}{16}$ " . Uses No. 15 Jack Fasteners and No. 6 Jack Blank. Takes No. 42 or No. 57 two conductor plugs or No. 55 three conductor plug. Replaced by No. 130 Jack on all new work.



End View No. 109 Jack



No. 109 Jack Spring Combination



No. 113 Jack Spring Combination

Stock No.	Code	Mounting	No. of Jacks	Group Marking
801089-000	(109)	60	10	Plain Face
801090-000	(109)	61	20	Plain Face
801091-000	(109)	62	20	White Line
801092-000	(109)	63	20	White Line and Party Line indicators
801097-000	(113)	60	10	Plain Face

Ordering Note

In ordering jacks mounted in strips be sure to specify number of jacks wanted and the mounting desired. For example: order 10 No. 109 Jacks on No. 60 Mounting.

When numbering of jack strips is desired an extra charge is made.

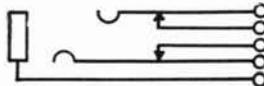
No. 113 Jack

Used for trunk service on multiple switchboards. Similar to No. 109 Jack, but with spring combination as shown. Takes same plugs, jack fasteners and jack blanks as No. 109.

No. 114 Jack

Formerly used with PBX and Magneto Switchboards. Similar to the No. 109 Jack, but with spring combination as shown. Uses No. 15 Jack Fasteners and No. 6 Jack Blank. Takes No. 42 or No. 57 Two Conductor Plug or No. 55 Three Conductor Plug.

No. 114 Jack Spring Combination

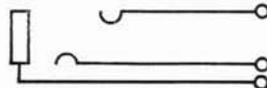


Stock No.	Code	Mounting	No. of Jacks	Group Marking
44464-000	(114)	60	10	Plain Face
801100-000	(114)	61	20	Plain Face
801101-000	(114)	62	20	White Line Divisions
801102-000	(114)	63	20	White Line Divisions—Drilled for party line indication.

No. 127 Jack



No. 127 Jack End View



No. 127 Jack Spring Combination

Standard for eight panel multiple switchboards. Mounts—10 or 20 per strip. Length of face— $7\frac{19}{32}$ " . Width— $\frac{3}{8}$ " . Depth of Jack from face to tip of springs— $2\frac{29}{32}$ " . Mounting centers— $8\frac{3}{8}$ " . Takes No. 54 or 54-D three conductor plug. Uses Jack fastener No. 17 and Jack blank No. 45.



No. 127 Jack on 90 Mounting

Stock No.	Code	Mounting	No. of Jacks	Group Marking
801137-000	(127)	89	10	Plain Face
801138-000	(127)	91	10	Drilled for No. 60-D Number Plate
42996-000	(127)	90	20	Plain Face
801139-000	(127)	90-A	20	White Line Divisions
801140-000	(127)	90-B	20	White Line Divisions Party Line Indication
801141-000	(127)	90-C	20	White Line Divisions can be lined on beveled edge to show a group of jacks.

No. 89 Mounting supersedes No. 82 Mounting.

No. 91 Mounting supersedes No. 88 Mounting.

No. 90 Mounting supersedes No. 83 Mounting.

No. 90-A Mounting supersedes No. 83-A Mounting.

No. 90-B Mounting supersedes No. 83-B Mounting.

No. 90-C Mounting supersedes No. 83-C Mounting.

NOTE: No. 127 Jack replaces No. 122 on new work as standard 8 panel Jack.

No. 128 Jack on 97 Mounting

Stock No.	Code	Mounting	No. of Jacks	Group Marking
801143-000	(128)	97	10	Plain Face

No. 128 Jack



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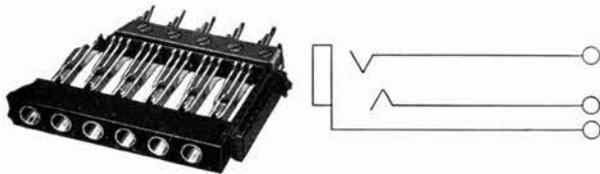
JACKS MOUNTED IN STRIPS (Cont.)

No. 130 Jack

For the No. 130 Jack two types of mountings are available — the No. 99 Mounting and the No. 100 Mounting.

In the No. 100 type Mounting the sleeve conductor is made in two parts—the ferrule or sleeve which extends through the face strip of the Jack and the terminating conductor to which the ferrule is joined by a threaded screw connection.

This design makes it possible to easily remove a single sleeve for replacement without disturbing the remaining Jacks or the wiring of the strip.



No. 130 Jack

The No. 130 Jack is used in two and six panel multiple switchboards, toll and PBX switchboards.

Stock No.	Code	Mounting	No. of Jacks
48368-000	(130)	99	10
48371-000	(130)	100	20
200721-000	(130)	100-A	20
200730-000	(130)	100-B	20

Plugs used—No. 56 Type, two conductor and either No. 53 or 65 Type, three conductor.

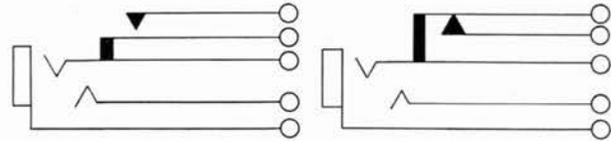
Standard Mountings for No. 130 Jacks

Selections to meet requirements should be made from the following standard mountings for the No. 130 Jacks which includes Nos. 130, 132 to 138 inclusive and Nos. 162, 163 and 164.

Mounting Codes	No. of Jacks per Strip	Group Markings
No. 99	10	Plain Face
No. 100	20	Plain Face
No. 100-A	20	White line divisions (groups of 5)
No. 100-B	20	White line divisions and drilled for party line indicators

No. 132 and No. 133 Jacks

(130 Type)



No. 132 Jack

No. 133 Jack

Same as No. 130 except spring combination. Used in trunk circuits. Nos. 132 and 133 Jacks on 80 mounting only (10 per strip) have been replaced by corresponding No. 134 Jacks.

No. 132 Jack

Stock No.	Code	Mounting	No. of Jacks
48372-000	(132)	100	20
200722-000	(132)	100-A	20
200731-000	(132)	100-B	20
218443-000	(132)	99	10

No. 133 Jack

Stock No.	Code	Mounting	No. of Jacks
48373-000	(133)	100	20
200723-000	(133)	100-A	20
200732-000	(133)	100-B	20

Plugs used—No. 56 Type, two conductor and either 53 or 65 type, three conductors.

No. 130 Jack Data

Used for two and six panel multiple switchboards. Toll and PBX Boards. This type includes the following jacks:

Nos. 130 to 138 and Nos. 162, 163 and 164

Length of face— $10\frac{3}{8}$ "

Width of face— $3\frac{1}{4}$ "

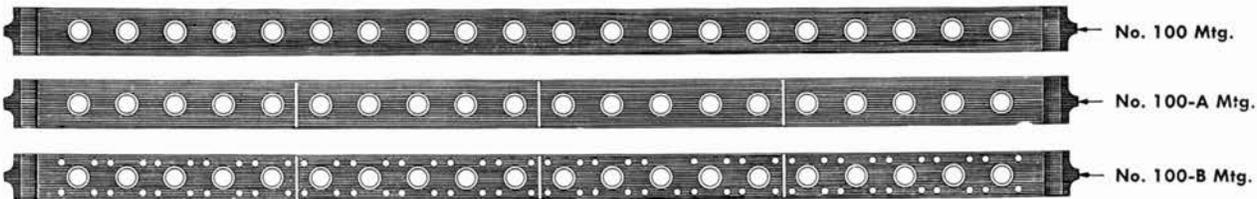
Mounting Strip Centers— $11\frac{1}{16}$ "

Depth, face to spring tips—3"

Plug used—No. 56 Type (two conductor)

No. 53 or 65 Type (three conductor)

Jack Fastener—No. 17 (2); Jack Blank—No. 52



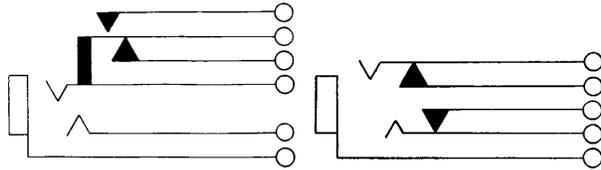
Jack Mountings Used with No. 130 Jacks

JACKS MOUNTED IN STRIPS (Cont.)

No. 134 Jack

No. 134 same as No. 130 except for spring combinations. Used in trunks and transfer circuits.

Stock No.	Code	Mounting	No. of Jacks
48367-000	(134)	99	10



Plugs used—No. 56 Type, two conductor and either No. 53 or 65 Type, three conductor.

No. 135 Jack

No. 135 same as No. 130 except for spring combinations. Used in Nos. 101, 102 and 106 PBX Switchboards.

Stock No.	Code	Mounting	No. of Jacks
48366-000	(135)	99	10
48374-000	(135)	100	20
200724-000	(135)	100-A	20
200733-000	(135)	100-B	20

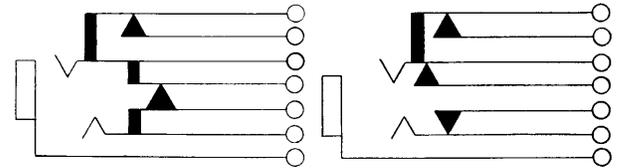
Plugs used—No. 56 or 56X Type, two conductor and either No. 65R or 65XR Type, three conductor.

No. 137 Jack

Same as No. 130 except for spring combinations. Used in trunk circuits.

Stock No.	Code	Mounting	No. of Jacks
48364-000	(137)	99	10
48376-000	(137)	100	20
200726-000	(137)	100-A	20
200735-000	(137)	100-B	20

Plugs used—No. 56 Type, two conductor and either No. 53 or 65 Type, three conductor.



No. 138 Jack

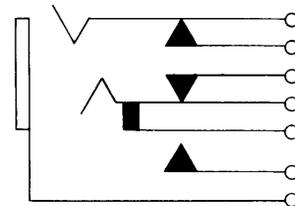
Stock No.	Code	Mounting	No. of Jacks
48363-000	(138)	99	10
48377-000	(138)	100	20
200727-000	(138)	100-A	20
200736-000	(138)	100-B	20

Plugs used—No. 56 Type, two conductor and either No. 53 or 65 Type, three conductor.

No. 136 Jack

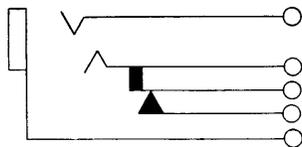
Stock No.	Code No.	Mounting	No. of Jacks
48365-000	(136)	99	10
48375-000	(136)	100	20
200725-000	(136)	100-A	20
200734-000	(136)	100-B	20

No. 136 Jack



No. 162 Jack

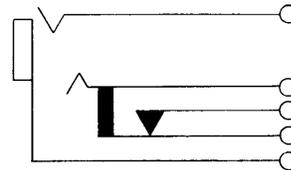
Same as No. 130 except for spring combinations. Used in trunk circuits.



No. 162 Jack

Stock No.	Code	Mounting	No. of Jacks
48360-000	(162)	99	10
48378-000	(162)	100	20
200728-000	(162)	100-A	20
200737-000	(162)	100-B	20

No. 163 Jack



No. 163 Jack

Stock No.	Code	Mounting	No. of Jacks
48361-000	(163)	99	10
48379-000	(163)	100	20
200729-000	(163)	100-A	20
200738-000	(163)	100-B	20

Plug used—No. 56 Type, two conductor and either No. 53 or 65 Type, three conductor.

Jack strips are furnished without numbering unless otherwise specified.

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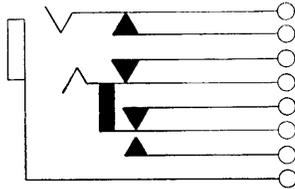
JACKS MOUNTED IN STRIPS (Cont.)

130 TYPE (Cont.)

No. 164 Jack

(130 Type)

Same as No. 130 except for spring combinations. Used in trunk circuits.



No. 164 Jack

Stock No.	Code	Mounting	No. of Jacks
48362-000	(164)	99	10

Plug used—No. 56 or 56X Type, two conductor and either No. 53, 65R or 65XR Type, three conductor.

NOTE—Mounting shown is the only one available for the No. 164 Type Jack.

No. 169 Jack

(130 Type)

Double cut-off with local make.

Stock No.	Code	Mounting	No. of Jacks
203851-000	(169)	99	10
203852-000	(169)	100	20

Plug used—No. 65 Type, three conductor.

JACK FASTENERS

Jack fasteners are used for mounting jack and lamp socket strips and jack blanks on switchboard stiles. For the proper type to use refer to separate descriptions of standard jacks and lamp sockets which will be found in this section.



No. 17 Jack Fasteners



No. 18 Jack Fasteners

Stock No.	Code	Jack Used	Jack Mounting	Lamp S'ck't	
				Used	Mounting
808667-000	(15)	109	59, 60, 61, 62, 63	121	59, 60, 61
801197-000	(17)	127	82, 83, 88	121	82, 83, 88
801197-000	(17)	130	79, 80, 81	121	79, 80, 81
801198-000	(18)	*	-----	---	-----
801199-000	(19)	*	-----	---	-----
†801200-000	(20)	109	-----	121	-----
801201-000	(21)	127	89, 90, 91	121	89, 91, 92
801202-000	(22)	144	93, 94	121	-----

*Nos. 18 and 19 used with Jack blanks in unfilled spaces, above multiple, of Nos. 127 and 130 Jacks.

†No. 20 used when stile strips in switchboards are drilled on 1" centers.

JACK BLANKS

These blanks may be black formica with satin finish or various woods with and without holly strip edges, depending upon requirements to be met.

In ordering jack blanks the type of jack or lamp socket strip should be specified by its proper code number.

Stock No.	Code	Material	Used in place of Jack	Mtg. Width	Center Length
1041-000	(5)	Maple Black	109	1"	10 ¹ / ₁₆ "
6923-000	(7)	Maple Black	109	2 ³ / ₆₄ "	10 ¹ / ₁₆ "
10657-000	(32)	Golden Oak	109	2 ¹ / ₂ "	10 ¹ / ₁₆ "
800029-000	(35)	Steel	93	2 ⁵ / ₃₂ "	2"
800030-000	(36)	Oak	127	1 ¹ / ₁₆ "	8 ³ / ₈ "
800031-000	(37)	Mahogany	127	Same as 36	ex. fin.
800032-000	(38)	Black Formica	127	1 ¹ / ₈ "	8 ³ / ₈ "
800033-000	(39)	Black Formica	127	7 ⁸ / ₈ "	8 ³ / ₈ "
800034-000	(40)	Black Formica	127	7 ⁸ / ₈ "	8 ³ / ₈ "
800035-000	(41)	Black Formica	127	3 ⁴ / ₄ "	8 ³ / ₈ "
800036-000	(42)	Black Formica	127	3 ⁴ / ₄ "	8 ³ / ₈ "
800037-000	(43)	Black Formica	121 L.S.	1 ² / ₂ "	8 ³ / ₈ "
800038-000	(44)	Black Formica	127	7 ¹ / ₁₆ "	8 ³ / ₈ "
800039-000	(45)	Black Formica	127	3 ⁸ / ₈ "	8 ³ / ₈ "
800040-000	(46)	Oak	130	2 ¹ / ₂ "	11 ¹ / ₁₆ "
800041-000	(47)	Mahogany	130	2 ¹ / ₂ "	11 ¹ / ₁₆ "
800042-000	(48)	Black Formica	130	1 ¹ / ₂ "	11 ¹ / ₁₆ "
800043-000	(49)	Black Formica	130	1"	11 ¹ / ₁₆ "
800044-000	(50)	Black Formica	130	1 ¹ / ₁₆ "	11 ¹ / ₁₆ "
800045-000	(51)	Black Formica	130	1"	11 ¹ / ₁₆ "
800046-000	(52)	Black Formica	130	1 ² / ₂ "	11 ¹ / ₁₆ "
800047-000	(53)	Black Formica	130	9 ¹ / ₁₆ "	11 ¹ / ₁₆ "
800048-000	(54)	Black Formica	130	1 ² / ₂ "	11 ¹ / ₁₆ "
800049-000	(55)	Black Formica	121 L.S.	1 ² / ₂ "	11 ¹ / ₁₆ "
800050-000	(56)	Black Formica	121 L.S.	3 ¹ / ₆₄ "	8 ³ / ₈ "
800051-000	(57)	Oak	127	1 ⁵ / ₁₆ "	8 ³ / ₈ "
800052-000	(58)	Mahogany	127	1 ¹ / ₁₆ "	8 ³ / ₈ "
800053-000	(59)	Oak	130	2 ⁹ / ₁₆ "	11 ¹ / ₁₆ "
800054-000	(60)	Mahogany	130	2 ⁹ / ₁₆ "	11 ¹ / ₁₆ "
800055-000	(62)	Oak	130	3 ⁴ / ₄ "	11 ¹ / ₁₆ "
800056-000	(63)	Oak	127	4 ²³ / ₆₄ "	8 ³ / ₈ "
800057-000	(64)	Mahogany	127	4 ²³ / ₆₄ "	8 ³ / ₈ "
800058-000	(65)	Oak	127	4 ²³ / ₆₄ "	8 ³ / ₈ "
800059-000	(66)	Mahogany	127	4 ²³ / ₆₄ "	8 ³ / ₈ "
800060-000	(67)	Oak	127	3 ⁴ / ₄ "	8 ³ / ₈ "
800061-000	(68)	Black Phenolic	127	3 ⁸ / ₈ "	8 ³ / ₈ "
800062-000	(69)	Maple	127	5 ³ / ₆₄ "	8 ³ / ₈ "
800063-000	(70)	Oak	Mult.	1 ⁷ / ₈ "	8 ³ / ₈ "
800064-000	(71)	Maple	121 L.S.	1"	8 ³ / ₈ "
800065-000	(72)	Oak	Mult.	2 ¹ / ₄ "	8 ³ / ₈ "
800066-000	(73)	Oak	T.T.	2 ¹ / ₈ "	18 ¹ / ₈ "
205115-000	(73-A)	Formica	T.T.	2 ¹ / ₈ "	18 ³ / ₈ "
800067-000	(74)	Birch	130	2 ¹ / ₂ "	11 ¹ / ₁₆ "
800068-000	(75)	Birch	130	2 ⁹ / ₁₆ "	11 ¹ / ₁₆ "
35418-000	(76)	Oak	—	1 ⁵ / ₇ "	22 ³ / ₄ "
800070-000	(77)	Birch	127	4 ²³ / ₆₄ "	8 ³ / ₈ "
800071-000	(78)	Birch	127	4 ²³ / ₆₄ "	8 ³ / ₈ "
49899-000	(79)	Oak	130	2 ¹ / ₂ "	11 ¹ / ₁₆ "
49900-000	(80)	Oak	130	2 ⁹ / ₁₆ "	11 ¹ / ₁₆ "
201188-000	(81)	Oak	127	1 ⁵ / ₁₆ "	8 ³ / ₈ "
201189-000	(82)	Oak	127	4 ²³ / ₆₄ "	8 ³ / ₈ "
201190-000	(83)	Oak	127	4 ²³ / ₆₄ "	8 ³ / ₈ "
204622-000	(84)	Oak	T.T.	1 ¹ / ₄ "	18 ¹ / ₈ "
205114-000	(84A)	Oak	T.T.	1 ¹ / ₄ "	18 ³ / ₈ "
213903-000	(85)	Black Formica	130	5 ⁸ / ₈ "	11 ¹ / ₁₆ "

KEYS

Stromberg-Carlson Keys are furnished in many designs to meet the specific requirements of the circuits in which they are used. Types available include cam lever keys with surface or flush mountings, key units on mountings with ring-off drops and party line indicating keys as well as plunger, twist type and push buttons keys on individual mountings or in strips of standard size. All springs are high grade nickel silver, long and flexible, with contacts of precious metal which effectively prevents corrosion. The assemblies are rigidly mounted and this, together with the use of phenolfibre insulations of the best quality, assures uniformly good performance under all operating conditions.

CAM KEYS

Cam keys have been designed primarily for use in switchboards, attendants' turrets, and test desks. These keys are so constructed as to fit in the least amount of space permitting keys to be mounted adjacent to each other.

The cam type keys are equipped with free action roller type cams to prevent excessive wear on both the cams and the blade springs which contact the rollers.

Standard spring combinations will meet the requirements of most circuits in which cam type keys are essential, but keys

with other combinations can be furnished if ordered in substantial quantities. To avoid specifying special keys it is sometimes possible to use a larger standard key having spring combinations that are not needed, provided, of course, that the remaining combinations will fulfill the requirements to be met.

Both the cam and spring assembly are attached to a zinc-plated one-piece steel frame which forms a rigid mounting that keeps the assembly in proper alignment.

NO. 170 TYPE CAM KEYS

General Description

These keys are designed for general application in circuits where dependable switching, ringing, or listening service is required.

Provision is made for either one-way or two-way cam levers and either locking or non-locking combinations. Keys are coded to indicate these operational differences; in addition the No. 175 Keys have a bent handle, and the No. 176 Keys provide clickless springs.

Both cam and springs are built on a rigid frame of punched steel with rust-proofed finish.

Cam lever handles are available in black, red, white, brown, and sun-tan.

The 170 Type Keys are coded as follows:

- No. 170—One Way, Locking
- No. 171—One Way, Non-Locking
- No. 172—Two Way, Locking and Non-Locking
- No. 173—Two Way, Locking and Locking
- No. 174—Two Way, Non-Locking and Non-Locking
- No. 175—Two Way, Locking and Locking, Bent Handle
- No. 176—Two Way, Locking and Non-Locking, Clickless
- No. 177—Two Way, Locking and Non-Locking, Bent Handle

Key Mountings

Key mounting is required for all cam type keys and this should be ordered as a separate item.

Flush or surface type mountings are available for keyboards and also for use when the keys are mounted in the switchboard face.

For more detailed information see "Key Mountings."

Method of Ordering Complete Keys

In ordering complete cam type keys the number of the desired mounting should be shown in addition to the stock and code number of No. 170 Type Key that has been selected. Examples:

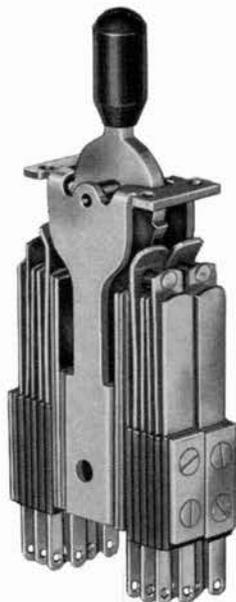
Two Keys on Flush Mounting

1-802626-000	(170-C)	Key	} mounted on
1-802628-000	(170-D)	Key	
1-801296-000	(93)	Key Mounting	

One Key on Surface Mounting

1-205012-000	(171-B)	Key	mounted on
1-801332-000	(132)	Key Mounting	

For these and other standard Key Mountings see "Key Mountings" further along in this section.

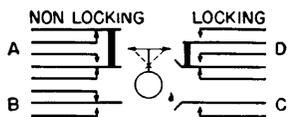


Typical No. 170 Type Cam Key, without Key Mounting

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NO. 170 TYPE KEYS (Cont.)

Contact Springs are shown in the non-operated (normal) position.



Typical Key, showing positions of Spring Combinations

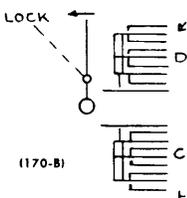
"Z" added to code number indicates brass finished cam for those keys used on No. 120, 121-A Switchboards. See PBX Boards.

One Way, Locking

Stock and Code No. Position Contact Description

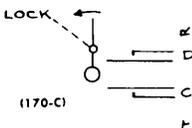
204963-000

- (170-B) C One make-before-break
Two break-makes
D One make-before-break
Two break-makes



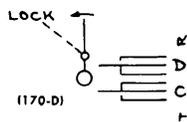
802626-000

- (170-C) C One make
D One make



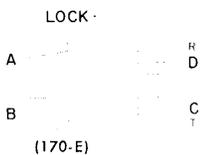
802628-000

- (170-D) C One break-make
D One break-make



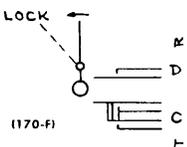
206792-000

- (170-E) A One break-make
B One break-make
C One break-make
D One break-make



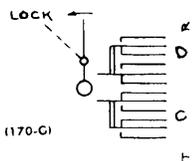
49759-000

- (170-F) C One sequence make,
break-make
D One make



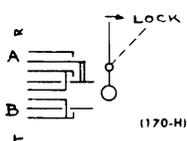
802632-000

- (170-G) C Two break-makes
D Two break-makes



802638-000

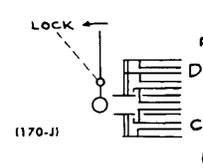
- (170-H) A One make-before-break,
One make
B One make-before-break



Stock and Code No. Position Contact Description

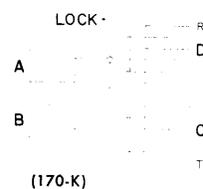
206793-000

- (170-J) C One make-before-break,
One break
D One make-before-break,
Two breaks



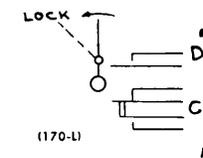
802664-000

- (170-K) A One break-make
B One break-make
C Two break-makes
D Two break-makes



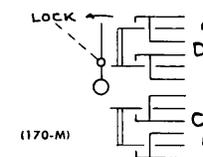
802675-000

- (170-L) C One break, one make
D One make



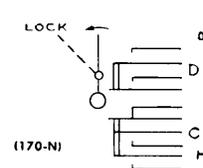
802682-000

- (170-M) C Two make-before-breaks
D Two make-before-breaks



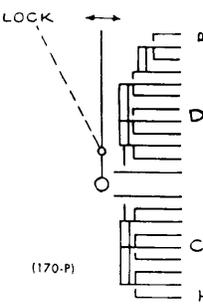
206929-000

- (170-N) C One break, two makes
D Two makes



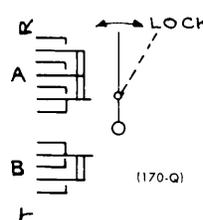
208366-000

- (170-P) C One make-before-break,
two break-makes
D One make-before-break,
three break-makes



212465-000

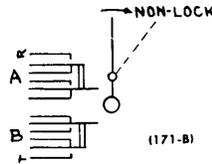
- (170-Q) A One break-make,
two makes
B One break-make,
one make



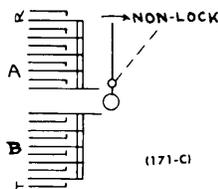
NO. 170 TYPE KEYS (Cont.)

One Way, Non-Locking

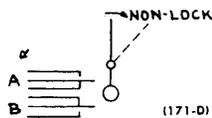
Stock and Code No. Position Contact Description
205012-00
(171-B) A Two break-makes
 B Two break-makes



205684-000
(171-C) A Five makes
 B Five makes

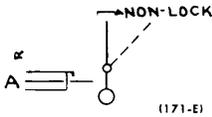


802627-000
(171-D) A One break-make
 B One break-make

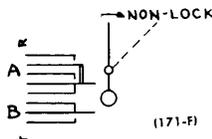


204986-000
(171-DZ) Same Combination-Brass Cam

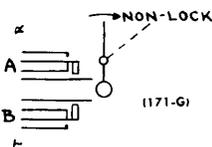
802640-000
(171-E) A One make-before-break



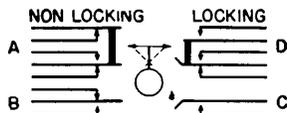
802645-00
(171-F) A One break-make, one make
 B One break-make



802681-000
(171-G) A One break-make
 B One break-make

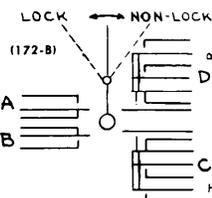


Two Way, Locking and Non-Locking



Typical Key, showing positions of Spring Combinations

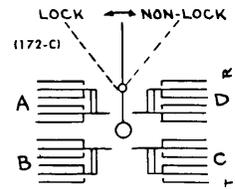
Stock and Code No. Position Contact Description
204956-000
(172-B) A One break-make
 B One break-make
 C One make-before-break, two makes
 D One make-before-break, two makes



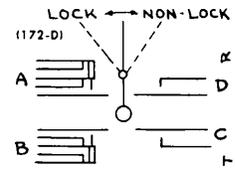
204957-000
(172-BZ) Same Combination-Brass Cam

Stock and Code No. Position Contact Description

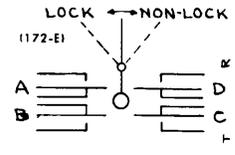
204964-000
(172-C) A Two break-makes
 B Two break-makes
 C Two break-makes
 D Two break-makes



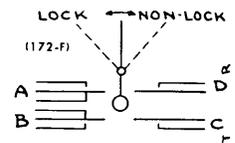
204965-000
(172-D) A One make-before-break, One break
 B One make-before-break, One break
 C One make
 D One make



802619-000
(172-E) A One break-make
 B One break-make
 C One break-make
 D One break-make

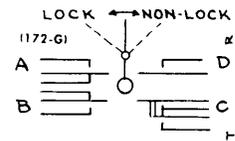


802622-000
(172-F) A One break-make
 B One break-make
 C One make
 D One make

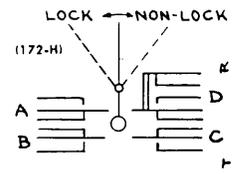


207621-000
(172-FZ) Same Combination-Brass Cam

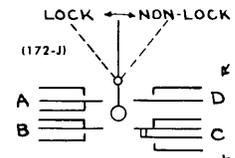
802623-000
(172-G) A One break-make
 B One break-make
 C One make sequence with one break-make
 D One make



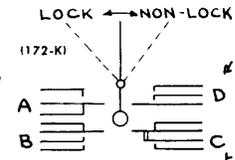
802625-000
(172-H) A One-break-make
 B One-break-make
 C One-break-make
 D One break-make, One break



802629-000
(172-J) A One break-make
 B One break-make
 C One break, one make
 D One make



201055-000
(172-K) A One break-make
 B One break, double make
 C One break, one make
 D One double make



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NO. 170 TYPE CAM KEYS (Cont.)

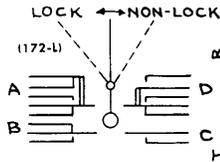
Contact Springs are shown in the non-operated (normal) position. "Z" added to code number indicates brass finished cam for those keys used on No. 120, 121-A Switchboards. See PBX Boards.

Two Way, Locking and Non-Locking (Cont.)

Stock and Code No. Position Contact Description

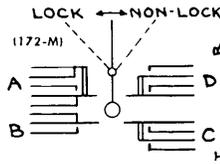
802630-000

- (172-L) A One break-make
One make
B One break-make
C One make
D One break-make,
One make



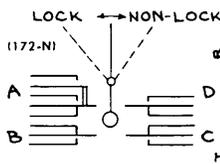
42665-000

- (172-M) A One break-make,
One break
B One break-make
C Two makes
D Two makes



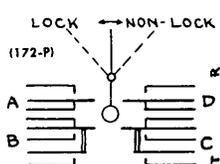
802633-000

- (172-N) A One break-make,
One make
B One break-make
C One break-make
D One break-make



802637-000

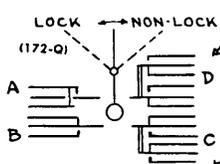
- (172-P) A One break-make
B One break-make,
One make
C One break-make,
One make
D One break-make



- 209816-000 Same Combination—
(172-PZ) Brass Cam

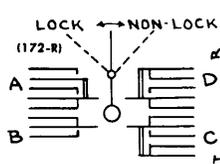
802642-000

- (172-Q) A One make before break
B One break-make
C Two break-makes
D Two break-makes



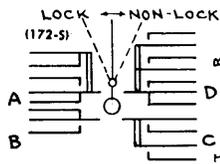
802643-000

- (172-R) A One break-make,
One make
B One break-make
C One break-make,
One break
D One break-make,
One break



206794-000

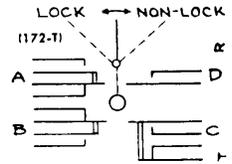
- (172-S) A One break-make,
One break
B One break-make
C Two makes
D One break-make,
Two makes



Stock and Code No. Position Contact Description

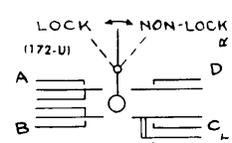
207164-000

- (172-T) A One break, one make
B One break, one make
C One make, one break
D One make



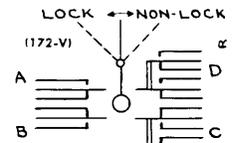
802994-000

- (172-U) A One break-make
B One break-make
C Two makes
D One make



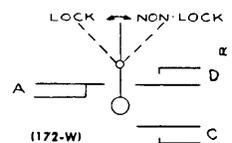
803021-000

- (172-V) A One break-make
B One break-make
C Two break-makes
D Two break-makes



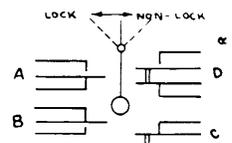
206930-000

- (172-W) A One break
B ———
C One make
D One make



209815-000

- (172-X) A One break-make
B One break-make
C One break, one make
D One break, one make

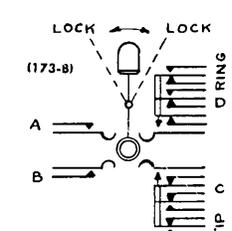


Two Way, Locking and Locking

Stock and Code No. Position Contact Description

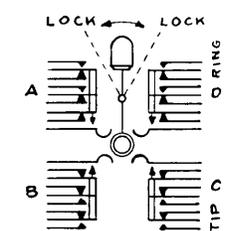
204966-000

- (173-B) A One make
B One make
C One make-before-break,
Two break-makes
D One make-before-break,
Two break-makes



204967-000

- (173-C) A One make-before-break,
Two break-makes
B One make-before-break,
Two break-makes
C One make-before-break,
Two break-makes
D One make-before-break,
Two break-makes



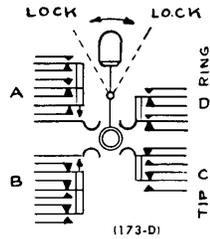
NO. 170 TYPE KEYS (Cont.)

Contact Springs are shown in the non-operated (normal) position. "Z" added to code number indicates brass finished cam for those keys used on No. 120, 121-A Switchboards. See PBX Boards.

Two Way, Locking and Locking (Cont.)

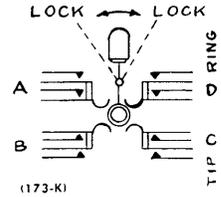
Stock and Code No. Position Contact Description

- 204968-000 (173-D) A One make-before-break, Two break-makes
- B One make-before-break, Two break-makes
- C Two break-makes
- D Two break-makes

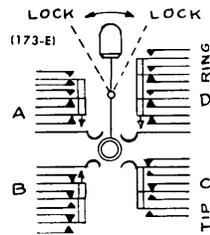


Stock and Code No. Position Contact Description

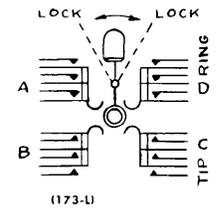
- 205039-000 (173-K) A Two makes
- B Two makes
- C Two makes
- D Two makes



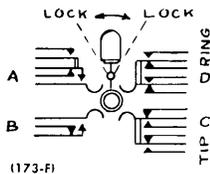
- 204969-000 (173-E) A One make-before-break, Two break-makes
- B One make-before-break, Two break-makes
- C Two break-makes, One make
- D One make-before-break, Two break-makes, One make



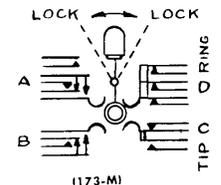
- 205040-000 (173-L) A Three makes
- B Three makes
- C Three makes
- D Three makes



- 204970-000 (173-F) A One make-before-break, One make
- B One make-before-break
- C Two break-makes
- D Two break-makes



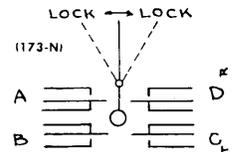
- 205052-000 (173-M) A One make-before-break-make, One make
- B One make-before-break, One make
- C One break, one make
- D Three breaks



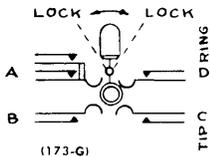
- 204971-000 (173-FZ) Same Combination-Brass Cam

- 207201-000 (173-MZ) Same Combination-Brass Cam

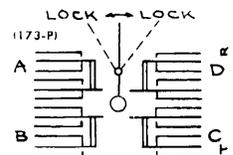
- 802621-000 (173-N) A One break-make
- B One break-make
- C One break-make
- D One break-make



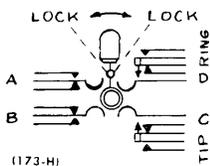
- 204994-000 (173-G) A Two makes
- B One make
- C One make
- D One make



- 802624-000 (173-P) A Two break-makes
- B Two break-makes
- C Two break-makes
- D Two break-makes

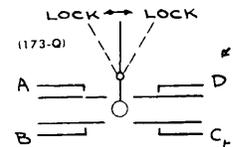


- 205025-000 (173-H) A One break-make
- B One break-make
- C One make-before-break and make
- D One make-before-break and make

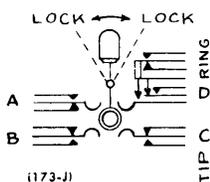


- 204987-000 (173-PZ) Same Combination-Brass Cam

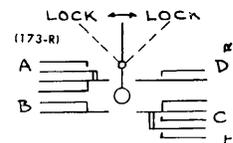
- 802631-000 (173-Q) A One make
- B One make
- C One make
- D One make



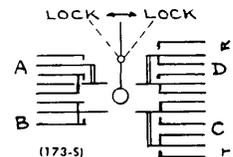
- 205038-000 (173-J) A One break-make
- B One break-make
- C One break-make
- D One make-before-break, One make, one break-make



- 206795-000 (173-R) A One break, one make
- B One break
- C One break-make, one make
- D One make



- 802644-000 (173-S) A One make-before-break, One make
- B One make-before-break
- C Two break-makes
- D Two break-makes

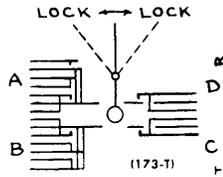


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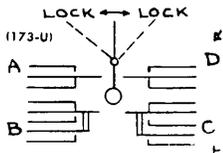
NO. 170 TYPE KEYS (Cont.) Two Way, Locking and Locking (Cont.)

Stock and Code No. Position Contact Description
207343-000
 (173-SZ) Same Combination as 173-S except Brass Cam

802665-000
 (173-T) A One make-before-break, One break, one make
 B One make-before-break, Two breaks
 C One make-before-break
 D One make-before-break

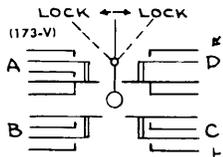


802670-000
 (173-U) A One break-make
 B One break-make, One make
 C One break-make, One make
 D One break-make

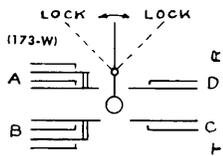


204985-000
 (173-UZ) Same Combination-Brass Cam

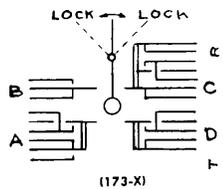
802674-000
 (173-V) A One break-make, One make
 B Two makes
 C Two makes
 D One break, one make



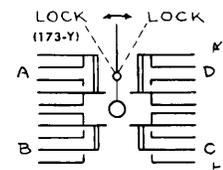
206931-000
 (173-W) A Two makes
 B Two makes
 C One make
 D One make



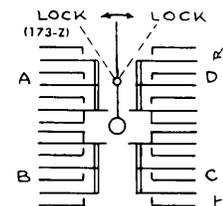
207052-000
 (173-X) A One break-make
 B One make-before-break, One break-make
 C One make-before-break, Two breaks
 D One make-before-break, One break



207249-000
 (173-Y) A One break-make, One break
 B One break-make, One make
 C One break-make, One make
 D One break-make, One break

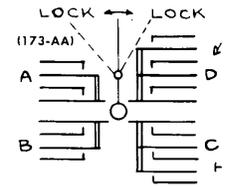


207250-000
 (173-Z) A One break-make, Two makes
 B One break-make, Two makes
 C One break-make, Two makes
 D One break-make, Two makes

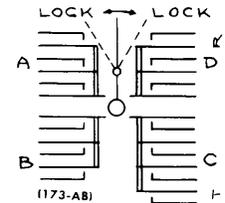


Stock and Code No. Position Contact Description

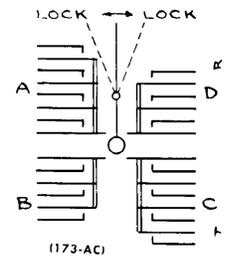
207251-000
 (173-AA) A Two makes
 B Two makes
 C Three makes
 D Three makes



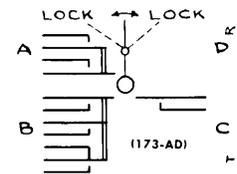
207252-000
 (173-AB) A Three makes
 B Three makes
 C Four makes
 D Three makes



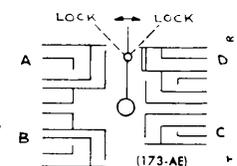
207337-000
 (173-AC) A Four makes
 B Three makes
 C Four makes
 D Three makes



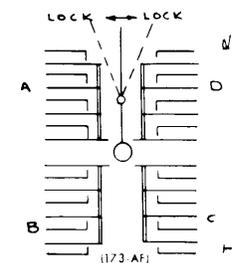
207338-000
 (173-AD) A Two makes
 B Two makes Break-make
 C One make
 D - - - -



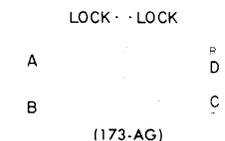
210190-000
 (173-AE) A One break, one make-before-break, one make
 B One break, one make-before-break, one make
 C One make-before-break, one make
 D One make-before-break, one make, one break



214039-000
 (173-AF) A Four makes
 B Four makes
 C Four makes
 D Four makes



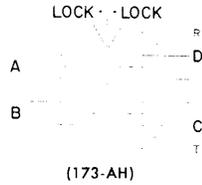
200150-103
 (173-AG) A One make
 B One make
 C One break-make
 D One break-make



NO. 170 TYPE CAM KEYS (Cont.)

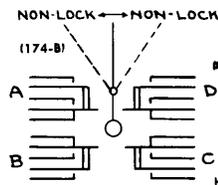
Two Way, Locking and Locking (Cont.)

Stock and Code No.	Position	Contact Description
200150-143 (173-AH)	A	One make-before-break
	B	One make-before-break
	C	One break, one make-before-break, one make
	D	One break, one make-before-break, one make

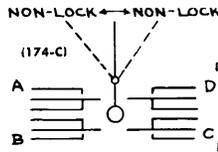


Two Way, Non-Locking and Non-Locking

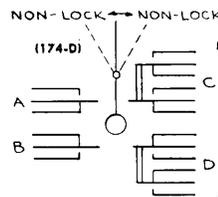
Stock and Code No.	Position	Contact Description
204995-000 (174-B)	A	One break-make, One make
	B	One break-make, One make
	C	One break-make, One make
	D	One break-make, One make



802620-000 (174-C)	A	One break-make
	B	One break-make
	C	One break-make
	D	One break-make

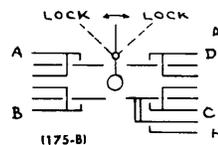


207165-000 (174-D)	A	One break-make
	B	One break-make
	C	Two break-makes
	D	Two break-makes

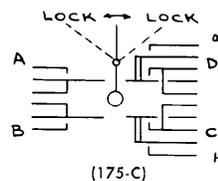


Two Way, Locking and Locking, Bent Handle

Stock and Code No.	Position	Contact Description
206790-000 (175-B)	A	One make-before-break
	B	One make-before-break
	C	One make-before-break, One make
	D	One make-before-break

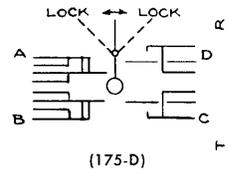


206791-000 (175-C)	A	One break-make
	B	One break-make
	C	One make-before-break, One make
	D	One make-before-break, One make

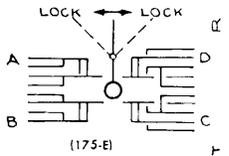


Stock and Code No. Position Contact Description

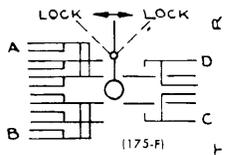
207246-000 (175-D)	A	Two breaks
	B	Two breaks
	C	One make-before-break
	D	One make-before-break



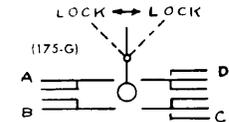
208126-000 (175-E)	A	Two breaks
	B	Two breaks
	C	One make-before-break, One break
	D	One make-before-break, One break



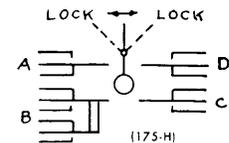
209339-000 (175-F)	A	Three breaks
	B	Three breaks
	C	One make-before-break
	D	One make-before-break



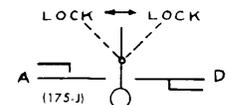
209805-000 (175-G)	A	One break
	B	One break
	C	One break-make
	D	One break-make



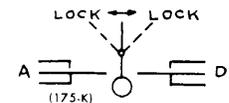
209806-000 (175-H)	A	One break-make
	B	Two break-makes
	C	One break-make
	D	One break-make



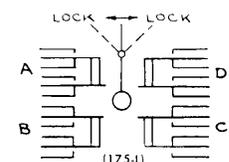
209807-000 (175-J)	A	One make
	D	One break



209808-000 (175-K)	A	One break-make
	D	One break-make



210969-000 (175-L)	A	Two break-makes
	B	Two break-makes
	C	Two break-makes
	D	Two break-makes



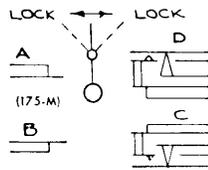
Revised 1-1-61

NO. 170 TYPE CAM KEYS (Cont.)

Two Way, Locking and Locking, Bent Handle (Cont.)

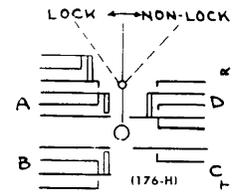
Stock and Code No. Position Contact Description

- 214045-000 (175-M)**
- A One break
 - B One break
 - C Break make-before-break
 - D Break make-before-break



Stock and Code No. Position Contact Description

- 205051-000 (176-H)**
- A One break-make, One break
 - B One break-make
 - C One make
 - D One break-make, One make

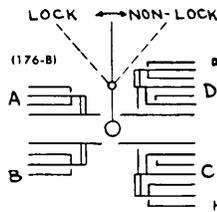


207206-000 (176-HZ) Same Combination-Brass Cam

Two Way, Locking and Non-Locking, Clickless

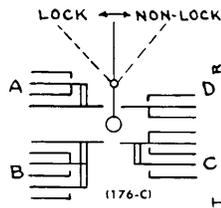
Stock and Code No. Position Contact Description

- 204958-000 (176-B)**
- A One break-make
 - B One break-make
 - C One make-before-break-make, One break-make
 - D One make-before-break-make, One break-make



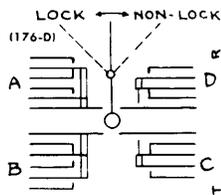
204959-000 (176-BZ) Same Combination-Brass Cam

- 204972-000 (176-C)**
- A One break-make
 - B One break-make, One make
 - C One break-make, One make
 - D One break-make

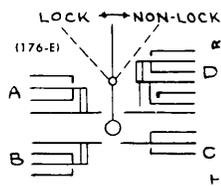


204973-000 (176-CZ) Same Combination-Brass Cam

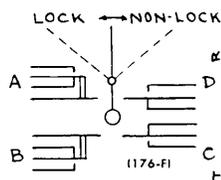
- 204993-000 (176-D)**
- A One make, one break-make
 - B One break-make, One make
 - C One make-before-break, One make
 - D One make-before-break, One make



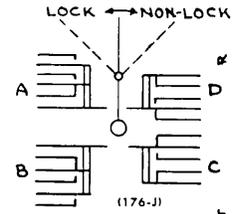
- 205037-000 (176-E)**
- A One break-make
 - B One break-make
 - C One break-make
 - D One make-before-break-make, One break-make



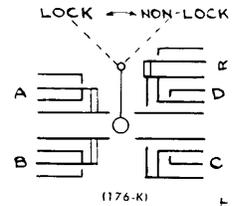
- 205026-000 (176-F)**
- A One break-make
 - B One break-make
 - C One break-make
 - D One break-make



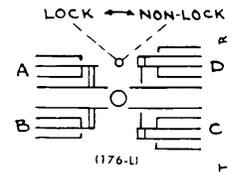
- 205064-000 (176-J)**
- A One break-make, One make
 - B One break-make, One make
 - C One break-make, One break
 - D One break-make, One break



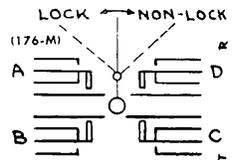
- 207075-000 (176-K)**
- A One break-make
 - B One break-make
 - C One make-before-break-make, One make
 - D One make-before-break-make, One make



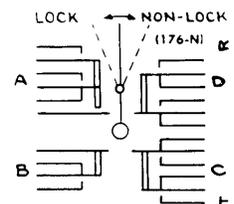
- 802676-000 (176-L)**
- A One break-make
 - B One break-make
 - C One make-before-break, One make
 - D One make-before-break, One make



- 802680-000 (176-M)**
- A One break-make
 - B One break-make
 - C One break-make
 - D One break-make



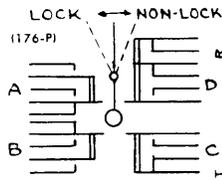
- 207169-000 (176-N)**
- A One break-make, One make
 - B One break-make
 - C Two break-makes
 - D Two break-makes



NO. 170 TYPE CAM KEYS (Cont.)
Two-Way, Locking and Non Locking, Clickless (Cont.)

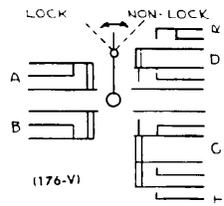
Stock and Code No. Position Contact Description

- 207202-000 (176-P)**
- A One break-make, One make
 - B One break-make, One make
 - C One break, one make
 - D Two breaks, one make

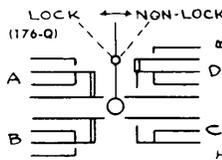


Stock and Code No. Position Contact Description

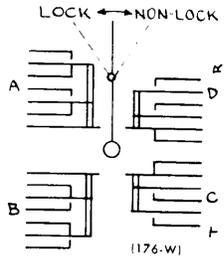
- 208136-000 (176-V)**
- A One break
 - B One break
 - C One make-before-break, Two makes
 - D Two make-before-breaks



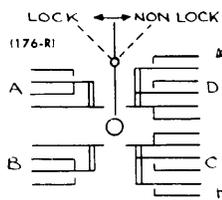
- 207219-000 (176-Q)**
- A One break-make
 - B One break-make
 - C One make-before-break
 - D One make-before-break, One make



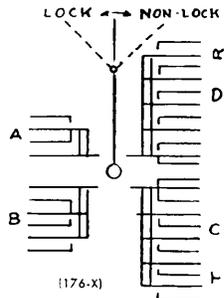
- 208519-000 (176-W)**
- A Two break-makes
 - B Two break-makes
 - C One break, two makes
 - D One break, two makes



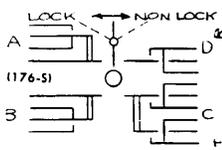
- 207663-000 (176-R)**
- A One break-make
 - B One break-make
 - C One break, two makes
 - D One break, two makes



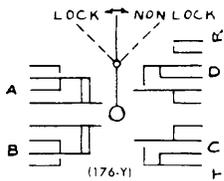
- 211040-000 (176-X)**
- A One break-make
 - B One break-make, one make
 - C One break-make, four makes
 - D One break-make, four makes



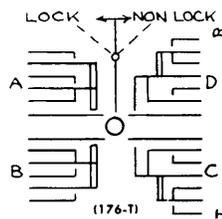
- 207800-000 (176-S)**
- A One break-make
 - B One break-make
 - C Two make-before-breaks
 - D One make-before-break



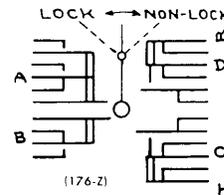
- 212479-000 (176-Y)**
- A One break-make
 - B One break-make
 - C One break, one make-before-break
 - D One break, one make-before-break, one make



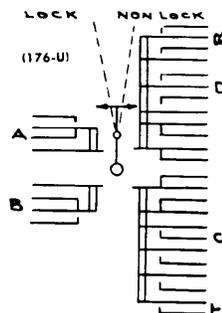
- 207806-000 (176-T)**
- A One break-make, One make
 - B One break-make, One make
 - C One make-before-break-make, One break-make
 - D One make-before-break-make, One break-make



- 212844-000 (176-Z)**
- A One break-make, one make
 - B One break-make
 - C One make-before-break, One break
 - D One make-before-break, One break

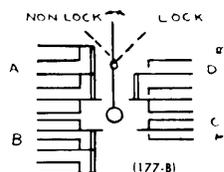


- 207823-000 (176-U)**
- A One break-make
 - B One break-make
 - C Two breaks, four makes
 - D Two breaks, four makes



Two-Way, Locking and Non-Locking, Bent Handle

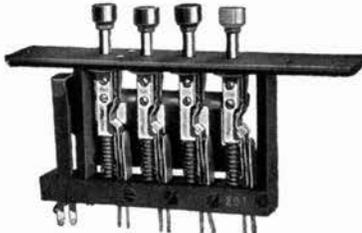
- 209272-000 (177-B)**
- A Three breaks
 - B Three breaks
 - C One break-make
 - D One break-make, one make



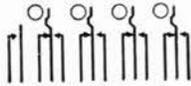
Revised 1-1-61

PARTY LINE INDICATING TYPE KEYS

No. 200 Type Key



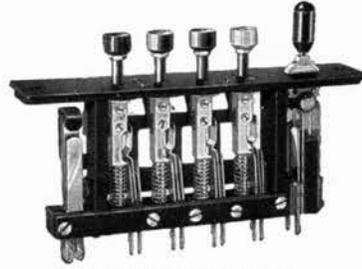
No. 202 Key Assembly



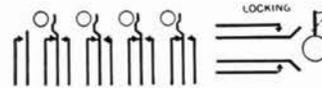
No. 202 Key Spring Combination

A four button, indicating, party line ringing key. Adapted to switchboards that are equipped with either "Manual" or "Machine Ringing" facilities. Each button has three positions—fully depressed, partially released or indicating, and fully released or normal. The spring combinations individual to each button are actuated when any button is in its "indicating position". The spring combination which is operated by the tumbler plate is actuated only when one of the buttons is in its "fully depressed" position. Each button is fully restored automatically when another button is depressed. The buttons are colored blue, red, green and black. Size of key top— $5\frac{1}{2}$ " x 1". Depth of key from surface of escutcheon to the tips of springs— $2\frac{3}{4}$ ". Key top mounts flush with keyboard's surface and is finished in dull black. For keys on other sized mountings see table below.

No. 210 Type Key



No. 212-B Key Assembly



No. 212-B Key Spring Combinations

This is a four button, indicating, party line ringing key combined with a cam type listening key. The action of the buttons is the same as that of the No. 202 Key. Used in cord circuits which are designed for "Machine Ringing" and "Manual Listening."

The buttons are colored blue, red, green, and black.

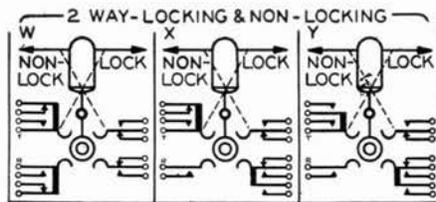
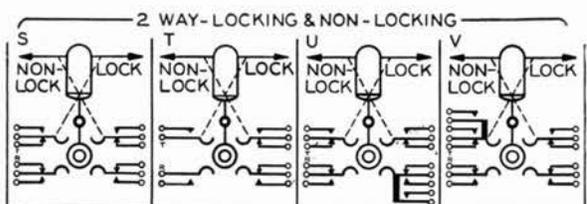
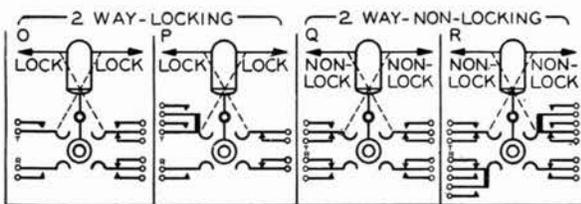
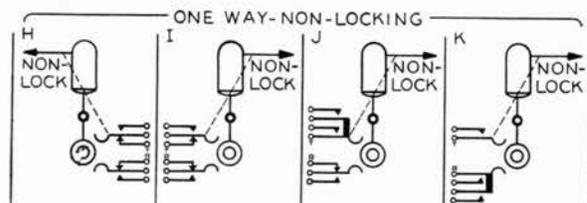
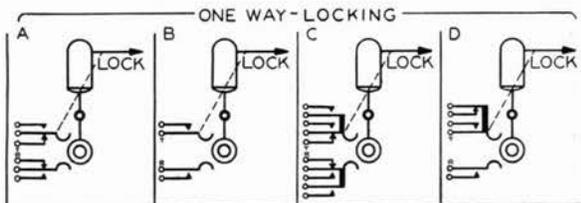
Size of key top— $5\frac{1}{2}$ " x 1". Depth of key from the surface of escutcheon to the tips of the springs— $2\frac{3}{4}$ ".

These dimensions are for keys coded 210 to 214. On keys that are coded 215 to 219, the size of the key tops are $6\frac{1}{2}$ " x 1".

The depth of keys coded 210 to 219, as measured from the surface of the escutcheons to the tips of the springs is $2\frac{3}{4}$ ".

Stock No.	Code	Description	No. of Cam Keys
802646-000	(202)	Four Party Indicating Key	None

Stock No.	Code	Description	No. of Cam Keys
_____	(212-B)	Four Party, Machine Ringing Key	One



Some Cam Key Combinations used with Party Line Keys
Code Nos. 210 to 259

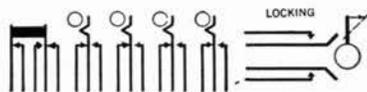
PARTY LINE INDICATING TYPE KEYS (Cont.)

No. 220 Type Key

A four button, indicating, party line ringing key with a one-way locking cam. Adapted to local common battery cord circuits which are arranged for Manual Four Party Harmonic Ringing and Manual Listening.

The key plungers have three positions—ringing, indicating and normal. The spring combinations individual to each button are actuated in the fully depressed position, but not until after the tumbler plate has actuated the common end springs. Both the end springs and the springs associated with a depressed button return to normal as the button is released to its indicating position. Each button remains in its indicating position until it is fully restored automatically when another button is depressed. The buttons are colored blue, red, green, and black.

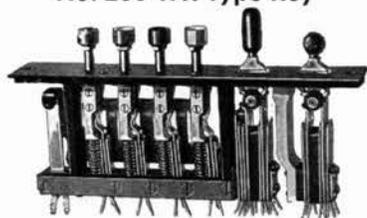
Size of key top—5½" x 1". Depth of key from the surface of escutcheon to the tips of the springs—2¾".



No. 222-B Key Spring Combination

Code No.	Description	No. of Cam Keys
222-B	Four Party, Manual Ringing Key	One

No. 230 WH Type Key



232-WH Key Assembly

This key consists of a four button, indicating, party line ringing key mounted with two cam keys. The action of the buttons and the spring combinations controlled by the buttons is identical with that of the No. 202 Key

Code No.	Width	Length	Esc. Stock No.
200	1¼"	5½"	13151-000
201	1⅝"	5½"	13152-000
202	1"	5½"	13153-000
203	¾"	5½"	13154-000
204	41/64"	5½"	13155-000
205	1¼"	6½"	13156-000
206	1⅝"	6½"	13157-000
207	1"	6½"	13158-000
208	¾"	6½"	13159-000
209	41/64"	6½"	13160-000
210	1¼"	5½"	13165-000
211	1⅝"	5½"	13166-000
212	1"	5½"	13167-000
213	¾"	5½"	13168-000
214	41/64"	5½"	13169-000
215	1¼"	6½"	13170-000
216	1⅝"	6½"	13171-000
217	1"	6½"	13172-000
218	¾"	6½"	13173-000
219	41/64"	6½"	13174-000
220	1¼"	5½"	13165-000
221	1⅝"	5½"	13166-000
222	1"	5½"	13167-000
223	¾"	5½"	13168-000
224	41/64"	5½"	13169-000
225	1¼"	6½"	13170-000
226	1⅝"	6½"	13171-000

Used in universal cord circuits which are designed for the following features—Four Party "Machine Ringing", "Manual Listening", and with provision for manual toll ringing on either cord end.

Size of key top—6½" x 1". The buttons are colored blue, red, green and black.

Depth of key from surface of escutcheon to the tips of springs—2¾".

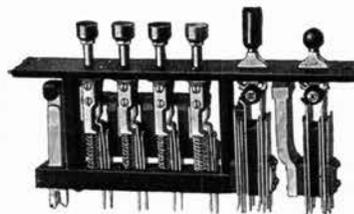
Code No.	Description	No. of Cam Keys
232-WH	Four Party, Machine Ringing Key	Two

No. 237-WH Type Key

An indicating, four button, party line key mounted with two cams. Used in universal cord circuits that are designed for—"Manual Party Line Ringing" on the calling cord end, "Manual Party Line Ringing" on the answering cord end, "Manual Toll Ringing" on either cord end and "Manual Listening" bridged across the cord circuit.

The operation of the buttons is similar to that described for the No. 222-B Key. The buttons are colored blue, red, green and black.

Size of key top—6½" x 1". Depth of key from surface of escutcheon to the tips of springs—2¾".



No. 237-WH Key Assembly



No. 237-WH Key Spring Combination

Code No.	Description	No. of Cam Keys
237-WH	Four Party, Manual Ringing Key	Two

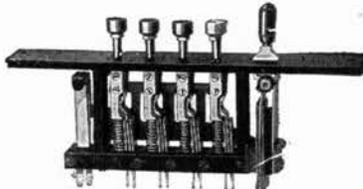
Code No.	Width	Length	Esc. Stock No.
227	1"	6½"	13172-000
228	¾"	6½"	13173-000
229	41/64"	6½"	13174-000
230	1¼"	5½"	13175-000
231	1⅝"	5½"	13176-000
232	1"	5½"	13177-000
233	¾"	5½"	13178-000
234	41/64"	5½"	13179-000
235	1¼"	6½"	13175-000
236	1⅝"	6½"	13176-000
237	1"	6½"	13177-000
238	¾"	6½"	13178-000
239	41/64"	6½"	13179-000
252	1"	5½"	12697-000
260	1¼"	5½"	13151-000
261	1⅝"	5½"	13152-000
262	1"	5½"	13153-000
263	¾"	5½"	13154-000
264	41/64"	5½"	13155-000
265	1¼"	6½"	13156-000
266	1⅝"	6½"	13157-000
267	1"	6½"	13158-000
268	¾"	6½"	13159-000
269	41/64"	6½"	13160-000

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PARTY LINE INDICATING TYPE KEYS (Cont.)

No. 250 Type Key

Similar to No. 210 except that it is equipped with a locking cam key which allows ringing over both sides of lines to ground—8 Party. Position of cam indicates whether "tip" or "ring" side of line is being rung. Size of key top—7¼" x 1".



No. 252-A Key Assembly

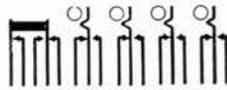


No. 252-A Key Spring Combination

Code No.	Description	No. of Cam Keys
252-A	Eight Party Master Key	One

No. 260 Type Key

This key is of the four button, indicating, party line type adapted for use as an individual, manual harmonic selective ringing push button key on local to local trunk circuits. The key plungers have three positions; ringing, indicating, and normal. The spring combinations, that are individual to each button, are actuated only in the fully depressed position and not until after the tumbler has actuated the common end springs. Both the end springs and the springs associated with a depressed button return to normal when the button is released to its indicating position. Each button remains in its indicating position until it is fully restored automatically when another button is depressed. Similar to No. 202 but has different end spring combination.



No. 262 Key Spring Combination

Code No.	Description	No. of Cam Keys
262	Four Party, Manual Ringing Key	None

No. 270 and No. 280 Type

The following numbers are assigned to party line indicating keys similar in structure and design to those previously described (see code numbers 202 to 262) with the exception that they are arranged for use with No. 340 Type cam keys and therefore are provided with key tops and escutcheons of suitable dimensions to mount properly in switchboard key-shelves.

In ordering the complete party line keys consisting of push button units and cam keys, the cam keys should be specified by their proper code numbers (see No. 340 Cam Type Keys) and the number of the party line key unit also shown.

Example:

- 1 No. 283 Party Line Key Unit
- 1 No. 342-FX Cam Key
- 1 No. 341-A Cam Key

Party Line Indicating Key Units

Code No.	Number of Cam Keys	Type of Ringing	Size of Mounting
279	2	4 Pty. Manual	7¾" x 1"
280	1	4 Pty. Machine	6½" x 1"
283	2	4 Pty. Machine	7¾" x 1"
290	1	2 Pty. Machine	7¾" x 1"
291	2	2 Pty. Machine	7¾" x 1"
292	2	5 Pty. Harmonic	7¾" x 1"
293	2	5 Pty. Harmonic	7¾" x 1½"

When the above party line indicating keys are ordered without cam keys the following code numbers should be used:

Code No.	Number of Cam Keys	Type of Ringing	Size of Mounting
277	None	4 Pty. Manual	7¾" x 1"
281	None	4 Pty. Machine	7¾" x 1"
285	None	2 Pty. Manual	7¾" x 1"
289	None	2 Pty. Machine	7¾" x 1"

Party line indicating keys and master keys are furnished with buttons of standard colors as follows:

- 4 Party Black, Green, Red, Blue
- 2 Party Red, Blue

If buttons are to be engraved complete information should be given inasmuch as plain buttons are furnished unless otherwise specified.

No. 325—326 Type

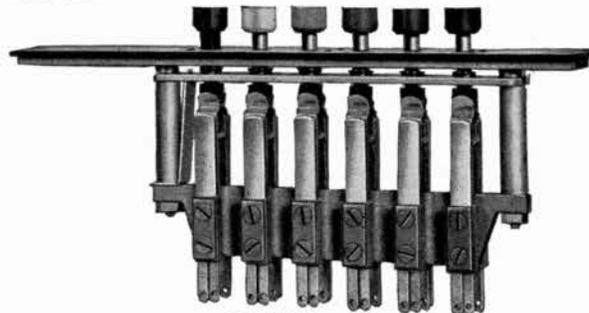
These are 5 and 6 button type master keys adapted for use as an individual master key for either five or six party line ringing. The No. 326 Key is used for six party service as all buttons are operative.

The plungers in both types of keys have two positions: normal (fully restored) and the ringing position in which the keys lock and indicate. Each button remains in the indicating (locking) position until it is automatically restored when another button is depressed. Standard buttons which are black, white, blue, red and green, can be engraved as specified at an additional charge.

Depth of key from surface of escutcheon to tips of spring—3".

Stock No.	Code	Escutcheon Length	Escutcheon Width	Number of Parties	Buttons
802677-000	(325-A)	5½"	1"	5	5
49956-000	(325-B)	7"	1"	5	5
49892-000	(325-C)	7¾"	1"	5	5
200394-000	(325-D)	6½"	1"	5	5
*203588-000	(325-E)	7¾"	1"	5	5
802678-000	(326-A)	5½"	1"	6	6
802679-000	(326-B)	7"	1"	6	6
49893-000	(326-C)	7¾"	1"	6	6
200395-000	(326-D)	6½"	1"	6	6
*203589-000	(326-E)	7¾"	1"	6	6

*The Nos. 325-E and 326-E Keys have provision in the escutcheon for mounting one cam key, which will be specified on the order.



No. 326 Type Key

PARTY LINE INDICATING TYPE KEYS (Cont.)
NO. 352 COMBINED KEY AND DROP

This compact unit consists of a combined ringing and listening key, an individual ring-back key and two ring-off drops with automatically restored shutters—all mounted on a rigid steel plate measuring 7¼" x 1⅞".

The No. 352 Key, as a unit replaces and is interchangeable with the No. 169 Type. Both keys were used on the Stromberg-Carlson No. 105 Magneto Switchboard and this, in turn, has been replaced by the new No. 125 Type which is fully described in Section B of this catalog.

No. 352 Key

Stock No.	Code	Resistance	Description
212746-000	(352-A)	500 Ohms	Double ring-off drops
212747-000	(352-B)	1000 Ohms	Double ring-off drops

Cam Key Assembly

Stock No.	Description
212744-000	Cam Key only, completely assembled

Former Keys

Many party line keys that were used in early Stromberg-Carlson switchboards can be replaced or repaired. If any such keys are not shown on these pages, our Rochester office should be consulted for information or a sample sent of the key that is needed.

INDIVIDUAL PARTY LINE RINGING KEYS

No. 310 Type Key

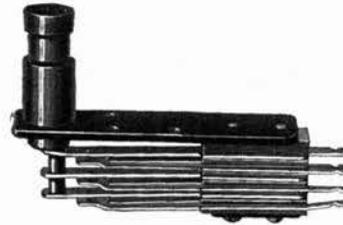


No. 310 Type Key Assembly

Stock No.	Code	Description
802490-000	(310-A)	A Super-Service Non-Locking Key with one make contact for harmonic machine ringing. Mounts under key shelf—bushing protrudes through woodwork and flush with top of key shelf. Diameter of hole— $\frac{3}{32}$ " for clearance of push button. White button-black center. Mounts with 2 Stock No. 11998-000 R.H.I.W. Screws. Specify these screws on order. Total height— $1\frac{25}{64}$ ". Length of key over springs— $2\frac{15}{16}$ ". Width— $\frac{3}{4}$ ". Diameter of button— $\frac{3}{8}$ ". Diameter of colored center— $\frac{3}{64}$ ". Designed for $\frac{7}{8}$ " key shelf.
802491-000	(310-B)	Same as No. 310-A Key, except white button, red center.
_____	(310-C)	Same as No. 310-A Key, except white button, blue center.
_____	(310-D)	Same as No. 310-A Key, except white button, green center.
802662-000	(310-E)	Same as No. 310-A Key, has plain white button.

INDIVIDUAL PARTY LINE RINGING KEYS (Cont.)

No. 312 Type Key



No. 312 Key Assembly

Stock No.	Code	Description
802663-000	(312)	An Individual Non-Locking Push Button Order Wire Key for Super-Service Switchboards. Designed for mounting from under side of a $\frac{7}{8}$ " key shelf through a $\frac{1}{2}$ " drill hole flush with key shelf surface. Mounts with 2 Stock No. 520195-000 R.H.I.W. Screws. Specify these screws on order. Length of key over springs— $2\frac{15}{16}$ ". Width— $\frac{3}{4}$ ". Total height— $1\frac{15}{16}$ ". Finish of button—Black. Diameter— $\frac{29}{64}$ ".
802666-000	(315-E)	Same as No. 310 except Breaks one Contact.

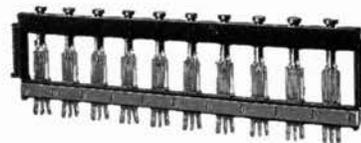
When specified engraved buttons can be furnished at an additional charge.

STRIP-MOUNTED PLUNGER TYPE KEYS

Nos. 62 and 69 Keys

These are plunger Jack Keys consisting of push buttons assembled on hard rubber strips with mounting centers the same as used for Jacks. They are furnished in non-locking (62) and locking (69) types which have the same spring combinations and are similar in all other respects.

No. 62 and No. 69 Type Keys are used in switchboards for night switching purposes and also as circuit-restoring and ringing keys. Both types mount ten keys per strip.



No. 62 Key on 122 Mounting

No. 122 Mounting

Stock No.	Code	Operation	Use
42491-000	(62)	Key Non-Locking	2 & 6 Panel Multiple Swbds.
42980-000	(69)	Key Locking	Mount same as No. 130 Jacks

No. 123 Mounting

Stock No.	Code	Operation	Use
42979-000	(62)	Key Non-Locking	3 & 8 Panel Multiple Swbds.
42981-000	(69)	Key Locking	Mount same as No. 127 Jacks

Mounting Information

Specifications	122 Mtg.	123 Mtg.
Length of Key strip overall	11⅞"	7 ³¹ / ₃₂ "
Length of face strip overall	10 ³ / ₈ "	7 ¹⁹ / ₃₂ "
Width of face strip	½"	½"
Depth—face to tip of springs	3 ³ / ₁₆ "	3 ³ / ₁₆ "
Mounting Centers	11 ¹ / ₁₆ "	8 ³ / ₈ "
Jack Fasteners used	No. 17(2)	No. 17(2)
Jack blank for empty space	No. 52	No. 43

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INDIVIDUAL PLUNGER KEYS

Individual Push Button Keys

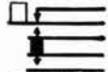


No. 303 Key

Spring Combinations



No. 303 Key
Non-Locking



No. 304 Key
Non-Locking



No. 305 Key
Non-Locking

Stock No.	Code	Use
802659-000	(303)	Key Magneto Telephones and Desk Set Boxes, for ringing central.
802660-000	(304)	Key Magneto telephones for shorting lines in connection with Non-Interfering Ringing.
802661-000	(305)	Key No. 844 Lineman's Magneto Test Set.

Each of the above push button keys has a different spring combination but in other respects they are the same.

Push Type and Twist Type Keys



No. 334 Key



No. 338 Key

Individual Push Type Plunger Keys Nos. 334, 335 and Nos. 336, 337

These Keys are available in both locking and non-locking types and designed for mounting on either $\frac{7}{8}$ " or $\frac{1}{2}$ " panels. The plungers are black with plain buttons but, when specified, engraved letters can be added to meet circuit requirements. Spring contacts, method of mounting and operating features are indicated by letters affixed to the code numbers of Nos. 334, 335 and Nos. 336, 337 Type Keys.

Individual Twist Type Plunger Keys Nos. 338 and 339

Twist type keys and push type keys are the same with the exception of the plungers. All twist keys are locking. Plain black buttons are standard but red, white or brown can be furnished and engraved letters added when specified.

Individual Push Type Plunger Keys

Mounts on $\frac{7}{8}$ " Panel Stock No.	Panel Code		Mounts on $\frac{1}{2}$ " Panel Stock No.	Panel Code
49506-000	(334-A)	Locking	49512-000	(335-A)
49507-000	(334-B)	Locking	49513-000	(335-B)
49508-000	(334-C)	Locking	49514-000	(335-C)
49509-000	(334-D)	Locking	49515-000	(335-D)
49510-000	(334-E)	Locking	49516-000	(335-E)
49511-000	(334-H)	Locking	49517-000	(335-H)
Mounts on $\frac{7}{8}$ " Panel Stock No.	Panel Code		Mounts on $\frac{1}{2}$ " Panel Stock No.	Panel Code
49518-000	(336-A)	Non-Locking	49524-000	(337-A)
49519-000	(336-B)	Non-Locking	49525-000	(337-B)
49520-000	(336-C)	Non-Locking	49526-000	(337-C)
49521-000	(336-D)	Non-Locking	49527-000	(337-D)
49522-000	(336-E)	Non-Locking	49528-000	(337-E)
		Non-Locking	21312-000	(337-G)
49523-000	(336-H)	Non-Locking	49529-000	(337-H)
-----	-----	Non-Locking	211082-000	(337-J)
-----	-----	Non-Locking	211083-000	(337-K)
-----	-----	Non-Locking	211132-000	(337-L)
211158-000	(336-M)	Non-Locking	219369-000	(337-M)

Individual Twist Type Plunger Keys

Mounts on $\frac{7}{8}$ " Panel Stock No.	Panel Code		Mounts on $\frac{1}{2}$ " Panel Stock No.	Panel Code
49530-000	(338-A)	Locking	49536-000	(339-A)
49531-000	(338-B)	Locking	49537-000	(339-B)
49532-000	(338-C)	Locking	49538-000	(339-C)
49533-000	(338-D)	Locking	49539-000	(339-D)
49534-000	(338-E)	Locking	49540-000	(339-E)
216548-000	(338-F)	Locking	-----	-----
201122-000	(338-G)	Locking	49541-000	(339-H)
49535-000	(338-H)	Locking	209018-000	(339-J)
-----	-----	Locking	211740-000	(339-L)
-----	-----	Locking	212699-000	(339-M)
-----	-----	Locking	211760-000	(339-N)
-----	-----	Locking	211947-000	(339-P)
-----	-----	Locking	213104-000	(339-Q)
-----	-----	Locking	213722-000	(339-R)

- A. Two make contacts
- B. Two break contacts
- C. Two break-make contacts
- D. Two make-before-break contacts
- E. Two double make contacts
- G. Three breaks and one make contacts
- H. Four single make contacts
- J. Two break-makes and two makes
- K. Two break-makes, one make and one break
- L. Two break-makes, one break, and two makes
- M. Four break-makes
- N. Three break-makes, two breaks
- P. Four makes and two breaks
- Q. Two breaks, two break-makes, one make-before-break

The Nos. 336 and 337 Non-Locking Push Type are generally similar to the Nos. 334 and 335 Locking Push Type Keys, except that they have rollers on the actuating springs.

The Nos. 338 and 339 Twist Type are furnished only as locking keys and used in night alarm, battery and generator circuits.

Former Push Type Plunger Keys

Code	Key	Operation	Replaced by
No. 34	Key	Non-Locking	Nos. 336, 337
No. 119	Key	Locking	Nos. 334, 335
No. 300	Key	Non-Locking	Nos. 336, 337
No. 301	Key	Locking	Nos. 334, 335

KEY MOUNTINGS

The following Key Mountings are designed to be used with Stromberg-Carlson Keys. They are furnished in three designs —for surface keyboard mounting, for flush keyboard mounting, and for switchboard face mounting.

Surface Keyboard Type

These Key Mountings are generally mounted with two No. 5502 Oval Head Wood Screws on the surface of keyboards. They mount one cam key each. Finish—black enamel.



No. 55

Surface Key Mounting

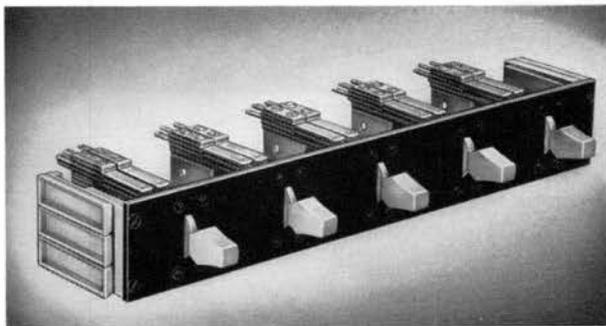
Stock No.	Code No.	No. of Keys	Face Length	Face Width	Mounting Centers
†801264-000	(55)	1 No. 175	2 3/4"	3/4"	2 3/8"
†801270-000	(66)	1 No. 170	2 5/16"	3/4"	1 7/8"
801332-000	(132)	* 1 No. 340 or 170	2 3/4"	1 5/16"	2 3/8"
801333-000	(133)	* 1 No. 340 or 170	2 5/16"	1 5/16"	1.880"

†No. 55 and No. 66 will not mount No. 340 Type Keys.

*Note: 340 Type Keys are no longer manufactured.

Flush Keyboard Type

These Mountings have steel tops covered with dull finished phenolic material and mount flush with the keyboard surface. Each mounting uses 2 Stock No. 12908-000 screws and 2 Stock No. 12672-000 clamps for key frame mounting. Finish dull black, except those marked*, which are suntan.



No. 104 Switchboard Face Key Mounting

Flush Keyboard Mountings For No. 170 or 340 Type Keys

Stock No.	Code No.	No. of Keys	Face Length	Face Width	Mounting Centers
801285-000	(82)	1	6 1/2"	1"	6 1/16"
801286-000	(83)	2	6 1/2"	1"	6 1/16"
801287-000	(84)	3	6 1/2"	1"	6 1/16"
207331-000	(88)	1	5 1/2"	1"	5 1/16"
207332-000	(89)	2	5 1/2"	1"	5 1/16"
207333-000	(90)	3	5 1/2"	1"	5 1/16"
801295-000	(92)	1	5 1/2"	1 1/8"	5 1/16"
801296-000	(93)	2	5 1/2"	1 1/8"	5 1/16"
801297-000	(94)	3	5 1/2"	1 1/8"	5 1/16"
801298-000	(95)	1	2 3/4"	1 1/8"	2 3/16"
801311-000	(111)	1	6 1/2"	1 1/8"	6 1/16"
801312-000	(112)	2	6 1/2"	1 1/8"	6 1/16"
801313-000	(113)	3	6 1/2"	1 1/8"	6 1/16"
801314-000	(114)	1	7 1/4"	1 1/8"	6 13/16"
801315-000	(115)	2	7 1/4"	1 1/8"	6 13/16"
801316-000	(116)	3	7 1/4"	1 1/8"	6 13/16"
†801319-000	(119)	3	5 1/2"	3/4"	5 1/16"
801321-000	(121)	1	2 3/4"	1"	2 5/16"
801325-000	(125)	1	7"	1"	6 1/2"
801326-000	(126)	2	7"	1"	6 1/2"
801327-000	(127)	3	7"	1"	6 1/2"
*801328-000	(128)	1	5 1/2"	1"	5"
*801329-000	(129)	2	5 1/2"	1"	5"
*801330-000	(130)	3	5 1/2"	1"	5"
*801331-000	(131)	3	5 1/2"	7/8"	5"
801334-000	(134)	1	5 1/2"	1"	5 1/16"
*205649-000	(138)	1	5 1/2"	7/8"	5 1/16"
*205650-000	(139)	2	5 1/2"	7/8"	5 1/16"
203773-000	(150)	2	6 1/2"	1"	6 1/8"
203774-000	(151)	2	6 1/2"	1"	6 1/8"
203775-000	(152)	1	6 1/2"	1"	6 1/8"
203776-000	(153)	3	6 1/2"	1"	6 1/8"
206771-000	(154)	1	7"	1"	6 3/16"
206772-000	(155)	2	7"	1"	6 3/16"
206773-000	(156)	3	7"	1"	6 3/16"
206774-000	(157)	2	7"	1"	6 3/16"
205651-000	(158)	1	2 3/4"	7/8"	2 5/16"
205652-000	(159)	1	6.496"	.999"	6 1/16"
205653-000	(160)	2	6.496"	.999"	6 1/16"
205654-000	(161)	3	6.496"	.999"	6 1/16"
208444-000	(164)	1	6 1/2"	1"	6 1/8"
208655-000	(165)	1	3 5/16"	1"	3 3/8"
208656-000	(166)	2	3 5/16"	1"	3 3/8"

Mountings Nos. 150 through 157 have clear escutcheons.

*These Key Mountings have Suntan finish escutcheons and use Phillips head brass screws for face mounting.

†No. 119 will mount No. 170 Type Keys only.

Switchboard Face Mounting Type

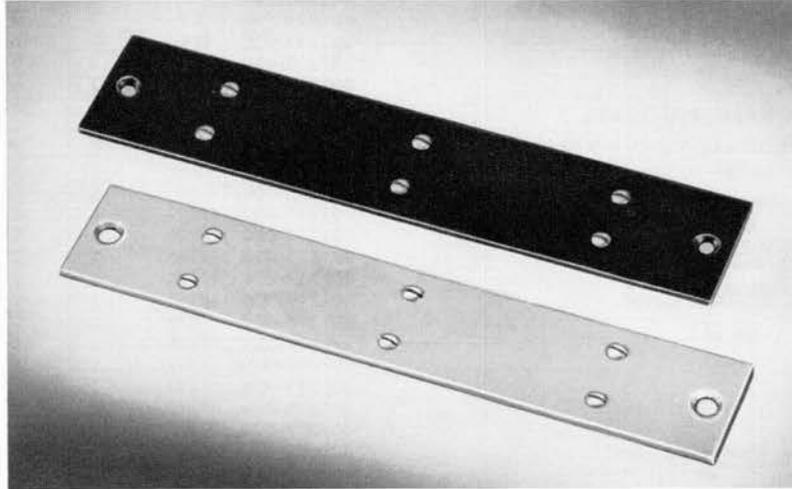
These Key Mountings mount similarly to jacks and lamps in the faces of switchboards. They are held in place by No. 17 Jack Fasteners. Finished in black enamel.

Stock No.	Code No.	No. of Keys	Face Length	Face Width	Mounting Centers
801294-000	(91)	10	10 3/8"	1 1/2"	11 1/16"
801304-000	(104)	5	10 3/8"	2"	11 1/16"
801320-000	(120)	10	10 3/8"	1 1/2"	11 1/16"
204950-000	(162)	10	11 23/32"	1 3/4"	10 15/16"
205047-000	(163)	15	17 15/16"	2"	

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KEY BLANKS

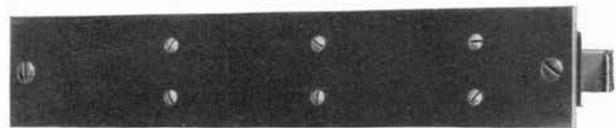
The Stromberg-Carlson key blanks may be of formica or steel and are available in various finishes. In ordering, the type of key being replaced should be specified by its proper code number.



Stock No.	Code	Used in place of	Mounting Center	Size	Finish
3222-000	(7)	No. 16, 25 & 170 key		1 3/8" lg x 4 1/64" wd	dead black
12986-000	(68)	No. 170 key	6-1 1/10"	6 1/2" lg x 1" wd	dull black
12987-000	(69)	No. 191 key	6 1/16"	6 1/2" lg x 1/2" wd	dull black
12988-000	(70)	No. 170 key	6 1/16"	6 1/2" lg x 3/4" wd	dull black
12989-000	(71)	No. 190 key	5 1/16"	5 1/2" lg x 1/2" wd	dull black
207334-000	(72)	No. 170 key	5 1/16"	5 1/2" lg x 1" wd	dull black
12234-000	(77)	No. 170 key	6 1/16"	6 1/2" lg x 1 1/8" wd	dull black
13235-000	(78)	No. 170 key	5 1/16"	5 1/2" lg x 3/4" wd	dull black
13236-000	(79)	No. 170 key	5 1/16"	5 1/2" lg x 1 1/8" wd	dull black
206767-000	(80)	No. 170 key	2 3/8"	2 3/4" lg x 1 1/8" wd	dull black
206768-000	(81)	No. 170 key	2 3/8"	2 3/4" lg x 1" wd	dull black
13439-000	(83)	No. 170 or 340 key	6 13/16"	7 1/4" lg x 1 1/8" wd	dull black
27255-000	(84)	No. 325 & 326 B key	6 3/8"	7" lg x 1" wd	dull black
207335-000	(85)	No. 170 key	5 1/16"	5 1/2" lg x 1" wd	sun-tan
207336-000	(86)	No. 170 key	5 1/16"	5 1/2" lg x 7/8" wd	sun-tan
32132-000	(87)	No. 170 or 340 key	2 3/8"	2 3/4" lg x 15/16" wd	black
33992-000	(88)	No. 170 or 340 key	1.880"	2 5/16" lg x 15/16" wd	black
206770-000	(94)	No. 170 or 340 key	6.562"	7" lg x 1" wd	clear
205655-000	(95)	No. 170 or 340 key	2.312"	2 3/4" lg x 7/8" wd	black
205451-000	(96)	No. 170 or 340 key	6.062"	6 1/2" lg x 1" wd	black
208657-000	(97)	No. 170 key	3 3/8"	3 13/16" lg x 1" wd	black
208658-000	(98)	No. 170 key	3 3/8"	3 13/16" lg x 1 1/8" wd	black



No. 69—Key Blank



No. 77—Key Blank



No. 83—Key Blank

STROMBERG-CARLSON

NO. 13 KEY BOX



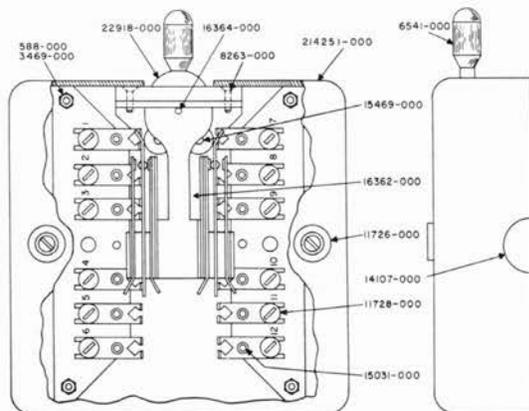
No. 13 Key Box

The Stromberg-Carlson No. 13 Key Box is another revenue producer for the operating company. It makes possible better and additional telephone service, and is particularly useful in

- A. Aiding Extension Telephone Service.
- B. Grouping of Telephone Lines for Secretarial Supervision.
- C. Operating Call Signals.
- D. Tying Low Voltage Circuits Together.
- E. Switching Loud Speakers in Paging Service.
- F. Sending Code Signals in No. 2-6 Systems.

The No. 13 Key Box is made of pressed steel in a dull black finish. It is designed for mounting on the side or end of a desk or table. Each Key Box is equipped with one cam type Key.

All key springs are wired to screw terminals in such a manner that various wiring combinations can readily be made. Dimension—4¼" x 3⅞" x 1⅞".



Line Drawing showing arrangement of Terminals and Key. In No. 13 Key Box Assembly Part Numbers are also shown.

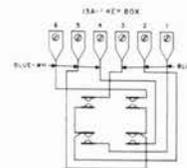
No. 216780-000 Key Box (Less Key and Wiring)

When keys other than those shown in the following codes are required, they may be selected from those listed under "Cam Keys." These keys may be mounted in the (216780-000) Key Box (less key and wiring). Twelve terminals are provided within each Key box.

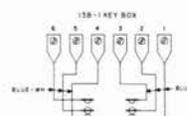
Stock No.	Code	Equipped with	Description
216770-000	(13-1)	173-N Key	2-Way, Locking-Locking
216771-000	(13A-1)	173-Q Key	2-Way, Locking-Locking
216772-000	(13B-1)	170-D Key	1-Way, Locking
216773-000	(13C-1)	171-D Key	1-Way, Non-Locking
216774-000	(13D-1)	170-G Key	1-Way, Locking
216775-000	(13E-1)	173-N Key	2-Way, Locking-Locking
216776-000	(13F-1)	173-U Key	2-Way, Locking-Locking
216777-000	(13FA-1)	173-H Key	2-Way, Locking-Locking
*216778-000	(13G-1)	175-B Key	1-Way, 3 position lock'g
216779-000	(13H-1)	171-C Key	1-Way, Non-Locking

*No. 175-B Key, used in the No. 13G-1 Key Box, has a tilted handle. All other keys have straight handles.

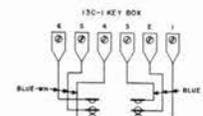
Typical Wiring Diagrams of No. 13 Type Key Boxes



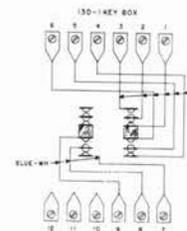
With No. 173-Q Locking Key



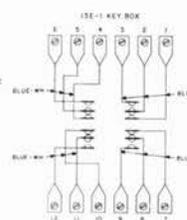
With No. 170-D Locking Key



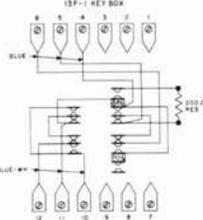
With No. 171-D Non-Locking Key



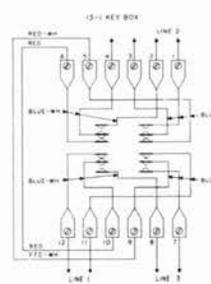
With No. 170-G Locking Key



With No. 173-N Locking Key



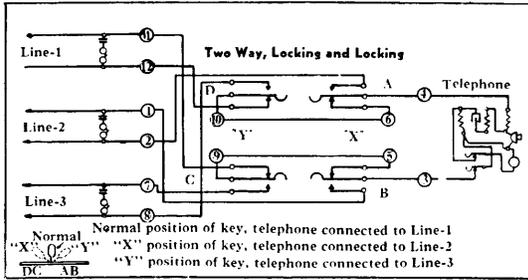
With No. 173-U Locking Key



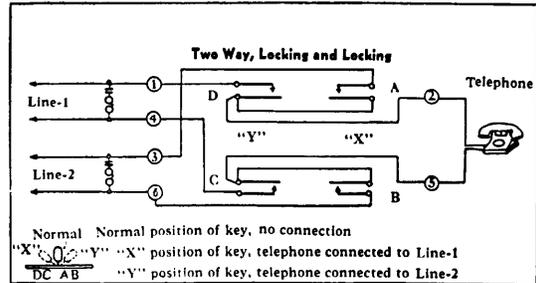
Wiring Diagram No. 13 Key Box

With No. 173-N Locking Key

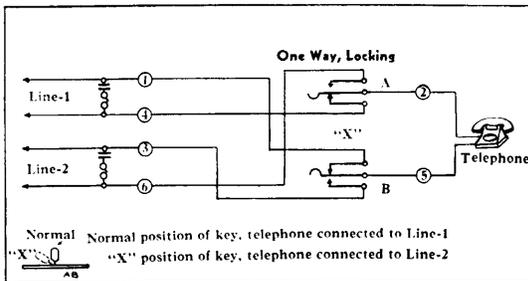
TYPICAL NO. 13 KEY BOX APPLICATIONS



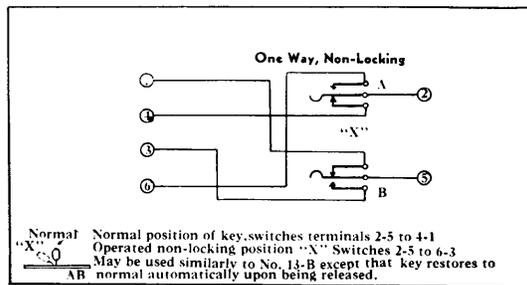
No. 13-1



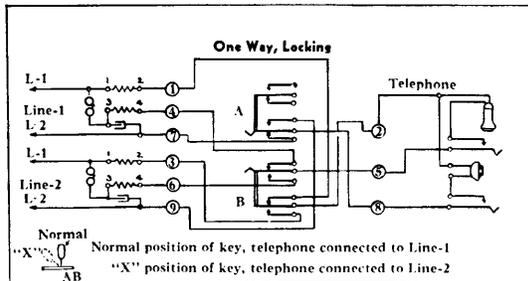
No. 13A-1



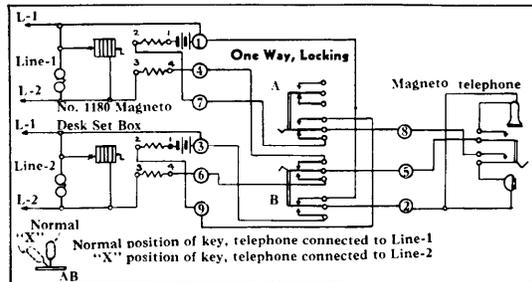
No. 13B-1



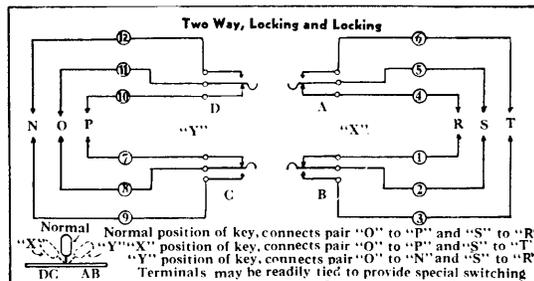
No. 13C-1



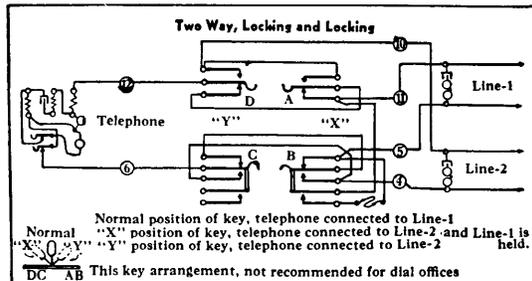
No. 13D-1 Fig. 1



No. 13D-1 Fig. 2



No. 13E-1



No. 13FA-1

CARD FRAMES

Stock No.	Code	Use	Description
801350-000	(2)	Mounts subscriber's number on No. 7 Type Transmitter.	Construction — Steel, black enameled frame holding white bristol-board with transparent celluloid protector. Length— $2\frac{13}{32}$ " Width— $\frac{29}{32}$ "
801351-000	(3)	Mounts operator's instruction cards on No. 101 PBX Switchboards and on toll boards.	Construction — Brass frame with japanned semi-gloss black finish, holding card with glass protector. Length— $3\frac{3}{4}$ " Width— $2\frac{11}{16}$ "



No. 2 Card Frame

Stock No.	Code	Use
801352-000	(4)	Card Frame used on 1201, 1232-3-4, and 1532-3-4 suspended type Handset Telephones.
24557-000	—	Card Frame used on 1197 Handset Telephones.

LAMPS—SWITCHBOARD

Stromberg-Carlson tipless lamps have a service record which justifies their reputation for being dependable and economical under actual operating conditions.

Their use is not limited as these lamps will fit any standard lamp socket in telephone service.

The over-all length is $1\frac{23}{32}$ " and diameter 0.300". Put up in standard packages of 100 lamps but smaller quantities may be ordered.

Important Advantages

Tungsten filaments clamped to the lead-in wires.

Filament supports of highly heat-resistant material are embedded in the stem.

Base consists of two metal contact pieces on either side of a plastic insulator of extremely high dielectric strength.

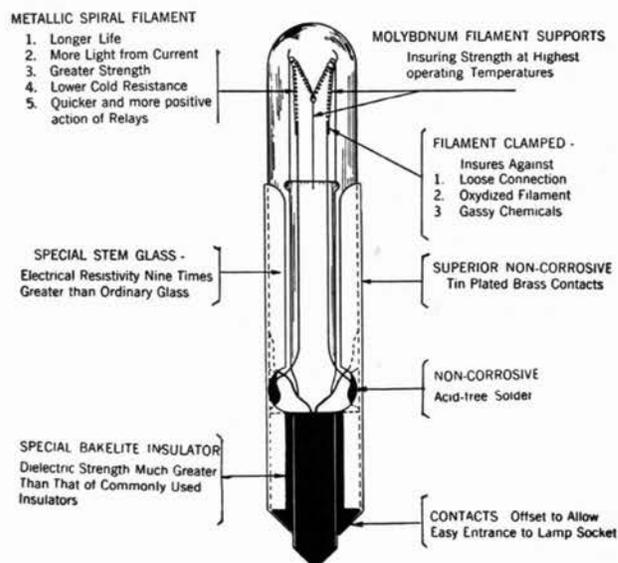
Long life and low current consumption is enhanced by using special stem glass that is nine times more resistant to heat than ordinary glass.

The use of acid-free solder and special plating of contacts maintains solid electrical contacts for years.

The elapsed time between hot and cold resistance of one-fifth of a second is practically negligible.

Operation through a maximum range of voltage with minimum fluctuation of signal value.

The filament is mounted near the end of the bulb to obtain maximum end-on candle power at the tip of the lamp.



Stromberg-Carlson Telephones Switchboard Lamp

Ordering Data and Characteristics

Stock No.	Code	Voltage	Current Consumption		Approximate Ohms, Cold Resistance	Min. End Foot Candle Power
			Min.	Max. Amperes		
801363-000	(4-A)	4	.170	.210	2.0	150
801364-000	(6-A)	6	.120	.160	4.5	200
801365-000	(8-A)	8	.080	.100	9.0	75
801366-000	(12-A)	12	.090	.110	12	110
801367-000	(16-A)	16	.090	.110	16	130
801368-000	(18-A)	18	.035	.050	46	150
801369-000	(24-B)	24	.035	.050	61	200
801370-000	(24-C)	24	.060	.085	33	750
209569-000	(24-H)	24	.018	.033	135	75
801371-000	(30-B)	30	.090	.110	30	500
801372-000	(44-A)	44	.060	.085	61	650
801374-000	(48-B)	48	.090	.110	48	360
42201-000	(48-C)	48	.032	.038	160	200
201737-000	(48-D)	48	.012	.021	410	30
801375-000	(55-C)	55	.045	.055	109	500
45271-000	(60-A)	60	.045	.055	120	500

*E.F.C. is the candle power at a distance of one foot from the tip of the lamp.

24 volt lamps may be used on voltage 18-28; 44 volt lamps on voltage 36-48.

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LAMP CAPS

Stromberg-Carlson Lamp Caps are built to combine neatness with durability—the lenses are made of specially annealed glass to resist breakage from impact with plugs, and are mounted in bushings made from seamless metal tubing which is later spun over to retain the lenses—other end of shank is slotted for close fitting in lamp socket.

No. 23 Pilot Type



No. 23 Pilot Lamp Cap

A pilot lamp cap used on common battery multiple, non-multiple, and PBX Switchboards. Designed for use with the No. 9 Individual Lamp Socket. This lamp cap is equipped with an attractive sand-blasted lens. Maximum diameter of face— $\frac{5}{16}$ " , Diameter of shank is 0.811" , fits $\frac{1}{16}$ " hole.

Stock No.	Code	Color	Lens Finish	Glass Description
801388-000	(23-A)	White	Glossy	Translucent
801389-000	(23-B)	Red	Sanded	Translucent
801390-000	(23-C)	Green	Sanded	Translucent
801391-000	(23-D)	Amber	Sanded	Translucent
207824-000	(23-E)	Red	Glossy	Translucent
207825-000	(23-F)	Clear	None	Transparent
207826-000	(23-G)	Red	Glossy	Translucent
207827-000	(23-H)	Clear	None	Transparent
209428-000	(23-J)	Red	Glossy	Translucent

No. 27 Supervisory Type

A Supervisory Lamp Cap associated with trunk circuits, with cord circuits, and with miscellaneous circuits where caps are not required to be numbered. Designed for use with the No. 12 Lamp Socket on the keyboard and the No. 121 Lamp Socket on Nos. 79, 80, 81 or 82 Mounting in the switchboard face. This lamp cap is equipped with a non-breakable opal. Maximum diameter of face— $\frac{3}{8}$ " , Diameter of shank—0.340" , fits $\frac{1}{32}$ " hole.

Stock No.	Code	Color	Lens Finish	Glass Description
801392-000	(27-A)	White	Glossy	Cloudy
801393-000	(27-B)	Red	Sanded	Clear
801394-000	(27-C)	Green	Sanded	Clear
801395-000	(27-D)	Transparent	Glossy	Clear
801396-000	(27-E)	White	Glossy	Cloudy, Red when lighted



No. 27 Supervisory



No. 29 Line

No. 29 Line Type

Associated with line lamp sockets in 20 per strip mounting on eight panel multiple switchboards. Designed for use with the No. 121 Lamp Socket on No. 83 Mounting only. Equipped with a non-breakable lens. No. 29-A only provided with removable number disc which is held in place by an invisible ring. Disc numbered as specified. Maximum diameter of face— $\frac{3}{8}$ " , Diameter of shank—0.320" , fits a $\frac{5}{16}$ " hole.

Stock No.	Code	Color	Lens Finish	Glass Description
801400-000	(29-A)	Transparent	Glossy	Clear, number disc
801401-000	(29-B)	Red	Sanded	Clear
801402-000	(29-C)	Green	Sanded	Clear
801403-000	(29-D)	White	Glossy	Cloudy
801404-000	(29-E)	White	Glossy	Cloudy with • Symbol
801405-000	(29-F)	White	Glossy	Cloudy with + Symbol
801406-000	(29-G)	White	Glossy	Cloudy with | Symbol

No. 30 Line Type

A lamp cap used on PBX and Multiple Switchboards over line lamps. Designed for use with the No. 121 Lamp Socket on Nos. 79, 80, 81, 82, or 89 Mountings. Equipped with a non-breakable lens. No. 30-A and 30-L only provided with removable paper number disc which is held in place by an invisible ring. Disc numbered as specified. Diameter of face— $\frac{3}{8}$ " , Diameter of shank—0.340" , fits a $\frac{1}{32}$ " hole.

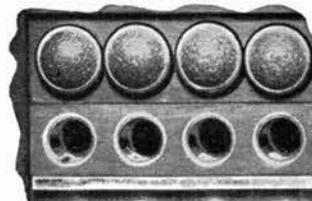


No. 30 Line

Stock No.	Code	Color	Lens Finish	Glass Description
801407-000	(30-A)	Transparent	Glossy	Clear, number disc
801408-000	(30-D)	White	Glossy	Cloudy with • Symbol
801409-000	(30-J)	White	Glossy	Cloudy with + Symbol
801410-000	(30-K)	White	Glossy	Cloudy with | Symbol
801411-000	(30-L)	Transparent	Flat lens	with number disc.



No. 30-D No. 30-J No. 30-K Lamp Caps



No. 30 Line Type, Mounted and associated with line jacks

No. 31 Supervisory Type

Standard lamp cap used with both trunk and cord circuits on PBX and Multiple Switchboards. Designed for use with the No. 13 Lamp Socket only. Equipped with a non-breakable lens. Maximum diameter of face— $\frac{1}{2}$ " , Diameter of shank—0.343" , fits $\frac{1}{32}$ " hole.



No. 31 Supervisory Lamp Caps

Stock No.	Code	Color	Lens Finish	Glass Description
801412-000	(31-A)	White	Glossy	Translucent
801413-000	(31-B)	Red	Sanded	Translucent
801414-000	(31-C)	Green	Sanded	Translucent
207177-000	(31-D)	Clear	None	Transparent

LAMP SOCKETS

Stromberg-Carlson Lamp Sockets are furnished in two types: those for mounting individually and those for mounting in strips. Both of these types are provided with all metal frames so as to readily distribute and radiate the heat generated by the lamps. Every Stromberg-Carlson Lamp Socket with the exception of Code Nos. 10, 11, and 14, takes a standard switchboard lamp and lamp cap. Code Nos. 10, 11, and 14 Lamp Sockets take Edison Base Lamps.

Lamp Sockets which are mounted in strips for use in the face of switchboard align with jacks having the same type of mounting.

Mounting screws, fasteners, lamps and lamp caps are not included with the lamp sockets, but should be ordered separately.

**Individual Lamp Sockets
Pilot Type**

For pilot lamp service on PBX and Multiple Switchboards. Used with standard switchboard lamps and the No. 23 Lamp Cap. Mounts on the face of the switchboard in any standard panel with two No. 6176 Wood Screws. Consists of steel frame with brass head for lamp cap; equipped with insulating fiber tubing and nickel silver springs. Length overall— $2\frac{15}{16}$ ". Diameter of head— $\frac{7}{8}$ ". Diameter of sleeve— $\frac{7}{16}$ ".



No. 9 Lamp Sockets

Stock No.	Code	Used with
801417-000	(9)	Lamp Socket No. 23 Lamp Cap (Pilot)

No. 12 Supervisory Type

Used on PBX and Multiple Switchboards for supervisory lamp service. Consists of a steel frame with a fiber tubing for insulating purposes and nickel-silver springs. Mounts from the under surface of any standard— $\frac{7}{8}$ " key shelf with one No. 4 x $\frac{1}{2}$ " R.H.I.W. Screw. Takes standard switchboard lamp and the No. 27 Lamp Cap. Length over springs— $2\frac{7}{16}$ ". Diameter of sleeve— $\frac{7}{16}$ ". Mounting lug— $\frac{11}{16}$ " from face.



No. 12 Lamp Socket

Stock No.	Code	Used with
801420-000	(12)	Lamp Socket No. 27 Lamp Cap (Supervisory) Replaced by No. 13 on all new work

No. 13 Supervisory Type

A standard lamp socket for cord circuits and supervisory lamp service. Replaces the No. 12 and used on all new work. Used on PBX, Multiple, and Super-Service Switchboards. Consists of a steel frame with a fiber tubing, for insulating purposes, and nickel-silver springs. Mounts from the under surface of any standard— $\frac{7}{8}$ " panel with one No. 4 x $\frac{1}{2}$ " R. H. I. W. Screw.

Takes standard switchboard lamp and the No. 31 Lamp Cap. Length over springs— $2\frac{29}{32}$ ". Diameter of sleeve— $\frac{1}{2}$ ". Mounting lug— $\frac{27}{32}$ " from face.



No. 13 Lamp Socket

Stock No.	Code	Used with
801421-000	(13)	Lamp Socket No. 31 Lamp Cap (Supervisory)

Generator Protection Type

Mounted lamp sockets designed to take resistance lamps for generator protection, used in multiple switchboards where party ringing service is required. Strip fastened to the roof of the switchboard with four No. 10 x $\frac{3}{4}$ " R.H.I.W. Screws. Consists of a white shellacked maple mounting strip equipped with Porcelain Edison Base Lamp Sockets, No. 4 Cord Terminals and steel supports for mounting.

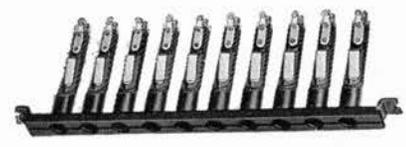


No. 10 Lamp Socket

Stock No.	Code	No. of Sockets	Used with
801418-000	(10)	Lamp Socket 4	Edison base lamps
801419-000	(11)	Lamp Socket 5	Edison base lamps
801422-000	(14)	Lamp Socket 6	Edison base lamps

Face Strip Type

No. 121 Lamp Sockets with mountings 59, 60, 61 and 67 were used on Stromberg-Carlson Switchboards made previous to 1917. Used only on additions to old S-C installations on two, three, four, and six panel multiple sections in connection with the No. 109 Type Jack. Takes standard switchboard lamp and No. 30 Individual Lamp Cap. Consists of face plate, mounting extensions, and sleeve sockets—all made of steel with black enamel finish. Equipped with nickel-silver springs. Sleeve socket insulated from springs with black tubular sheet fiber.



No. 121 Lamp Socket on 67 Mounting

Length of face— $10\frac{15}{32}$ ", Overall length— $11\frac{15}{32}$ ", Width of face— $\frac{1}{2}$ ", Mounting Centers— $10\frac{15}{16}$ ", Jack Fasteners—No. 15. No. 67 Mtg. only—length of face $7\frac{37}{64}$ ", Mounting Center— $8\frac{15}{64}$ ".

Stock No.	Code	Mtg.	No. of Sockets	Description
801430-000	(121)	59 Mtg.	5	Plain face
801431-000	(121)	60 Mtg.	10	Plain face
801432-000	(121)	61 Mtg.	20	Plain face
801433-000	(121)	67 Mtg.	10	Plain face

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LAMP SOCKETS (Cont.)

Face Strip Type (Cont.)

No. 121 is a Standard Lamp Socket for two, three, four and six panel associated multiple and PBX Switchboards. Used in connection with the No. 130 Type Jacks and mounts the same. Replaces Garford Type. Takes standard switchboard lamp and No. 27 or No. 30 Individual Lamp Cap. Consists of a face plate, lugs, and sleeve sockets—all made of steel with black enamel finish. Equipped with nickel-silver springs. Sleeve sockets insulated from springs with black tubular sheet fiber.



No. 121 Lamp Socket on 80 Mounting

Length of face— $10\frac{3}{8}$ " , Overall length— $10\frac{3}{4}$ " , Width of face— $\frac{1}{2}$ " , Mounting Centers— $11\frac{1}{16}$ " , Jack Fastener—No. 17.

Stock No.	Code	Mounting	No. of Sockets	Description
801424-000	(121)	80	10	*Plain Face
801425-000	(121)	81	20	+Plain Face

*Can also be drilled for No. 26 Lamp Cap when specified.
 †Can also be drilled for No. 25 Lamp Cap when specified.

No. 121 Eight Panel Multiple Switchboard Lamp Socket, used in connection with No. 127 Type Jacks. Replaces Garford Type. Takes standard switchboard lamp, and the No. 30 Individual Lamp Cap. Similar to the No. 80 Mounting only shorter.

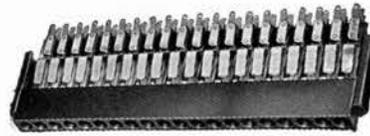
Length of face— $7\frac{19}{32}$ " , Overall length— $7\frac{31}{32}$ " , Width of face— $\frac{1}{2}$ " , Mounting Centers— $8\frac{3}{8}$ " , Jack Fastener—No. 17.

Stock No.	Code	Mountings	No. of Sockets	Lamp Caps
801429-000	(121)	Lamp Socket Strip	*89	10 No. 30

*No. 89 replaces No. 82 on new work.

Lamp sockets on above mountings are also drilled for No. 24 Twin Type Lamp Caps.

No. 121 Eight Panel Multiple Switchboard Lamp Socket used on all new work in connection with the No. 127 Type Jack. Takes standard switchboard lamp, and the No. 29 Individual Lamp Cap. Consists of black molded face strip with satin finish on face, sheet steel frame for mounting the springs, and the two end lugs. Equipped with nickel-silver springs.



No. 121 Lamp Socket on 83 Mounting

Length of face— $7\frac{19}{32}$ " , Overall length— $7\frac{31}{32}$ " , Width of face— $\frac{1}{2}$ " , Mounting Centers— $8\frac{3}{8}$ " , Jack Fastener—No. 17.

Stock No.	Code	Mtgs.	No. of Sockets	Description
801440-000	(121)	Lamp Socket Strip	91	10 Plain face
801427-000	(121)	Lamp Socket Strip	83	20 Plain face
801439-000	(121)	Lamp Socket Strip	92	20 Takes No. 26 Designation Strip

NUMBER PLATES



No. 13 Number Plate



No. 19-A Number Plate

Number Plates—used on jack stiles to designate subscriber's multiple; on plug boards to designate cord circuits; on key-boards to designate keys; and on power boards to designate switches.

7005-000	(13)	A round number plate, used on wood drop mounting panels, keyboards, terminal strips, etc. Consists of white opaque celluloid engraved with black figures— $\frac{1}{8}$ " high. Mounts flush—drive fit.
9573-000	(17)	Diameter— $\frac{1}{4}$ " . Thickness— $\frac{3}{16}$ " . Round number plate used on plug boards and keyboards, associated principally with the No. 310-E Key on Super-Service Switchboards. White, opaque, plain or engraved with figures or letters— $\frac{3}{16}$ " high. Mounts flush—drive fit. Diameter— $\frac{7}{16}$ " . Thickness— $\frac{5}{16}$ " . Same as No. 17 except Black.
15373-000	(17-A)	Same as No. 17 except Black.
15374-000	(17-B)	Same as No. 17 except Red.
15375-000	(17-C)	Same as No. 17 except Blue.
15376-000	(17-D)	Same as No. 17 except Green.
13062-000	(19-A)	Square number plate used on multiple finishing stiles. Consists of black with white engraved figures—style to be specified. Three figures or less— $\frac{7}{32}$ " high, four or more $\frac{9}{64}$ " . Mounts with 2 Stock No. 12910-000 O.H.M. Screws. Size— $\frac{11}{16}$ " square. Thickness— $\frac{7}{64}$ " . Same as No. 19-A except Red.
13063-000	(19-B)	Same as No. 19-A except Red.

OPERATOR'S TELEPHONE SETS

No. 52AW Operator's Headset Assembly



No. 52AW Operator's Telephone Set

The No. 52AW operator's headset assembly is lightweight, compact, comfortable to wear and easily adjustable. The molded receiver and transmitter housings are connected by a stainless steel adjustable boom. The headband is of high-grade spring steel. The aluminum adjustment block allows up to 1½" extension on the receiver. A five-foot black, nylon braided, operator's cord terminates in a No. 210327-000 twin plug.

Stock No.	Description
205701-000	Operator's headset with twin No. 62 plug.
205826-000	Operator's headset without twin plug.
205827-000	Operator's headset with No. 66 SC plug.

Parts of No. 52AW Operator's Headset

Stock No.	Description
210320-000	Boom & Transmitter Case Assembly
210321-000	Transmitter
210322-000	Receiver Holder
210323-000	Receiver
210324-000	Headband Assembly
210325-000	Cord Assembly
210327-000	Twin Plug
210328-000	Transmitter Cap
210329-000	Receiver Cap
210330-000	Strap Assembly

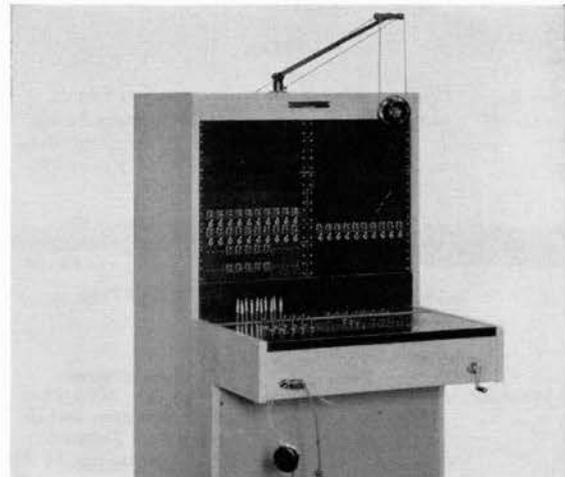
Suspended Type Operator's Sets

This set consists of No. 22 Universal Type Transmitter with mouth-piece and front molded in a single unit and No. 29 Headband Receiver.

For switchboard use the transmitter is suspended by two single conductor cords from an adjustable arm mounted on top of the cabinet.

Stock No.	Code	Description
802525-000	(22)	Operator's Transmitter (Suspended)
801592-000	(29)	Headband Receiver (Less Cord)
202926-000	(O-2-J)	4', two conductor cord

This outfit uses the No. 66 Four-Point Plug to match the No. 93 Jack which is standard for all switchboards. Only two conductors, however, are actually needed for suspended operator's sets.



Suspended Type Operator's Set on No. 125 Magneto Switchboard

Revised 1-1-61

PLUGS

Stromberg-Carlson Plugs are equipped with bronze tip conductors to withstand wear; special alloy steel tip rods for strength; best quality tough, hard rubber for insulation; and heavy black fibre shells for protection. The tip rods are threaded through and spun over the end of the tip conductor.

Three conductor plugs, Code Nos. 53, 54, and 65 Types are equipped with bronze dead rings to protect the insulation between the tip and ring conductors.

Plug screws for both terminals and shells are drilled for pilot screw driver.

Order plugs by stock and code number. If this is impossible, send in a sample plug or state serial number of switchboard on which the plugs will be used.

No extra charge is made for attaching cords to plugs when the order includes both plugs and cords.



No. 61 Plug

Stock No.	Code	Jack used	Class of Service
801502-000	(61)	144-A, 145-A, 154-A, 155-A	Toll test panels. Uses S-2 Two Conductor Cord. Interchangeable with W.E. No. 47
200516-000	(61-A)		

Designations

"X" affixed to code number indicates over-all shell covering butt of plug.

"N" affixed to code number indicates non-depressed ring.

Diameters shown in illustrations indicate size of associated jack.

"R" indicates large screw.

Switchboard Plugs Two Conductor Plugs



No. 42 Plug

Stock No.	Code	Used with	Class of Service
801481-000	(42)	11 Drop	No. 105 Magneto Swbd. Uses S-2 Two Cond. Cord



No. 56-XR Plug



No. 56-R Plug

Stock No.	Code	Used with	Class of Service
206515-000	(56-R)	130 Jack	Replaces No. 5060 Plug on Garford Magneto Swbds. Uses S-2 Two Conductor Cord. Replaces No. 56 Plug.
206516-000	(56-XR)	130 Jack	No. 125 Magneto Swbd. Also PBX and Multiple Boards. Uses S-2 Two Conductor Cord. Replaces No. 56-X Plug.

*Numbers that are listed have black shells; grey and red shells are available upon request.

Three Conductor Switchboard Plugs



No. 54 Plug



No. 55 Plug

Stock No.	Code	Used with	Class of Service
801504-000	(63)	109 Jack	Same profile as No. 55. Uses W.E. 101 Cord Tips. Uses S-3 three conductor cord. Replaces No. 55 Plug.
801505-000	(63-N)	127 Jack	Same as No. 63 but with non-depressed ring. Uses S-3 three conductor cord. Replaces No. 55-N Plug.
205544-000	(64-R)	156, 157 and 127 Jacks	Same profile as No. 54. Uses W.E. 101 Cord Tips. Uses S-3 three conductor cord. Replaces No. 54 and 64 Plugs.
*205547-000	(64-DR)	127 Jack with large ring spring	Same profile as No. 64-R and uses same cord. However, the Ring sleeve is .010" smaller. Replaces No. 64-D and No. 54-D Plugs.
*205550-000	(64-ER)	127 Jack	Same profile as No. 64-R and uses same cord. However, the Ring sleeve is .020" smaller. Replaces No. 64-E and No. 54-E Plugs.
*205553-000	(64-FR)	127 Jack	Similar to No. 64-R except uses a different tip. Replaces No. 64-F and No. 54-F Plugs. Uses S-3 Cord.
*205557-000	(64-GR)	Garford 110, and 120 Jacks	Has different profile from No. 64-R but has same body and uses same cord. Replaces No. 64-G and No. 54-G Plugs.
*These numbers indicate plugs with black shells; they are also available in grey and red.			
Stock No.	Code	Used with	Class of Service
205559-000	(64-NR)	Garford 110, and 120 Jacks	Same as No. 64 but with non-depressed ring. Uses S-3 three conductor cord. Replaces No. 54-N and No. 64-N Plug.

STROMBERG-CARLSON

PLUGS (Cont.)



No. 59 Plug

801500-000	(59)	145,	Toll test panels
		154,	Uses S-33-NS Three Conductor Cord
		155	Interchangeable with W.E. No. 110

Replaced No. 53 Type Plug

The No. 53 Three-Conductor Plug, formerly used with Stromberg-Carlson No. 130 Jack and Garford No. 3210 and No. 4260 Types, has been replaced by and is interchangeable with the No. 65 Plug. The cords, however, are not interchangeable.

When cords are required for No. 63 Plugs in service, S-C Stock No. 212120-000 of required length should be used instead of the cord for the No. 65 Plug.

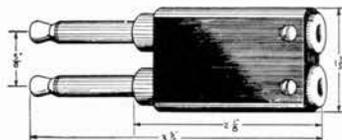
No. 65 Switchboard Plug

Stock No.	Code	Used with	Cord Used
*205532-000	(65-R)	130 Jack	S-3 (Three conductor)
*205541-000	(65-XR)	130 Jack	S-3 (Three conductor)
*205535-000	(65-NR)	130 Jack	S-3 (Three conductor)
*205538-000	(65-NXR)	130 Jack	S-3 (Three conductor)

*Used on Stromberg-Carlson PBX and Multiple Switchboards. Black shells are standard but red and gray shells can also be furnished. For Stock Numbers of shells see heading "Plug Parts".

Test Plugs

These plugs are used in connection with toll test panels and wire chief's testing equipment at the M.D.F.



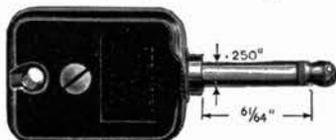
Line Drawing to Show Dimensions of No. 62 Plug

Stock No.	Code	Conductors	Used with	Class of Service	Cord Used
801503-000	(62)	4	154 Type Jack	Test Panel	M-4-C
209779-000	(67)	6	145 Type Jack	Test Panel	S-33-NS
*218334-000	(62-H)	4	154 Type Jack	Test Panel	P4-1
*200290-000	(67-H)	6	154 Type Jack	Test Panel	PT6-1

*Same as Nos. 62 and 67 except have holes in shell for strain relief cord.

No. 60 Outlet-Box Plug

This is used with wall-outlet jack outfit consisting of outlet box and brass plate with plug-in jack assembly.

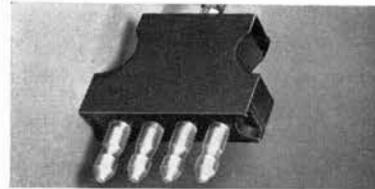


No. 60 Plug

For a description of this complete assembly refer to this section (F) under "Individual Jacks."

Stock No.	Code	Jack Used	Description
801501-000	(60)	2-Point	Used with Stock No. 25856-000 Plug-in Jack Assembly

No. 66 Operator's Plugs



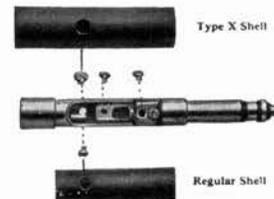
No. 66 Operator's Plug

The No. 66 Plug replaces the No. 23 Plug and is used with the 93 Jack on all switchboards.

Stock No.	Code	Jack used	No. of Points	Cord Used	Operator's Set Used
201839-000	(66)	93	4	O-4-K, 5'	No. 4 B.P. Type
201839-000	(66)	93	2	O-2-J, 4'	Susp. Type

Plug Parts

Plug Code No.	Shell Stock No.	Shell Screws Stock No.	Terminal Screws Stock No.
10	8851-000	5729-000	5729-000
35-A	12836-000	4836-000	8300-000
42	8339-000	13061-000	5729-000
53, 53-N	25045-000(a)	4836-000	8300-000
53-X, 53-NX	13060-000(b)	13061-000	8300-000
54, 54-N	25045-000(a)	4836-000	8300-000
55, 55-N	25045-000(a)	4836-000	8300-000
56	25045-000(a)	4836-000	5729-000
56-X	13060-000(b)	13061-000	5729-000
57	25045-000(a)	4836-000	5729-000
59	14033-000	14032-000	14693-000



Plug Parts

Plug Code No.	Shell Stock No.	Shell Screws Stock No.	Terminal Screws Stock No.
60	15148-000	15147-000	515020-000
61	21421-000	21420-000	21419-000
61-A	22321-000(c)	21420-000	21419-000
62	26853-000	26854-000	21419-000
63, 63-N	202076-000(d)	4836-000	4836-000
65, 65-N	202076-000(e)	4836-000	8300-000
65-X, 65-NX	35296-000(f)	13061-000	8300-000

- (a) These shells are black. Specify 15319-000 for red shell. Specify 15578-000 for gray shell.
- (b) These shells are black. Specify 27584-000 for red shells. Specify 27585-000 for gray shell.
- (c) No. 61-A Plug has red shell. No. 61 Plug has black shell.
- (d) These shells are black. Red shell is 34406-000. Gray is 34407-000.
- (e) These shells are black. Red shell is 202078-000. Gray is 202077-000.
- (f) These shells are black. Red shell is 35297-000. Gray is 35298-000.

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PLUGS (Cont.)

Plug and Jack Gauges

These gauges should be in every telephone exchange. They indicate when plugs and jacks are worn to an extent that talking connections will be unreliable.

When a plug passes through the slot in the plug gauge it should be replaced.

If the jack gauge fits into the jack, the jack should be replaced.

Each set includes one plug and one jack gauge with a canvas carrying case, Stock No. 52236-000.



Jack Gauge

Stock No.	Diameter
13070-000	.246
13071-000	.255



Plug Gauge

Description
Plug Gauge
Jack Gauge

The equipment listed above is used to gauge Nos. 10, 31, 35, 40, 42, 53, 55, 56, 57, 63, 65 Plugs and Nos. 5, 11, 49, 58, 101 and 130 Jacks, and No. 11 Drop Jack.

Stock No.	Diameter	Description
13114-000	.217	Plug Gauge
13118-000	.226	Jack Gauge

The equipment listed above is used to gauge Nos. 39, 54, 64 Plugs; and Nos. 22 and 127 Jacks.

Stock No.	Diameter	Description
13113-000	.197	Plug Gauge
13119-000	.205	Jack Gauge

The equipment listed above is used to gauge Nos. 33, 34 Plugs and No. 67 Jacks.

Plug Seats

Plug seats are furnished with two wood screws for attaching to the under side of plug boards. The center hole is chamfered to prevent injury to the cords while passing through this opening. The Nos. 5, 6 and 12 Plug seats are the same except for the diameter of the center hole which varies according to the size of the plug that is used.



No. 5 Type



No. 6 Type

Stock No.	Code	Plug Used	Diam. Hole	Material	Mtg. Screws
4637-000	(5)	10, 42, 59, 61	1 1/32"	Fiber	2-No. 3939
4638-000	(6)	53, 54, 55, 56, 57, 63, 64, 65	5/16"	Fiber	2-No. 4638
12170-000	(12)	18, 33, 34, 39	1/4"	Fiber	2-No. 3939
203957-000	(13)	62	1 1/32"	Fiber	4-No. 3939

Plug Trouble Caps (Sleeves)

These are black fiber tubes that are split full length so as to slip over plugs of various diameters. Trouble sleeves are used to designate cord circuits that are temporarily out of service.

Stock No.	Code	Name	Length	Plugs Used
16582-000	(1)	Trouble Cap	1 1/8"	54, 64
16583-000	(2)	Trouble Cap	1 1/8"	10, 42, 53, 55, 56, 63, 64, 65
16584-000	(3)	Trouble Cap	1 1/8"	33, 34

Service Plugs

Service plugs are available in standard colors for use as party-line indicators and out-of-service indications to the operator. They are made of brass with spread shanks that can be adjusted to firmly plug into the jack openings.

The No. 7 Type is used to indicate four-party lines by using service plugs of different colors in holes that are drilled around the jack.

The No. 14 and 15 Types (used as out-of-service indicators) are inserted directly into the line jacks in place of plugs.

No. 7 Type

Stock No.	Code
801526-000	(7-A)
801527-000	(7-B)
801528-000	(7-C)
801529-000	(7-D)
801530-000	(7-E)
802769-000	(7-F)



No. 14 Type

Stock No.	Code
801531-000	(14-A)
801532-000	(14-B)
801533-000	(14-C)
801534-000	(14-D)
801535-000	(14-E)
801536-000	(14-F)



No. 15 Type

Stock No.	Code
801537-000	(15-A)
801538-000	(15-B)
801539-000	(15-C)
801540-000	(15-D)
801541-000	(15-E)
204349-000	(15-F)

Above code letters indicate the following colors:

Type No.	Diameter Service Plug	Fits Jack No.	Used as
7	.070	*109-130	Party Line Indicators
14	.195	122-127	Out-of-Service Indicators
15	7/32"	109-130	Out-of-Service Indicators

*When drilled for 4-Party Lines

Plug Hole Blanks

Blanks that are used to fill the space of switchboard plugs and individual lamp sockets. This improves the appearance of the switchboard and prevents dust from settling in unequipped openings.



A Typical Plug Hole Blank

Stock No.	Code	Material	Shank Diameter	Blank For
1323-000	(2)	Composition	.375	106, 108, 124 Jacks
1513-000	(3)	Composition	.375	12, 18, 33, 34 Plugs
4415-000	(5)	Composition	.477	34, 99, 102, 119 Keys
7637-000	(6)	Composition	.406	53, 54, 55, 56, 57, 63, 64, 65
12713-000	(7)	Rubber	.347	No. 12 Lamp Socket
13940-000	(8)	Composition	.453	142, 143, 144 Jacks 12 L.S., 59 Plug
15323-000	(11)	Rubber	.650	310 Key
21672-000	(12)	Composition	.610	No. 61 Plug
32142-000	(13-A)	Brass	.515	10, 15, 24, 25, 42,
32143-000	(13-B)	Ox. Bronze	.515	43, 44, 53-X Plugs; 6, 8 L.S.
209398-000	(13-C)	Brass, black	.515	Toll Test Boards
32144-000	(14-A)	Brass	.500	158 Jack
205515-000	(14-C)	Brass, black	.500	120 Swbd.

RECEIVERS

No. 29 Operator's Receiver

The No. 29 Head-Band Receiver is a component part of the No. 4 Operator's Breast Plate Telephone Set described in this section (F) under Operator's Telephone Sets.

This receiver is also used with suspended type operator's sets in connection with the No. 22 Transmitter which is suspended from an adjustable arm mounted on the roof of the switchboard cabinet. This is also shown under Operator's Telephone Sets.



No. 29 Operator's Receiver

All Stromberg-Carlson Switchboards are equipped with No. 93 four-point operator's Jacks. All four conductors are used for No. 4 Breast Plate Sets but only two conductors for the headband receivers when associated with suspended type transmitters.

A watch case receiver using silicon steel coil cores for high efficiency, and chrome alloy steel magnets to insure a definite and permanent magnetic field. The magnet and cores are held firmly in place by clamps to prevent the possibility of variation between pole pieces and diaphragm. Two coils, each wound to 65 Ohms provide a total resistance of 130 Ohms. Equipped with a sanitary, light weight, wire head band.

Parts for No. 29 Operator's Receiver

For Suspended Operator's Sets

Stock No.	Code	Description
801592-000	(29)	Receiver with head band (Less Cord)
202926-000	(O-2-J)	4' Cord only (Two conductor)

For Breast Plate Operator's Sets

Stock No.	Code	Description	Plug Used	B.P. Set Used
801592-000	(29)	Headband Rcvr (less cord)	No. 66	No. 4
200320-109	(O-4)	5' Four Conductor Cord	No. 66	No. 4

Other Parts

Stock No.	Name	Used on
19279-000	Headband	No. 29 Receiver
18583-000	Ear Cap	No. 29 Receiver
21433-000	Diaphragm	No. 29 Receiver

Sub-Station Receivers

No. 30 Type

The No. 30 Type Receiver is encased in a plastic shell and ear cap which covers a capsule unit that is firmly held in place by pressure contacts. The spool is assembled with a non-metallic head to prevent eddy current losses and wound with high grade enameled copper wire.

The construction is simple and durable and years of service will not impair the highly efficient receiving qualities that are assured.



No. 30 Receiver

This receiver is used with old style wall sets and desk stands which have been generally superseded by the more modern handset telephones in either wall or desk types.

Stock No.	Code	Name	Used with
*801593-000	(30)	Receiver	Wall Sets and Desk Stands
801595-000	(30-B)	Receiver	Iron-Clad Telephones

*The No. 30 Receiver is furnished without cord.

Assembly Parts

Stock No.	Code	Name	Receiver Used
800655-000	(MR-2-J)	39" Cord	No. 30-A
800627-000	(M-2-I)	22" Cord	No. 30-B
33179-000		Casing	No. 30-A, 30-B
32864-000		Earcap	No. 30-A, 30-B
34230-000		Capsule Unit	No. 30-A, 30-B

RECEIVERS (Cont.)

Handset Receivers



No. 26 Handset



No. 27 Handset

No. 32 Capsule Receiver

This is a self-contained capsule type unit that is easily assembled in the No. 26 and No. 28 handsets by attaching the spade terminals on the cords running through the handset handle to the receiver capsule. The capsule is then locked into position by tightening the threaded earcap.

This receiver provides an equalized response frequency characteristic, and improved hearing is secured by placing the resonance peaks at approximately 2,000 cycles per second while introducing sufficient damping at the same time.

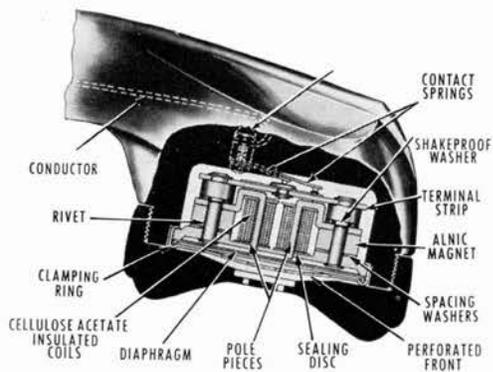
Cords are available to permit usage of this receiver capsule in Nos. 20, 21, 22, 23 and 24 handsets. The contact springs in these older handset receivers will have to be removed to allow connection of the cord to the screw terminals already existing and to the new capsule receiver.

No. 31 Capsule Type Receiver

The No. 31 receiver is also a capsule type receiver used in older handsets, the Nos. 18, 19, 20, 21, 22, 23, and 24. This receiver is non-positional, simply drop it into the receiver cavity and screw the earcap tightly. Contact is made through pressure springs attached to the handset in the receiver cavity.

No. 211881-000 Capsule Type

This receiver is used in the Stromberg-Carlson Nos. 27 and 29 Handsets which are the handsets for the 1543-W Telephones. Comes equipped with a varistor which reduces noise and other interferences.



Cross Section of 34230-000 Capsule Type

Present Handset Receivers

Stock No.	Code	Description	Handsets Used
210278-000	(32)	Capsule Type Receiver	26, 28
211881-000	(33)	Capsule Type Receiver	27, 29, 31, 34
34230-000	(31)	Capsule Type Receiver	18, 19, 20, 21, 22, 23, 24
212707-000	(T-1-L)	Cord for adapting No. 32 Receiver to Nos. 20, 21, 22, 23, 24 handsets	

GENERAL INDEX

A complete alphabetical index with cross references for all the products shown in this section or any of the other sections will be found in the center of this catalog.

RELAYS AND RELAY COILS

The relays listed in this Catalog are adapted for use in telephone communication, signalling, and remote control circuits. By combining standard spring combinations and coils an endless variety of assemblies may be had, covering a wide range of characteristics, operating voltages, and contact arrangements for both direct current relays and alternating current relays.

In designing Stromberg-Carlson Relays particular care has been taken to incorporate features which will meet specific requirements. Line relays are made compact and sensitive, while cord circuit relays are built to carry several easily adjusted spring combinations with contacts that are plainly visible.

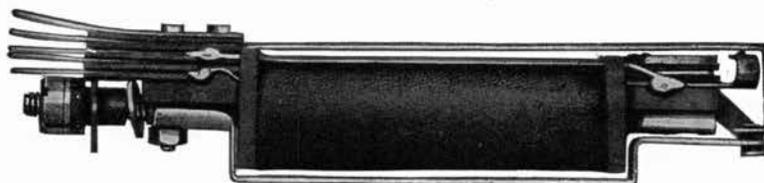
Ordering Information

When ordering relays for Stromberg-Carlson Switchboards, the number of the circuit in which they are used should always be shown. This information is required for adjusting current flow values which should be the same as originally determined to assure uniform operation.

If unable to specify the code number in ordering relays, provide the following information on such points as apply to the particular item you desire. This information is necessary to properly edit factory orders.

1. Kind of operating current—Direct or Alternating—state frequency.
2. Operating voltage or current.
3. Single, tandem, or concentric winding.
4. Resistance, if known.
5. Quick or Slow Acting.
6. Continuous or Periodic Operation.
7. Number and type of spring combinations.
8. Amount of current contacts must carry and whether inductive or non-inductive.
9. Type of mounting and casing desired.

No. 190 Type Relays



The No. 190 Type of Relay is used in line circuits—for both PBX and Multiple Switchboards. This type relay's outstanding features are:

HIGH EFFICIENCY—The very high efficiency of this relay is obtained by combining the armature and the traveling contact spring into one element. This construction requires less magnetic effort for operating contacts in telephone circuits. The efficiency of this relay is further increased by fastening the armature rigidly and metallicly to one end of the relay's core.

COMPACTNESS—But one-third to one-half of the space is required for this relay that is required for other types of relays. Obviously, this compactness permits closer mounting centers which means a marked saving of space either in the switchboard section or on the relay racks in the terminal room.

LIGHT WEIGHT—This relay is the lightest in weight of any of the standard relays, which means easier handling during installation and less danger of the relay's breaking loose from its mounting during shipment.

ACCESSIBILITY—All contacts are at the extreme front end, easily inspected, easily adjusted, and easily tested, even when the relays are mounted on the closest possible centers.

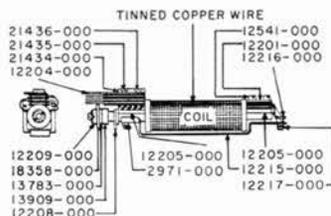
RELIABILITY—Owing to simplicity of construction, the use of high grade materials, and careful manufacture, this relay is unsurpassed for reliable operation. Many exchanges completely equipped with No. 190 Type Line Relays report that relay trouble is negligible and that relay casings are seldom removed. This reliability is due to the following conditions:

1. The armature construction does not permit binding or getting out of alignment.
2. The phenolic spool heads and spring insulations provide good insulation that is neither hygroscopic nor affected by temperature changes.
3. The windings are of the best grade of commercially pure, heavily enameled copper wire.

Stock No.	Code	Approx. Ohms Resistance	Spring Arrangement	Stock No. Coil only
802772-000	(192-A)	100 x 670	One make	12233-000
802773-000	(193-A)	320	One make	12234-000
802774-000	(193-BB)	320	Two breaks	12234-000
802775-000	(194-A)	800	One make	12235-000
802776-000	(194-C)	800	One-break-make	12235-000
803052-000	(194-1-BB)	800	Two breaks	12235-000
802777-000	(195-A)	320-1000 N.I.	One make	12265-000
200580-000	(197-BB)	34	Two breaks	19075-000
802950-000	(198-A)	400 x 400	One make	21587-000
802778-000	(199-BB)	320	Two breaks	12234-000

Under the heading "Relay Casings" dust proof covers are shown that will accommodate groups of 20, 40 or 50 No. 190 Type Relays.

Parts Drawing of No. 190 Type Relay



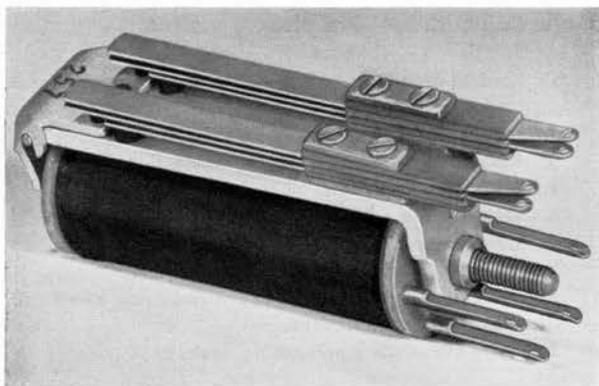
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RELAYS AND RELAY COILS (Cont.)

No. 200 Type D.C. Relays

This Relay is especially designed for circuits requiring:

1. Several windings
2. Large winding spaces
3. High impedances
4. Timing of relay's action
5. Diversity of spring combinations



The features of this relay are:

- Efficient Magnetic Circuit.
- Pin-pivoted, definitely located armature of the "L" type.
- Adjustable residual screw in armature.
- Facilities for the quick removal of the relay's coil.
- Visible contacts located at the front end of the relay.
- Phenol fibre spring insulation.
- Coils with formica heads.

How to Order No. 200 D.C. Type Relays

The scheme for coding No. 200 Type Relays provides for assigning group numbers for the various styles of windings, viz.: "single wound," "tandem wound," "concentric wound," "slow release," and "slow operating." These numbers are followed by letters indicating the spring combination desired. (See table of Relays Less Springs for code numbers used and diagrams for spring combinations.)

Examples

Code No. 205-AB Relay

This specifies a single wound relay, 200 ohms resistance, (see table for single wound relays) having springs with one make contact (A) and one break contact (B).

Code No. 242-CC Relay

This specifies a concentric wound relay, 1000 ohms inductive and 100 ohms non-inductive, (see table for concentric wound relays) having two sets of break-make contacts.

The number indicates the resistance and type of winding; the letter or letters indicate the spring combinations.

All Stromberg-Carlson relays use a phenolic head and have no freeze on end of core. (Formerly indicated by letter Z in code.)

The No. 200 Type Relay may be furnished with 1, 2, or 3 sets of spring combinations which will be mounted in alphabetical order from left to right looking at the terminal end of the relay—except for relays with 3 spring combinations having 2 combinations alike, then the odd combination shall be mounted in the middle.

Spring Designations

Standard spring combinations are designated by affixing the following letters to "200 Type" relay code numbers which indicate style of winding and resistance only. "Y" means light springs.

- | | |
|---------------------------------------|------------------------------|
| *A One make | D One make before break |
| *B One break | EY One double make |
| *C One break-make | FY One break and double make |
| G One break and make before break | |
| *H Two makes | K Two breaks |
| L One make and one break | |
| M One break-make and one make | |
| *N One break-make and one break | |
| O One make before break and one make | |
| PY One break and double make | |
| *Q One make and one break (sequence) | |
| R One break-make, heavy contacts | |
| SY One make, heavy contacts | |
| TY One double make, heavy contacts | |
| U Make before break and delayed break | |

Light (Y) Springs

*These combinations can also be furnished with light springs by adding the letter "Y" to the letters of the regular spring combinations, as: AY, BY, CY, HY, NY, QY.

No. 200 Type D.C. Relays

The following Stromberg-Carlson relay parts do not include spring combinations.

Springs as required must be specified with the Code No. when complete relays are desired. Coils only, are shown under their proper Stock Numbers.

Single Wound Coil One Inductive Winding

Code No.	Relays Less Springs Approx. Ohms Resistance	Coil only Stock No.
201	5	12276-000
202	15	12277-000
203	70	12278-000
204	100	15491-000
205	200	12280-000
206	500	12266-000
207	1000	12267-000
208	800	12281-000
209	1500	12282-000
210	5000	12283-000
212	18-50 N.I.	30005-000
213	320	15435-000
214	2000	15436-000
215	16-75 N.I.	32846-000
218	2000 AC	201054-000
219	500 AC	34947-000

Slow Release, Single Coil with Copper Sleeve One Inductive Winding

Code No.	Relays Less Springs Approx. Ohms Resistance	Coil only Stock No.
261	100	15429-000
262	200	15430-000
263	500	15431-000
264	1000	15432-000
265	50	15433-000
266	23	202167-000
267	5000	202453-000

STROMBERG-CARLSON

RELAYS AND RELAY COILS (Cont.)
No. 200 Type D.C. Relays (Cont.)



Tandem Wound Coils

Tandem Wound Coils

Tandem coils have a rear winding (1-2) which is at the terminal end and an adjacent front winding (3-4) which is at the armature end.

Two Inductive Windings (Tandem)

Code No.	Relays Less Springs Approx. Ohms Resistance		Coil only Stock No.
221	65-65	Balanced Inductance	12286-000
222	100-100	Balanced Inductance	12287-000
223	200-200	Balanced Inductance	12288-000
224	500-500		12289-000
225	1000-1000		12290-000
226	50-50	Balanced Inductance	12291-000
227	100-250		12292-000
228	75-75	Balanced Inductance	12293-000
229	200-2000		12294-000
231	500-1000		12295-000
232	400-400		12296-000

Concentric Wound Coils

The first winding (1-2) of concentric coils is next to the core, and the second winding (3-4) is on the outside.

One Inductive—One Non-Inductive Winding (Concentric)

Code No.	Relays Less Springs Approx. Ohms Resistance		Coil only Stock No.
241	500-100 N.I.		12297-000
241-1	200-350 N.I.		33856-000
242	1000-100 N.I.		12298-000
242-1	200-1000 N.I.		33857-000
243	100-350 N.I.		15197-000
243-1	1000-500 N.I.		37012-000
244	500-350 N.I.		15198-000
245	500-2000 N.I.		15199-000
246	100-60 N.I.		15200-000
247	100-1000 N.I.		15201-000
248	500-500 N.I.		15202-000
249	1000-1000 N.I.		29743-000



Concentric Wound Coils

Two Inductive Windings (Concentric)

Code No.	Relays Less Springs Approx. Ohms Resistance		Coil only Stock No.
251	500-1000		15203-000
251-1	500-1000	(A.C. Relay)	39351-000
251-2	100-600		211883-000
252	500-100		15204-000
252-1	13-12,000		42782-000
253	200-500		15205-000
254	175-2100		17809-000
254-1	500-5000		202006-000
255	100-10,000	(Takes AY Spring)	15207-000
255-1	250-2000		203192-000
256	250-500		15208-000
257	250-670		15209-000
258	500-500		15210-000
259	100-200		15211-000
295	200-75		28366-000
296	500-75		28365-000
297	1000-75		28367-000
298	340-2000		32845-000
299	1000-150		38507-000

Slow Operating Type Relays With Concentric Wound Coil, Copper Sleeve

One Inductive—One Non-Inductive Winding

Code No.	Relays Less Springs Approx. Ohms Resistance		Coil only Stock No.
291	500-100 N.I.		15219-000
292	500-450 N.I.		33757-000
293	500-2000 N.I.		33855-000

Slow Release Type Relays With Concentric Wound Coil, Copper Sleeve

Code No.	Approx. Ohms Resistance		Coil only Stock No.
274	500-500 Both Inductive		15217-000
275	500-1000 Both Inductive		16480-000
276	500-100 N.I.		202007-000
277	500-2000 N.I.		202008-000
278	500-10,000 N.I.		202009-000
279	50-1000 N.I.		201174-000
*281	160-200 N.I.		15218-000

*Ringing Trip Relay Copper Slug on armature end of core.

300 Type Relay



No. 300 Type Relay

This relay which mounts the same as the No. 200 Type, is especially designed for actuating contacts, without vibration, when alternating, pulsating or superimposed ringing current is used.

The No. 300 Type Relay can be furnished either separately as a non-locking relay or as a ring up locking relay when associated with a No. 200 Type Relay having the letter "X" affixed to the Code number.

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RELAYS AND COILS (Cont.)

No. 300 Type Relays (Cont.)

The following spring combinations for No. 300 Type non-locking and locking relays are standard:

Non-Locking		Locking	
A—One make		X—One make lock with armature	
B—One break		*AX—One make and one locking armature make	
C—One break-make		*BX—One break and one locking armature make	
AA—Two makes		*CX—One break-make and one locking armature make	
BB—Two breaks			
CC—Two break-makes			
*Locking relays with these "X" springs are used only in connection with No. 200-X Relays.			

NOTE: The letter "X" denotes a make contact and locking device actuated by the attraction of the armature which is restored by the operation of an associated No. 200-X Type Relay.

Example

- 1 — No. 306-AX Relay consisting of:
 1 — No. 306 Coil (500 Ohms) and frame
 1 — "AX" Spring Combination

Associated With

- 1 — No. 204-BBX Relay consisting of:
 1 — No. 204 Coil (100 Ohms) and frame
 1 — "X" Armature
 1 — "BB" Spring Combination

No. 300 Type Relay

Code No.	Relays Less Springs Approx. Ohms	Winding	Coil only Stock No.
306	500	Single	15220-000
307	1000	Single	15221-000
313	400-500	Concentric	15222-000

Above Code numbers cover coils of designated resistances and relay frames only. To make complete relays, springs should be added to meet requirements.

No. 320 Type Relay

This relay has been replaced by the No. 300 Type. It was formerly used as a ring up or drop relay on magneto lamp line circuits and consisted of two interacting relays—one actuated by alternating and the other by direct current.

No. 340 Type Relay

A polarized type relay which is used in cases where reversal of battery polarity is required for signalling purposes. These relays are especially sensitive to low currents.

The No. 340 Type Relay has two coils and mounts the same as two No. 200 Type Relays. Furnished only with the following spring combinations:

Code No.	Resistance		Spring Combination	Coil only Stock No.
	Total	One Coil		
343-CC	500	250	Two break-make	13086-000
*344-C	500	250	One break-make	13086-000
*345-C	20,000	10,000	One break-make	35036-000
*346-C	174	87	One break-make	35405-000
347-CC	20,000	10,000	Two break-make	35036-000
348-CC	30,000	15,000	Two break-make	201028-000
349-C	—	50-15,000	One break-make	201952-000
		50-15,000		201953-000

*These relays have contacts insulated from the armature. They can be wired for "A" (one make) and "B" (one break), or "C" (one break-make) Spring Combination.

No. 360 Type Relay

This relay, like the No. 300 Type, is adapted for use with alternating, pulsating or superimposed ringing. Unlike the "300" Relay, however, the No. 360 Type has an adjustable armature loaded with a copper weight. This relay is equipped with an "A" (make) spring combination.

Code No.	Spring Combination	Resist. Ohms	Operation	Coil Only Stock No.
366-A	One make	500	Non-Locking	15220-000
367-A	One make	1000	Non-Locking	15221-000

No. 370 Type

This type includes the No. 371 Relay which has been discontinued and replaced by No. 372 Type. Designed for toll circuit operation.

Code No.	Resistance		Spring Combination
	Total	Per Coil	
372	3200	1600	Break-make

No. 375 Type Relay

This is a concentric wound relay designed primarily for use with universal cord circuits. A quad coil is used consisting of three inductive and one non-inductive winding of the following resistances:

Code No.	Resistance Ohms	*Spring Combination	Coil Only Stock No.
375-W	75-175-700-2200 N.I.	—————	205103-000
376-WC BY	75-175-700-2200 N.I.	One break-make	205103-000
		One break	
377-WC YC Y	75-175-700-2200 N.I.	Two break-make	205103-000
378-W	150-225-700-2200 N.I.	—————	38506-000
379-WC Y	150-225-700-2200 N.I.	One break-make	38506-000
385-WF YC Y	75-175-400-400 N.I.	One break and double make; One break-make	200575-000

Code Number	Resistance	Stock No.
386-W	100-100, 700-200 NI	203405-000 Coil
387-W	200-200, 700-200 NI	203404-000 Coil
388-WC Y	100-100, 700-200 NI	203405-000 Coil
389-WC Y	200-200, 700-200 NI	203404-000 Coil

NOTE: The letter "W" indicates that these relays are equipped with anti-wear pins.

*Center spring combination should be specified in ordering this type of relay.

No. 380 Type Relay

This type of relay is used in line and supervisory pilot circuits or in any other places where high sensitivity is essential. A micrometer screw adjustment assures accuracy and when used for supervisory purposes the transmission loss is extremely low.

Stock No.	Code	Coil Stock No.	Resistance
803103-000	(381-A)	44356-000	1.7 Ohms
208075-000	(382-A)	208076-000	1000 Ohms
38308-000	(383-C)	211908-000	16.4-36-NI-14 NI
211909-000	(384-C)	211910-000	26-26 Ohms

No. 390 Type Relay

This is a relay having a three winding coil, designed primarily for use in cord circuits.

Code No.	Resistance	Stock No. of Coil
391-W	100-600-250 N.I.	204471-000

TYPE "A", "B", AND "C" RELAYS

These relays are designed to meet the exacting requirements of telephone switching systems. The "A," "B," and "C" relays were subjected to many severe tests before the complete design was approved and only after it had been actually demonstrated that this apparatus would meet every field condition that might be encountered. In addition, life tests were run over millions of cycles of operation, cycles of temperature ranging from -40° to 150° F and cycles of relative humidity exceeding 90%. Vibration tests were also made, similar to those applied to aeronautical equipment.

New processes of production have been developed which provide maximum spring stability and at the same time easier and more permanent contact adjustment. Spring combinations and coils have been standardized which increase the supply of available parts to facilitate deliveries of these items as well as the complete equipments with which they are used. Although exhaustive tests indicate long life, reliability and trouble-free operation,

there may be cause for occasional relay adjustments in the field. Some operating conditions are more severe than average and some relays in a system are subject to considerably more wear than others. For these reasons particular care has been taken to develop a design that permits easy removal of functional parts and any adjustment that may be necessary for perfect operation.

Type "A" Relays

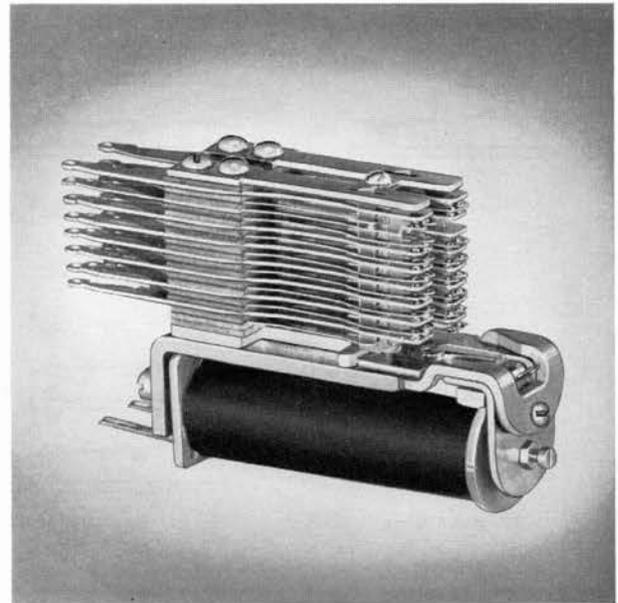
The Type "A" is a general-purpose telephone relay used in XY Systems or in other places where similar operating conditions exist. This relay will give reliable service under ordinary conditions or in damp climates, due to the use of carefully selected insulating materials and special treatment to prevent failures caused by electrolysis and corrosion.

The Frame

The plated frame increases bearing life by preventing corrosion and at the same time makes an attractive finish. This frame, together with the core and armature form an efficient magnetic circuit of the conventional telephone-relay type. The conditions. The wire, itself, is carefully inspected for quality and uniformly highgrade insulation. The core is threaded and securely attached to the frame of the relay by means of a nut which permits easy removal of the coil.

The Armature

The armature is L-shaped and designed so as to operate on a knife-edge pivot. It is held in place by a non-adjustable spring retainer that is welded to the frame. This retainer rests on the axis of rotation of the armature which permits it to move with the least possible friction without interfering with its easy removal. With this method of construction side play is virtually eliminated. The armature travel is adjusted by means of an armature support which also acts as a stiffener to prevent distortion and any lost motion at the spring contacts. The spring combinations are mounted in two stacks, one on the right side and the other on the left side of the spring mounting plate. The top clamping plate bridges and covers both spring stacks which provides great mounting stability as well as over-all mechanical protection to the springs. Spring combinations of Type "A" Relays may also be mounted in one stack. The equivalent of 12 "make" contacts may be mounted on each Type "A" Relay although this number may be increased to 20 when sufficient mounting space is available. Twin contacts of precious metal are carried by two lines on each spring, which assures un-failing operation. Stability of contact adjustment is maintained



Type "A" Relay

by a rigid mechanical arrangement in which the heavy stationary springs are properly located by a stepped phenolic spring stop. This stop and associated springs are supported by a clamping plate which is securely attached to the relay frame by a mounting screw and metal spacer. This construction holds the heavy springs firmly in position at a point near the contact end and gives the whole pile-up greater stability.

The Spring Pushers

A continuous single-piece spring pusher of phenolic material permits each moving spring to operate individually as a cantilever beam. This unimpeded action reduces friction and prevents one spring from interfering with the proper operation of other springs in the pile-up.

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TYPE "A", "B", AND "C" RELAYS (Cont.)

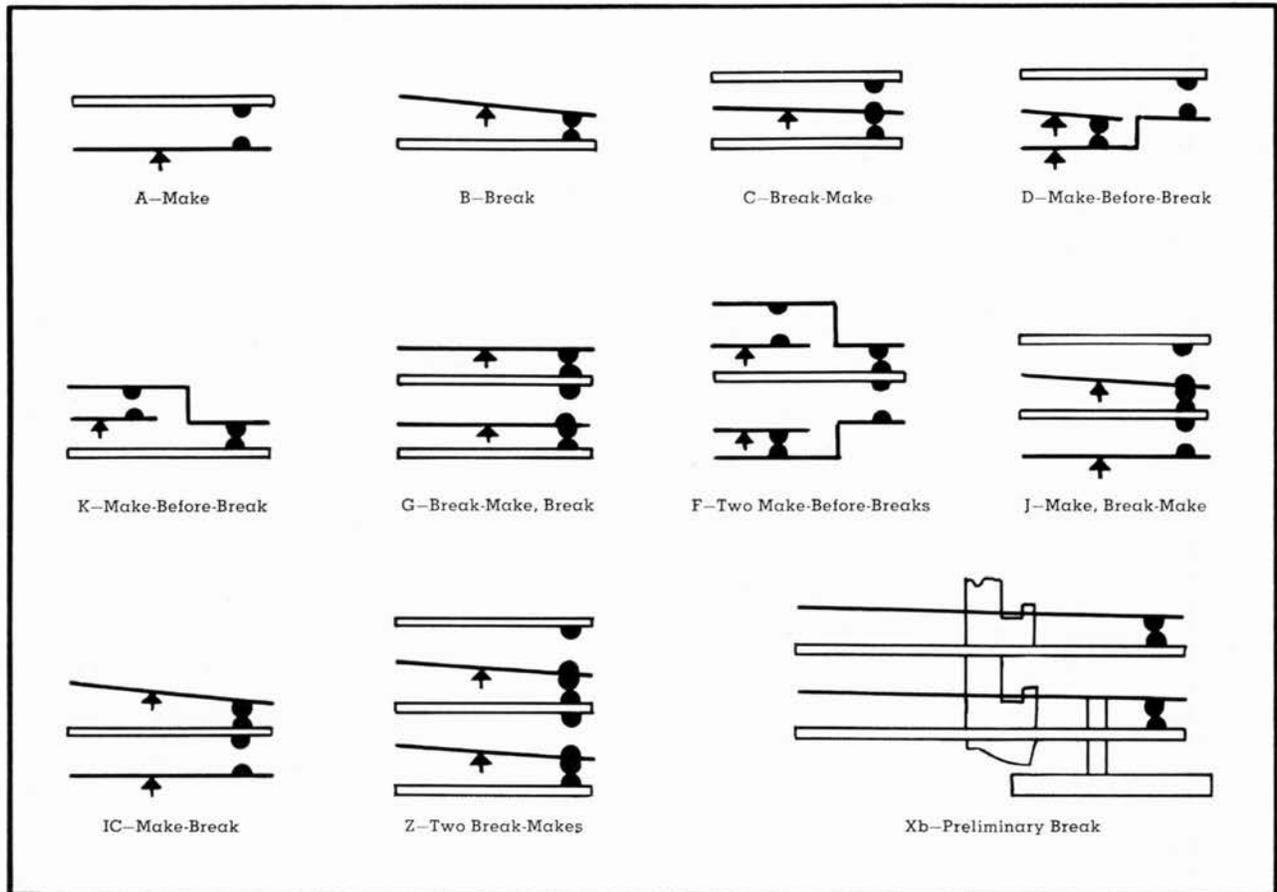
Basic Spring Combinations For Pile-Ups in Type "A" Relays

When ordering spring combinations, simply refer to these illustrations and specify the number of assemblies of each form desired.

Assemblies are always arranged in our standard sequence; therefore special arrangements should not be specified unless required, and will be subject to special ordering.

Under certain conditions a preliminary "make" or "break make" may be required, and these are specified as "Xa" or "Xc."

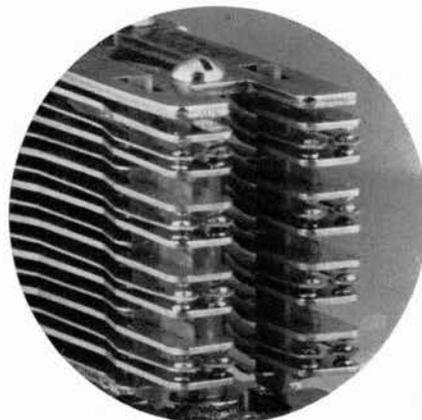
If heavy duty type contacts are required these are specified as "HA," "HB," or "HC" and will come equipped with a single larger sized contact in place of the twin type contacts.



A few of the most commonly used Spring Combinations

Twin-Type Contacts

Stromberg-Carlson Type "A" Relays are equipped with the well known twin contacts of precious metal (shown at right). The twin contacts have the advantage in permitting greater reliability over single contacts (figures based on calculated tables show that twin type contacts fail only twice in a million operations). Contact material is precious metal, assuring excellent noise-free contacts of low resistance and long life.



STROMBERG-CARLSON

TYPE "A", "B", AND "C" RELAYS (Cont.)

ARMATURES

Type "A" relays may be equipped with any of the following armature assemblies:

- (1) Standard armature ratio with standard adjustable residual (anti-freeze) screw. This armature is suitable for all general purpose relays requiring an adjustable residual.
- (3) Standard armature ratio with .004" thick welded residual. This armature is suitable for all general purpose relays not requiring an adjustable residual.

- (6) Standard armature ratio with large diameter adjustable residual screw. This armature is used on "pulsing" relays.
- (5) Short-lever ratio armature with standard adjustable residual screw. This armature is used when a longer release delay time is desired than that which can be obtained with standard armatures.

Note—The numbers 1, 3, 6, and 5 preceding the armature descriptions refer to the reference chart B-359, Stromberg-Carlson Engineering Data.

COILS FOR TYPE "A" RELAYS

One Inductive Winding

Standard Spool (ST)

Stock No. Coil	Approx. Ohms Resistance	Stock No. Coil	Approx. Ohms Resistance
208532-000	.32	36874-000	300
36801-000	1.1	36870-000	320
36802-000	1.7	36814-000	350
36803-000	2.7	36871-000	514
36804-000	4.3	36815-000	560
36805-000	7	36876-000	800
36806-000	11	36816-000	850
36807-000	17	36822-000	1170
36808-000	27	36872-000	1200
36823-000	32	208527-000	1310
36809-000	40	36875-000	1310
36810-000	67	36817-000	1350
36811-000	100	36878-000	1500
36869-000	135	36868-000	2090
36812-000	140	36818-000	2120
36877-000	180	36819-000	3500
36873-000	214	36820-000	5500
36813-000	220	36821-000	8600

5/8" Heel-End Slug (SR-1)

Stock No. Coil	Approx. Ohms Resistance	Stock No. Coil	Approx. Ohms Resistance
36824-000	5.25	36833-000	262
36825-000	8.25	36834-000	420
36826-000	12.70	36835-000	638
36827-000	20.2	36836-000	1010
36828-000	30	36837-000	1590
36829-000	50.3	36838-000	2620
36830-000	75	36839-000	4120
36831-000	105	36840-000	6540
36832-000	165		

1 1/4" Heel-End Slug (SR-2)

Stock No. Coil	Approx. Ohms Resistance	Stock No. Coil	Approx. Ohms Resistance
36857-000	417	36859-000	983
36858-000	660	36860-000	1710

1/2" Armature End Slug (SO-1)

Stock No. Coil	Approx. Ohms Resistance	Stock No. Coil	Approx. Ohms Resistance
36844-000	262	36841-000	2620
36842-000	1010	36843-000	4120
36845-000	1590	36846-000	6540

1 1/4" Armature End Slug (SO-2)

Stock No. Coil	Approx. Ohms Resistance	Stock No. Coil	Approx. Ohms Resistance
36853-000	172	208536-000	1525
36854-000	417	36851-000	2700
36852-000	983		

One Inductive Winding

1/2" Diameter Sleeve (SL-1)

Stock No. Coil	Approx. Ohms Resistance	Stock No. Coil	Approx. Ohms Resistance
36861-000	11.8	208535-000	1210
208533-000	800	36863-000	1330
36864-000	938	36862-000	2400

1/16" Diameter Sleeve (SL-2)

Stock No. Coil	Approx. Ohms Resistance	Stock No. Coil	Approx. Ohms Resistance
36866-000	170	36865-000	610

1/2" Armature End Slug and 3/16" Diameter Sleeve (RT-1)

Stock No. Coil	Approx. Ohms Resistance	Stock No. Coil	Approx. Ohms Resistance
36880-000	61	36879-000	200
		208526-000	1000

Two Inductive Windings — Concentric Wound

Standard Spool (ST)

Stock No. Coil	Approx. Ohms Resistance	Stock No. Coil	Approx. Ohms Resistance
36898-000	.1 x 200	36882-000	214 x 2020
36889-000	2.5 x 130	36201-000	214 x 3090
36924-000	4 x 1220	36205-000	332 x 470
36206-000	7.5 x 1200	36886-000	332 x 1220
36895-000	10 x 2020	36896-000	332 x 2020
36203-000	16 x 16	36923-000	475 x 530
36899-000	16 x 23	36208-000	514 x 38
36900-000	24.8 x 780	36207-000	514 x 780
36892-000	24.8 x 2020	36883-000	514 x 1220
36890-000	38.7 x 38.4	36887-000	514 x 2020
36202-000	50 x 2020	36905-000	610 x 1017
36897-000	61.5 x 1550	36891-000	800 x 470
36200-000	79 x 1220	36894-000	800 x 780
36893-000	79 x 2020	36881-000	800 x 1220
36885-000	135 x 780	36903-000	800 x 2020
36888-000	135 x 2020	36922-000	1310 x 318
36209-000	140 x 1500	36884-000	1310 x 2020
36901-000	185 x 215	36974-000	1310 x 4500
36921-000	200 x 200	36904-000	2090 x 2020
36902-000	214 x 3.9	36979-000	3000 x 3000
36204-000	214 x 780	36978-000	30000 x 1200

5/8" Heel-End Slug (SR-1)

Stock No. Coil	Approx. Ohms Resistance	Stock No. Coil	Approx. Ohms Resistance
36949-000	250 x 560	36950-000	1560 x 2300

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COILS FOR TYPE "A" RELAYS

Two Inductive Windings — Concentric Wound

1 1/4" Heel-End Slug (SR-2)			
Stock No. Coil	Approx. Ohms Resistance	Stock No. Coil	Approx. Ohms Resistance
36942-000	2.2 x 985	36945-000	250 x 595
36943-000	7.7 x 985	36944-000	640 x 985
36946-000	90 x 950	36941-000	1075 x 1650

1/2" Armature End Slug (SO-1)			
Stock No. Coil	Approx. Ohms Resistance	Stock No. Coil	Approx. Ohms Resistance
36939-000	20 x 1525	36934-000	800 x 1160
36940-000	159 x 350	36935-000	927 x 167
36933-000	159 x 909	36931-000	1560 x 2300
36932-000	595 x 909		

1 1/4" Armature End Slug (SO-2)			
Stock No. Coil	Approx. Ohms Resistance	Stock No. Coil	Approx. Ohms Resistance
36938-000	250 x 595	36936-000	640 x 985
36937-000	250 x 985		

Two Inductive Windings — Concentric Wound

1/2" Diameter Sleeve (SL-1)			
Stock No. Coil	Approx. Ohms Resistance	Stock No. Coil	Approx. Ohms Resistance
209618-000	220 x 250	36928-000	1220 x 1250
36930-000	300 x 600		

Nickel-Steel Sleeve (SL-3)			
Stock No. Coil	Approx. Ohms Resistance	Stock No. Coil	Approx. Ohms Resistance
36925-000	3 x 490	36977-000	*200 x 200
36976-000	*200 x 200		

*Sandwich wound.

1/2" Armature End Slug and 3/16" Diameter Sleeve (RT-1)			
Stock No. Coil	Approx. Ohms Resistance	Stock No. Coil	Approx. Ohms Resistance
36927-000	150 x 750	36929-000	180 x 980
36947-000	180 x 198	36926-000	220 x 1000
209616-000	180 x 645		

One Inductive — One Non-Inductive Winding Standard Spool (ST)

Stock No. Coil	Approx. Ohms Resistance	Stock No. Coil	Approx. Ohms Resistance
36907-000	5 x 500 N.I.	36237-000	1310 x 500 N.I.
36975-000	* 24.2 x 700 N.I.	36238-000	1310 x 700 N.I.
36906-000	214 x 800 N.I.	36234-000	1310 x 800 N.I.
36910-000	214 x 1000 N.I.	36229-000	1310 x 1000 N.I.
36218-000	320 x 2000 N.I.	36230-000	1310 x 1500 N.I.
36223-000	332 x 500 N.I.	36224-000	1310 x 2000 N.I.
36221-000	514 x 500 N.I.	36239-000	1310 x 3000 N.I.
36913-000	514 x 1000 N.I.	36235-000	1310 x 4000 N.I.
36917-000	514 x 2000 N.I.	36231-000	2000 x 300 N.I.
36912-000	514 x 3500 N.I.	36219-000	2000 x 400 N.I.
36911-000	514 x 4500 N.I.	36919-000	2000 x 500 N.I.
36918-000	514 x 5000 N.I.	36233-000	2000 x 800 N.I.
36908-000	800 x 500 N.I.	36914-000	2000 x 1000 N.I.
36222-000	800 x 800 N.I.	36220-000	2000 x 1100 N.I.
36226-000	800 x 1000 N.I.	36920-000	2000 x 2000 N.I.
36916-000	800 x 2000 N.I.	36236-000	2000 x 3000 N.I.
36228-000	800 x 3500 N.I.	36232-000	2000 x 3500 N.I.
36225-000	800 x 5000 N.I.	36909-000	2000 x 4000 N.I.
36227-000	1200 x 800 N.I.	36915-000	2000 x 5000 N.I.

*Primary winding consists of a 24.8 Ohm inductive winding in parallel with a 2000 Ohm non-inductive winding.

Two Inductive Windings — Parallel Wound Standard Spool (ST)

Stock No. Coil	Approx. Ohms Resistance	Stock No. Coil	Approx. Ohms Resistance
36951-000	20 x 20	200005-062	200 x 200
36953-000	34 x 34	36963-000	280 x 280
36955-000	50 x 50	36965-000	425 x 425
36957-000	70 x 70	36956-000	1000 x 1000
36959-000	110 x 110	36954-000	1060 x 1060
36961-000	175 x 175	36969-000	1200 x 1200
36967-000	200 x 200	36952-000	1750 x 1750

Nickel-Steel Sleeve (SL-3)			
Stock No. Coil	Approx. Ohms Resistance	Stock No. Coil	Approx. Ohms Resistance
200005-072	200 x 200		

Three Inductive Windings Standard Spool (ST)			
Stock No. Coil	Approx. Ohms Resistance	Stock No. Coil	Approx. Ohms Resistance
36973-000	.1 x 14 x 3000	36971-000	865 x 1235 x 1400
36972-000	540 x 740 x 700		

One Inductive — Two Non-Inductive Windings Standard Spool (ST)			
Stock No. Coil	Approx. Ohms Resistance	Stock No. Coil	Approx. Ohms Resistance
36980-000	514 x 4500 N.I. x 1000 N.I.		

To Order A Type "A" Relay

- Select the desired spring combination from the information given on page 77f.
- Next, specify the armature desired from the various types listed in the section on armatures. For most general applications the standard ratio armature with adjustable residual screw (code 1) is satisfactory, and will be supplied unless otherwise noted.

- Select the coil desired from those listed on pages immediately above and preceding. Special coils can be wound to order if necessary to meet unusual operating conditions. All such orders are subject to delay. Unless the coil resistance is very important, it is better merely to specify the operating voltage and our engineers will select the most suitable coil for your requirements.

STROMBERG-CARLSON

TYPE "A", "B", AND "C" RELAYS (Cont.)

Type "B" Multi-Contact Relays

These are multi-contact units used in switching systems where reliable operation of a large number of contacts is essential. The Type "B" Relay will accommodate six stacks of spring combinations which are the same as the basic combinations used with Type "A" Relays. The use of twin precious metal contacts assures long life and reliable operation.

- A**—Make Contact
- B**—Break Contact
- C**—Break-make contact
- D**—Make-before-break contact

The Type "B" Relay has a capacity of 60 "A" (make) contacts or the equivalent in other basic combinations as previously described. Due to special construction, the space occupied by the six-spring pile-ups is unusually small which makes this relay particularly desirable for group mounting.

Other component parts of the "B" Relay are similar to those of the Type "A" with the exception of the L Type armature and spring retainer which are necessarily of different design on account of the heavy spring load which is characteristic of multi-contact units.

The special frame-armature construction design of the Type "B" Relay provides a solid bearing for the armature which prevents "rocking" or bending under the large spring load that has to be carried. Lost motion at the contacts is counteracted by stiffening the armature with a support which is also used for adjusting armature travel. Inasmuch as a greater force is required to hold the armature in place than in the case of "A" Relays, a different type of spring retainer must be used. (See illustration) This is a screw-and-coil-spring retainer especially designed to reduce the friction which is very small indeed compared with the heavy load that is carried.

Large leverage in the armature has also been retained in the Type "B" Relay and this provides the necessary long motion of the contact springs which permits them to operate individually like canti-lever beams. As in the case of the "A" Relay, a stepped phenolic single-piece spring pusher assures independent spring action so that the operation of one spring does not affect the operation of any other spring in the pile-up.

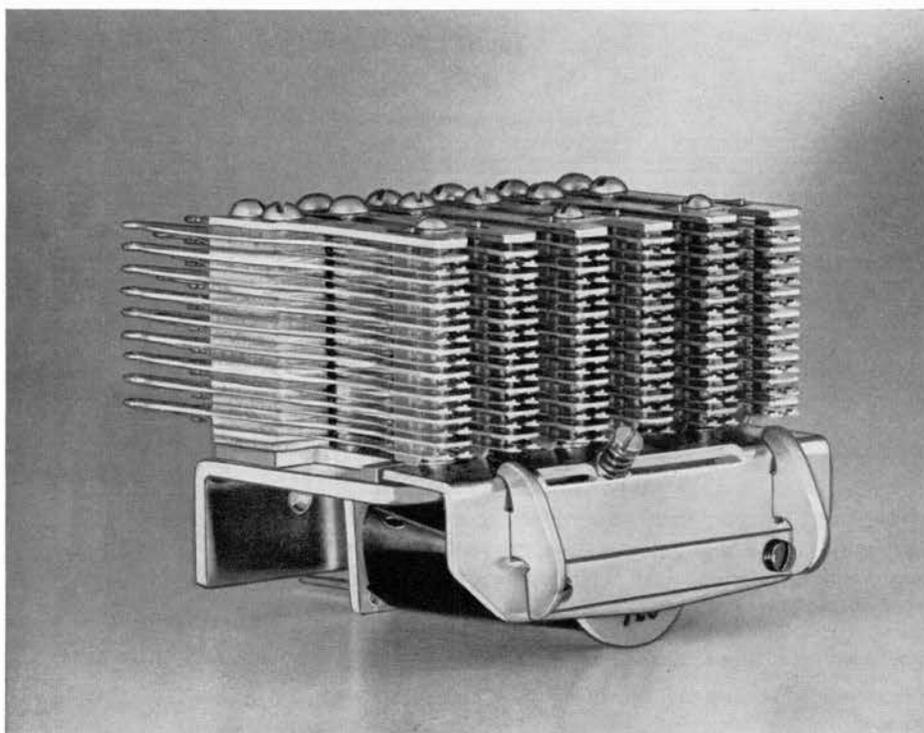
Types of "B" Relay Coils

Stock No.	Approx. Resistance	Stock No.	Approx. Resistance
36986-000	728 Ohms	36989-000	1070 Ohms
36987-000	175 Ohms	36990-000	2780 Ohms
36988-000	79 Ohms		

Listed below are a few of the commonly used spring combinations with associated stock numbers. There are many other arrangements (not listed) of A, B, C, or D spring combinations that can be used and should be specified when ordering.

Spring Combinations

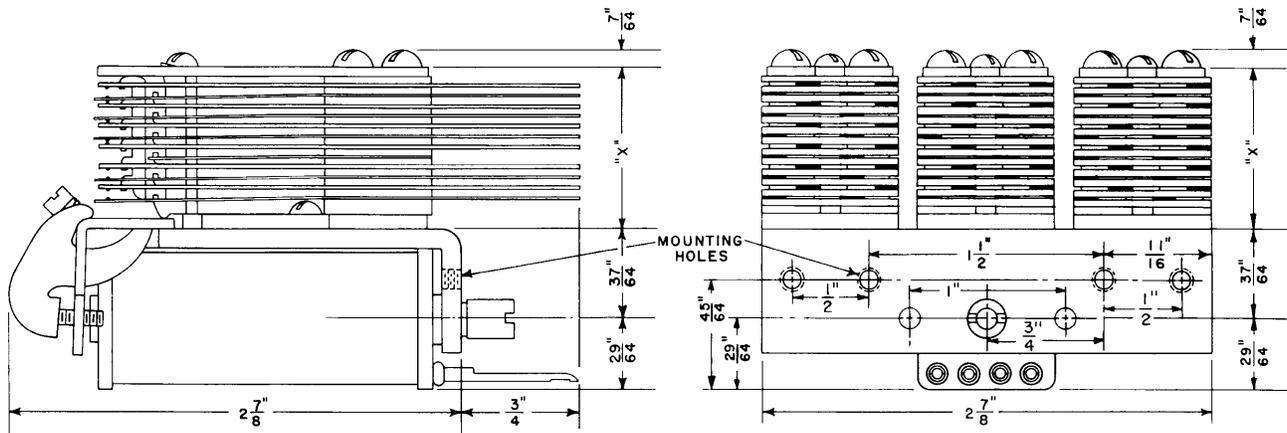
Total Make, Break-Make Combinations	No. of Groups	Type per Group	Stock No.
24	3	8-A's	36040-000
30	3	10-A's	36047-000
36	3	12-A's	36048-000
42	3	14-A's	36049-000
48	3	16-A's	36050-000
54	3	18-A's	36051-000
24	3	8-C's	351802-000



Stromberg-Carlson Type "B" Relay

MOUNTING INFORMATION (Cont.)

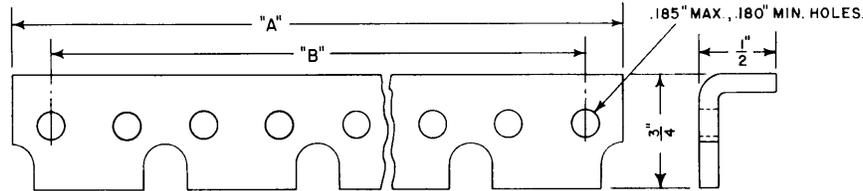
B TYPE



Type "B" Relays mount with two No. 8-32 screws. Dimension "X" varies from $\frac{9}{64}$ " (minimum height) for relays with a total of

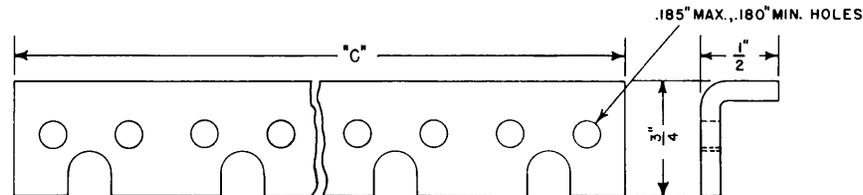
24 make combinations or equivalent to $1\frac{1}{32}$ " (maximum height) for relays with a total of 60 make combinations or equivalent.

**RELAY MOUNTING STRIPS
for Type "A", "B", & "C" Relays**



For use when fastening with screws in end holes.

Stock No.	No. of Relays		Length*	Mtg. Centers
	Type "A" or "C"	Type "B"		
206326-000	3	1	4"	3 1/2"
204904-000	6	2	7"	6 1/2"
206437-000	8	2	9"	8 1/2"
209558-000	10	3	11"	10 1/2"
209278-000	24	8	25"	24 1/2"



For use with butt welded ends or similar type fastening.

Stock No.	No. of Relays		Length*
	Type "A" or "C"	Type "B"	
204190-000	3	1	3"
480209-000	4	1	4"
204056-000	6	2	6"
204274-000	7	2	7"
481348-000	8	2	8"
484921-000	9	3	9 1/2"
204173-000	10	3	10"

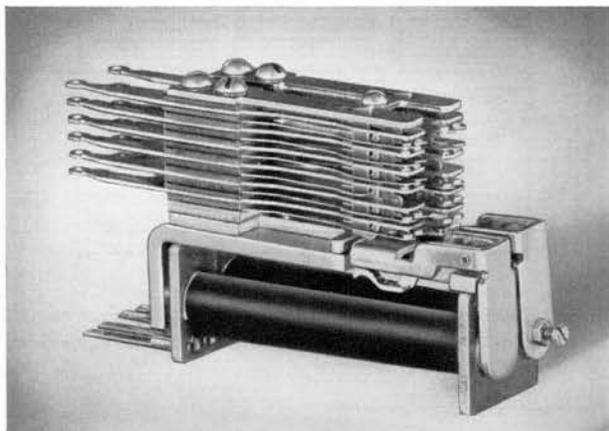
Stock No.	No. of Relays		Length*
	Type "A" or "C"	Type "B"	
480812-000	15	5	15"
483865-000	16	5	16"
484726-000	18	6	18"

*Lengths other than listed up to a maximum of 36" may be obtained on special order. The maximum length (36") will hold up to 36 Type "A" or "C" or 12 Type "B" when butt-welded.

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TWIN TYPE "C" RELAY

The Twin Type "C" Relay is designed to mount two coils and their associated spring combinations in the same space and on the same mounting as a standard Type "A" Relay, with 2 #8-32 screws. This relay was originally designed for use in line circuits where its small size results in considerable savings in space. Since it has proven so successful in its original application, it has been used wherever its small size is an advantage and where higher resistances are not a factor.



Type "C" Relay

The Frame

Since this relay has been designed specifically to use one frame for two relays, no sacrifice in strength and rigidity was made, as would have been necessary if an individual frame was made for each relay. This heavy frame therefore provides an excellent magnetic path.

Armatures

The hard drawn bearing pins operating in the brass yoke provide excellent bearings of low friction and long life.

Two lever ratios are available. The standard ratio is for quick acting; the "short-lever ratio" is for slow release type relays. Any combination can be supplied: two standard; one standard and one slow release; or two slow release.

Any of these armatures can be supplied with either an adjustable residual screw or a welded residual disc .004" thick.

Spring Combination

The Twin Relay employs the same structure as used on the Type "A" Relay. Similar combinations are available except that the maximum number of springs for each side of the Twin Relay is less. Normally six "makes" (A), or equivalent, can be mounted on each side; or if sufficient mounting room is available, up to a maximum of 10 "makes" or equivalent can be supplied on each relay.

The same highly efficient single continuous spring pusher is used, assuring long life with very little spring adjustment. The contacts are twin type, of the dome design. Contact material is precious metal, assuring excellent noise-free contacts of low resistance and long life.

Twin Relays use the same sturdy clamp plate as the "A" Relay in their spring pile-ups. This covers the entire spring combination of the Twin Relay and protects the springs from accidental damage.

Coils

The coils are wound with highest grade copper wire with double enamel insulation. Coils are tested for 500 volt AC breakdown between windings and core.

The coils can be supplied with copper "slugs" for delayed action.

Windings up to 1200 ohms are available with standard "quick acting" coils, and up to 830 ohms with slow acting coils having a 1 1/4" copper slug. Due to the limited amount of room for terminals, only one winding is available on each coil.

It is easy to remove and replace coils.

Standard Coils Available

For Twin Type "C" Relays

Single Winding — No Slug

Stock No.	Resistance
36470-000	1200 Ohms
36471-000	785 Ohms
36473-000	8.5 Ohms
36474-000	475 Ohms
36475-000	320 Ohms
36476-000	220 Ohms
36477-000	142 Ohms
36478-000	150 Ohms
211428-000	580 Ohms

Single Winding — 1 1/2" Heel and Slug

Stock No.	Resistance
36480-000	820 Ohms

Double Winding — No Slug

Stock No.	Resistance
36479-000	780 x 335 Ohms

Adjustment

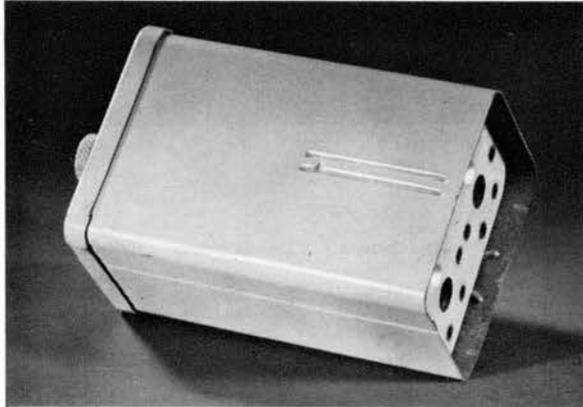
The relays are completely factory adjusted to very exacting limits, ready for immediate use, and during their normal life they will not usually require any readjustment. In extreme cases, some adjustment may be necessary and the relay is designed so that such readjustment may be made easily in the field.

Ordering Information

As viewed from the front, or armature end, with the contact springs up, the armature, coil and combination to the viewer's right is designated as the right-hand relay and the one to his left as the left-hand relay. In ordering a Twin Relay, specify by letter designations for both the right and left sides, exactly what spring combination is desired (see information on page 77f covering "A" Relays); what coil is desired (see information on coils above); whether a "standard" or "slow-release" armature; and whether an adjustable residual screw or fixed residual is desired. If the resistances of the coils are not important, it usually is better to specify the operating voltage and the proper coils for operating the combinations specified will be supplied.

RELAY CASINGS

These are light-finished sheet steel casings for covering individual relays or groups of relays. They are used with various types of standard relay mountings and effectively protect the apparatus from dust and mechanical injury.



No. 25 Relay Casing



No. 21 Relay Casing

Stock No.	Code	No. & Type Relays Covered	Width Inches	Depth Inches	Height Inches	
801597-000	(16-L)	50 No. 190	9 9/16	3 5/8	3 1/2	
801598-000	(17-L)	40 No. 190	7 3/4	3 5/8	3 1/2	
801600-000	(18-L)	20 No. 190	4 1/8	3 5/8	3 1/2	
-----	(19-L)	Replaced by No. 25 Casing				
801603-000	(20-L)	20 No. 200	11 1/4	3 3/4	3 41/64	
801605-000	(21-L)	10 No. 200	11 1/4	3 3/4	1 45/64	
801607-000	(23-L)	40 No. 190	23 13/32	3 3/4	1 57/64	
801609-000	(24-L)	14 No. 200	16 49/64	3 3/4	1 45/64	
*801610-000	(25)	2 No. 200	2 11/32	4	1 25/32	
801611-000	(26)	6 No. 200	7 7/64	3 3/4	1 45/64	
205108-000	(27)	1 "A" or "C"	2 3/8	3 3/4	1 7/8	

*No. 25 Casing with 4" shell may be used for replacement on all Stromberg-Carlson Switchboards.

RELAY MOUNTINGS

Stromberg-Carlson Type "A", "B", and "C" Relays are usually mounted on circuit plate mountings. These mountings are

grouped as to size and use and are listed in the following tables:

Mountings for Type "A", "B", and "C" Relays

The following is a list of Mountings for Composite CX Equipment

Stock No.	Number and Type of Relays	Cover Assembly	Mounting Centers Inches	Length Inches	Width Inches
480504-000	7 A or C	484505-000	18 3/8	19	1 1/16
480590-000	14 A or C	480507-000	18 3/8	19	3 3/8
480594-000	21 A or C, or 7 B	484518-000	18 3/8	19	5 1/8
*482869-000	28 A or C	None or †482887-000	18 3/8	19	6 3/8

The following is a list of Mountings for Manual Switchboards

Stock No.	Number and Type of Relays	Cover Assembly	Mounting Centers Inches	Length Inches	Width Inches
448504-000	18 A or C	448704-000	19 3/4	20 1/4	2 5/16
448505-000	16 A or C	448704-000	19 3/4	20 1/4	2 7/16

The following is a list of Mountings for Testing Equipment

Stock No.	Number and Type of Relays	Cover Assembly	Mounting Centers Inches	Length Inches	Width Inches
448501-000	18 A or C	448701-000	20 1/2	21	1 19/32

The following is a list of Mountings for XY Shelf Equipment

Stock No.	Number and Type of Relays	Cover Assembly	Mounting Centers Inches	Length Inches	Width Inches
447501-000	10 A or C	447611-000	27	27 1/2	1 13/64
447511-000	20 A or C	447612-000	27	27 1/2	3 1/16
447521-000	30 A or C, or 10 B	447613-000	27	27 1/2	4 41/64
447541-000	40 A or C	447614-000	27	27 1/2	6 7/32
447502-000	15 A or C	447615-000	38	38 1/2	1 13/64
447512-000	20 A or C	447616-000	38	38 1/2	3 1/16
447522-000	45 A or C, or 15 B	447617-000	38	38 1/2	4 41/64

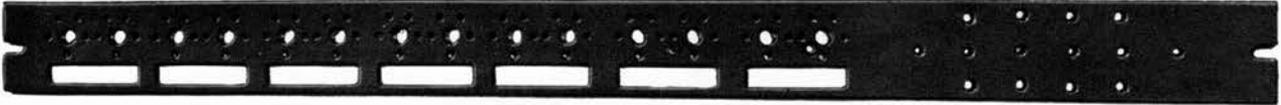
*Terminal Block and Mounting are attached

†Has one cut-out for make busy and test unit

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RELAYS MOUNTINGS (Cont.)

These relay mounting strips are light-finished plates of $\frac{3}{16}$ " strip steel designed for mounting relays shown in the following table, as well as those of our standard condensers which occupy the same space as the No. 200 Type Relays.



Horizontal Type Mountings

Stock No.	Code	Number & Type Relays	Relay Casings	Mtg. Centers Inches	Length Inches	Width Inches
801653-000	(84-L)	120 No. 190	3 No. 17	25½	26	3¾
801654-000	(85-L)	40 No. 200	20 No. 25	25½	26	3¾
200473-000	(86-L)	60 No. 190	3 No. 18	20%	21½	3¾
801657-000	(87-L)	16 No. 200	8 No. 25	20%	21½	1½
801659-000	(88-L)	60 No. 190	3 No. 18	17	17½	3¾
801661-000	(89-L)	12 No. 200	6 No. 25	17	17½	1½
44361-000	(90-L)	10 No. 200	5 No. 25	13	13½	1½
801663-000	(91-L)	100 No. 190	2 No. 16	20%	21½	3¾
45492-000	(92-L)	16 No. 200	8 No. 25	13	13½	3¾
801668-000	(96-L)	40 No. 190	1 No. 17	8¾	8¾	3¾
801671-000	(98-L)	20 No. 190	8 No. 25	17	17½	3¾
801675-000	(101-L)	12 No. 200 (α)	1 No. 21, 25	18¾	18¾	1½
801677-000	(102-L)	14 No. 200 4 No. 19 Cond.	2 No. 25 1 No. 21	25½	26	1½
801679-000	(103-L)	10 No. 200	5 No. 25	17	17½	1½
801681-000	(104-L)	20 No. 200	10 No. 25	25½	26	1½
801683-000	(105-L)	40 No. 190	1 No. 23	25½	26	1½
801685-000	(106-L)	6 No. 200 (α)	3 No. 25	17	17½	1½
801688-000	(109-L)	9 No. 200 (b)	5 No. 25	17	17½	1½
801690-000	(110-L)	10 No. 200 (c)	5 No. 25	17	17½	1½
801692-000	(111-L)	14 No. 200	1 No. 24	18½	18¾	1½
801697-000	(116-L)	60 No. 190	3 No. 18	18¾	18¾	3¾
801698-000	(117-L)	18 No. 200	9 No. 25	23¾	23¾	1½
801699-000	(118-L)	28 No. 200 20 No. 190	14 No. 25 1 No. 18	23¾	23¾	3¾
801700-000	(119-L)	8 No. 200	4 No. 25	17	17½	1½
801701-000	(120-L)	12 No. 200	1 No. 21, 25	17	17½	1½

(α) Mounts 2 No. 19 Condensers, (b) Mounts 2 No. 28 Condensers, (c) Mounts 2 No. 35 Condensers.

Vertical Type Mountings

These vertically installed mountings are used in relay cabinets and Stromberg-Carlson PBX Switchboards.

Stock No.	Code	Number & Type Relays Mounted	Relay Casings	Mtg. Centers Inches	Length Inches	Width Inches
801693-000	(112-L)	12 No. 200	6 No. 25	13	13½	2½
801694-000	(113-L)	18 No. 200	9 No. 25	18 $\frac{13}{16}$	19 $\frac{5}{16}$	2½
801695-000	(114-L)	12 No. 200, 2 No. 190	6 No. 25	18 $\frac{13}{16}$	19 $\frac{5}{16}$	2½
801696-000	(115-L)	22 No. 200	11 No. 25	22	22½	2½
801702-000	(121-L)	40 No. 200		39 $\frac{1}{16}$	39 $\frac{1}{16}$	2½
39829-000	(122-L)	23 No. 11 Repeat Coils		45 $\frac{7}{8}$	46 $\frac{3}{8}$	2½

Angle Type Mountings

Stock No.	Code	Number & Type Relays Mounted	Relay Casings	Style Mounting	Length Inches	Width Inches
801665-000	(93-L)	1 No. 200	—	Floor	1½	1½
801666-000	(94-L)	1 No. 200	—	Sidewall	1 $\frac{1}{16}$	1
801667-000	(95-L)	2 No. 200	1 No. 25	Sidewall	2 $\frac{1}{32}$	1
801673-000	(100-L)	4 No. 200	2 No. 25	Roof	3¾	2½

STROMBERG-CARLSON

RINGERS

TELEPHONE TYPE

The following list of ringers are used on the present line of Stromberg-Carlson telephones as well as some former models. They are described as to complete ringer and replaceable piece parts in Section A — TELEPHONES of this catalog. Refer to the contents page of Section A to find exact page of ringer desired.

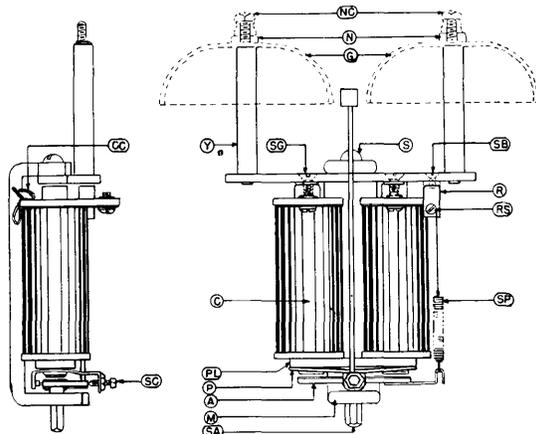
These ringers are available for use in common battery or magneto service and respond to tuned frequency ringing current as well as straight line and ringing tube operation.

Code	Type	Telephones used on
1660	St. line & tuned frequency	1600
74	Straight Line	1543, 1543W, 1553W, 1560, 1561
73	Tuned Frequency	1543, 1543W, 1553W, 1560, 1561
72	Tuned Frequency	1443, 1460, 1461
71	Straight Line	1443, 1460, 1461
65	Straight Line	1248, 1258, 1268 Magneto
62	Tuned Frequency	1243, 1247, 1253, 1260, 1261
61	Straight Line	1243, 1247, 1253, 1260, 1261
35	Straight Line	890, 950 Ironclads

Large Type Telephone Ringers

No. 46 Straight Line and No. 49 Biased Types

The following list covers parts for both the No. 49 and No. 46 Straight Line Ringers which are alike with the exception of a biasing spring and associated parts that are used with the No. 49.



No. 49 Type

Stock No.	Item	Name	Ringer Used On
2423-000	A	Armature	46
5025-000		Armature	49
12239-000	C	Coil (2)	46-A, 49-A
12240-000		Coil (2)	46-C, 49-C
12241-000		Coil (2)	46-F, 49-F
20266-000	CC	Conductor	46, 49
12047-000	G	Gongs (2)	46, 49
7485-000	M	Magnet	46, 49
525053-000	N	Nut (2)	46, 49
7571-000	NC	Cap Nut (2)	46, 49
4717-000	P	Plate Assembly	46, 49
579-000	PL	Plate	46, 49
34808-000	R	Adjusting Screw	49
34668-000	RS	Adjusting Stud	49
505355-000	S	Screw	46, 49
33986-000	SA	Adjusting Screw	46, 49
515285-000	SB	Screw	49
2580-000	SC	Screw (pivot)	46, 49
503783-000	SG	Screw	49
16060-000	SP	Spring (biasing)	49
8594-000	Y	Yoke Assembly	46
16061-000		Yoke Assembly	49

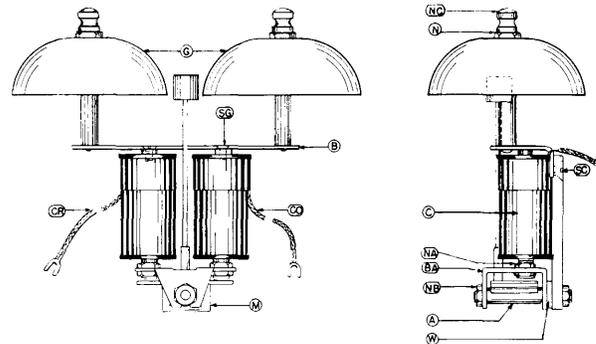
No. 52 Biased Type

The No. 52 is a biased type polarized ringer designed for 4-party systems that use pulsating current.

Stock No.	Code	Description	Resistance
801864-000	(52-F)	Ringer (Biased)	2500 Ohms

No. 64 Harmonic Ringer

The No. 64 Type Harmonic Ringer (Replacing No. 47) is equipped with a reed armature which may be tuned to all frequencies in general use.



No. 64 Type

Miscellaneous Parts

Stock No.	Item	Name
201705-000	A	Arm.—Reed Assem.—16, 16 1/2, 20
201706-000		Arm.—Reed Assem.—25, 30, 33 1/2
201707-000		Arm.—Reed Assem.—42
		Arm.—Reed Assem.—50, 54, 60, 66, 66 1/2
201708-000	B	Bracket Assembly (Mounting)
201709-000	BA	Bracket Assembly (Armature)
27981-000	C	Coil (No. 64-F, G, K, L, M, P, Q)
27982-000		Coil (No. 64-E, I, 64-N, 64-R)
44156-000	CO	Cord (T-1-D) Red
44154-000	CR	Cord (T-1-D) Black
12047-000	G	Gongs(2)
28021-000	M	Magnet
23114-000	NA	Nut (4)
23202-000	NB	Nut(2)
7571-000	NC	Cap Nut (2)
525053-000	N	Nut (2)
503783-000	SG	Screw (2)
505273-000	SC	Screw
204364-000		Set Screw—Armature weight

Additional Charge for Gongs

When gongs are to be furnished with ringers one set of the following parts should be specified for each No. 46, 47, 49, 52 or 64 Type.

Stock No.	Description	Quantity
12047-000	Gongs (Black Steel) 2 1/2" Dia.	2
7571-000	Nuts (Cap)	2
525053-000	Nuts (Lock)	2
4241-000	Screw (Mtg.)	2
5312-000	Studs (Elevating) for Wood Mtg.	
or		
10716-000	Studs (Elevating) for Steel Mtg.	2

RINGERS (Cont.)

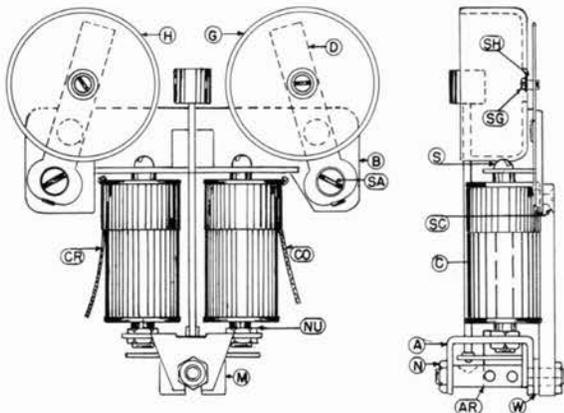
STOCK AND CODE NUMBERS

Stock No.	Code	Total Resistance	Description Less Gongs
Polarized Systems			
801830-000	(46-A)	920	Straight line
801832-000	(46-C)	1770	Straight line
801835-000	(46-F)	2500	Straight line
801856-000	(49-A)	920	Biased
801857-000	(49-C)	1770	Biased
801858-000	(49-F)	2500	Biased
Harmonic Frequencies			
47417-000	(64-E)	4320	16 2/3 Cycles
47416-000	(64-F)	780	33 1/3 Cycles
47415-000	(64-G)	780	50 Cycles
47412-000	(64-N)	4320	25 Cycles
47413-000	(64-H)	780	66 2/3 Cycles
Tuned Frequencies			
47423-000	(64-K)	780	30 Cycles
47422-000	(64-L)	780	42 Cycles
47421-000	(64-M)	780	54 Cycles
47420-000	(64-P)	780	66 Cycles
47419-000	(64-R)	4320	16 Cycles
209429-000	(64-Q)	780	40 Cycles
Two Frequency Systems			
47418-000	(64-I)	4320	20 Cycles
47414-000	(64-J)	780	60 Cycles

No. 59 Harmonic Type

Used with 1210 and 1211 Wall and 1212 Desk Type Handset Telephones which have been replaced by the 1250 Wall and 1243 Desk Models.

Stock No.	Code	Total Resistance	Description Less Gongs
801891-000	(59-E)	4320	16 2/3 Cycles Harmonic
801892-000	(59-F)	780	33 1/3 Cycles Harmonic
801893-000	(59-G)	780	50 Cycles Harmonic
801894-000	(59-H)	780	66 2/3 Cycles Harmonic
801898-000	(59-N)	4320	25 Cycles Harmonic
801895-000	(59-K)	780	30 Cycles Tuned
801896-000	(59-L)	780	42 Cycles Tuned
801897-000	(59-M)	780	54 Cycles Tuned
801899-000	(59-P)	780	66 Cycles Tuned
801900-000	(59-R)	4320	16 Cycles Tuned
801913-000	(59-I)	4320	20 Cycles Tuned
45389-000	(59-J)	780	60 Cycles Tuned



No. 59 Ringer

No. 59 Harmonic Ringer

Miscellaneous Parts

Stock No.	Item	Name
210709-000	A	Bracket (Armature)
210705-000	AR	Arm.—Reed Assem.—16, 16 2/3, 20
210706-000		Arm.—Reed Assem.—25, 30, 33 1/3
210707-000		Arm.—Reed Assem.—42
210708-000		Arm.—Reed Assem.—50, 54, 60, 66, 66 2/3
27976-000	B	Bracket (Mounting)
27981-000	C	Coil (No. 59-F, G, H, J, K, L, M, P)
27982-000		Coil (No. 59-E, I, N, R)
44154-000	CO	Cord (T-1-D) Black
44156-000	CR	Cord (T-1-D) Red
27975-000	D	Arms
28569-000	G	Gong
28570-000	H	Gong
28021-000	M	Magnet
23202-000	N	Nut
23114-000	NU	Nut
503653-000	S	Screw
503520-000	SA	Screw (Gong adjusting)
505273-000	SC	Screw
28433-000	SG	Screw (Gongs)
526281-000	SH	Shakeproof Washer (Gongs)
28020-000	W	Washer
204364-000		Set screw (Armature weight)

Switchboard Ringers (Buzzer Type)



No. 50-LL Buzzer

Stock No.	Code	Resist. Ohms	Use
*801861-000	(50-LL)	500	Nos. 102, 106, 120 PBX N.A. Circuits

*Will mount in the space of a casing on relay mounting plates.

Polarized Type Buzzers

Stock No.	Code	Resistance	Description
801820-000	(28-A)	1000	Polarized (Used on No. 843 Test Set)
801821-000	(28-C)	1600	Polarized (Used on No. 844 Test Set)
801822-000	(28-H)	100	No. 105 Swbd. Gen. Circuit
39530-000	Coil	(500 Ohms)	Used on No. 28-A Ringer
42142-000	Coil	(800 Ohms)	Used on No. 28-C Ringer

No gongs nor tapper required for No. 28 buzzer type ringers.

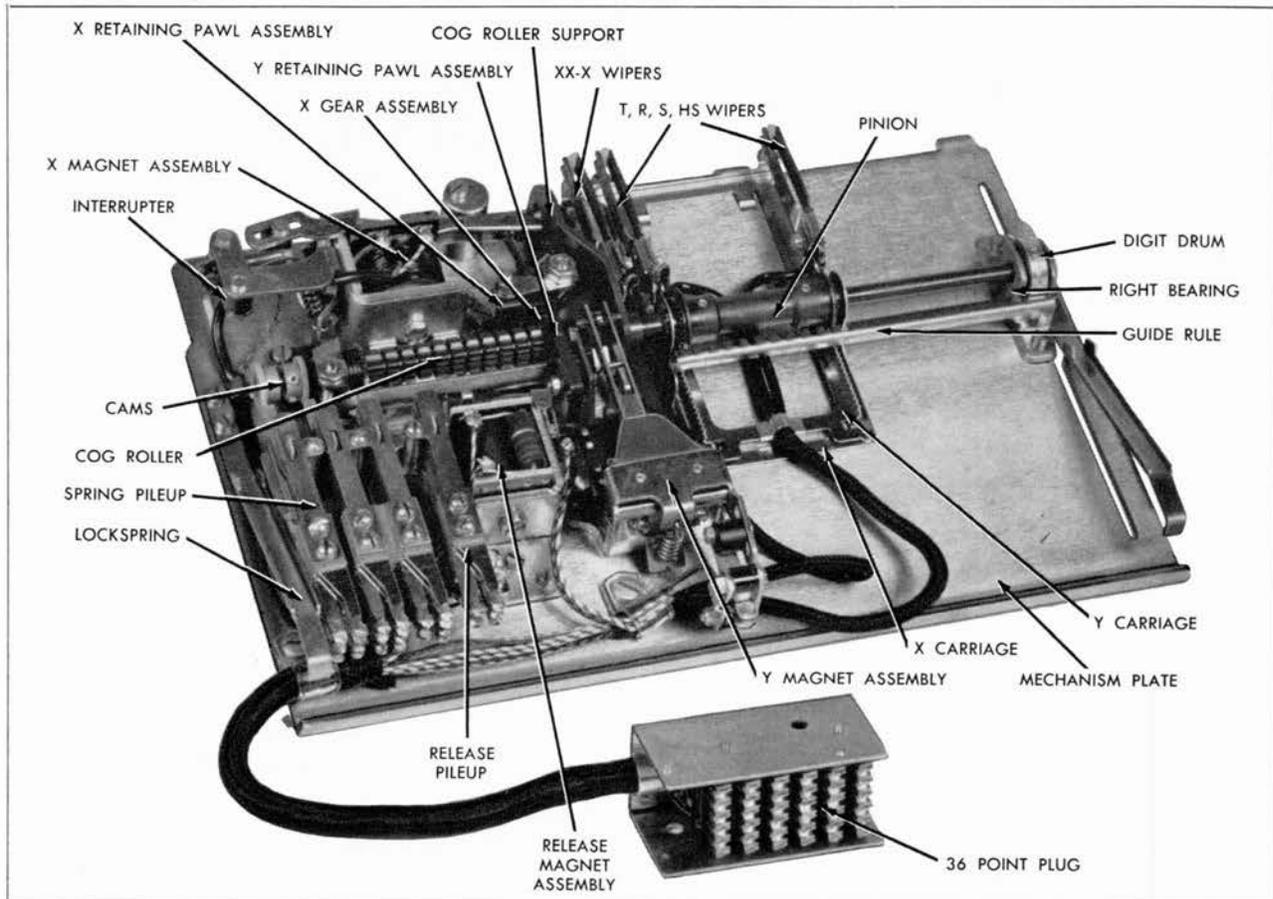
Miniature Type Buzzers

Stock No.	Code	Resist.	Description
801756-000	(1-B)	15 ohms	Encased Buzzer, 10 volts, D.C.
801757-000	(1-D)	132 ohms	Encased Buzzer, 30 volts, D.C.
801759-000	(0-B)	140 ohms	Encased Buzzer, 8-15 volts, D.C.
212096-000	(0-D)	10 ohms	Encased Buzzer, 6-8 volts, D.C., 8-10 volts, A.C.
212709-000	(0-E)	100 ohms	Encased Buzzer, 9-11 volts, A.C.
45304-000	(2-A)	1000 ohms	Encased Buzzer, 80 volts, 20 cps
211417-000	(2-B)	1000 ohms	Encased Buzzer, 6-8 volts, D.C.
211418-000	(2-C)	1000 ohms	Encased Buzzer, 22-26 volts, D.C.
211419-000	(2-D)	1000 ohms	Encased Buzzer, 44-52 volts, D.C.

STEPPING SWITCHES

For many years Stromberg-Carlson stepping switches have been manufactured to be used in XY Dial Systems. The XY Universal Switch encompasses all the benefits of excellent engineering and manufacturing that can be bestowed on an electro-mechanical switch of this capacity.

The XY Deca Switch is modernistic, small and light in weight and will function perfectly in any circuit where a 10-point 4-wire system is required.



XY Universal Switch

XY Universal Switch

The XY Universal Switch is a two-motion, flat-type, step-by-step switch. Operating on 48 volt D.C., this switch steps across the face of associated wire banks and then into these wire banks. It uses 2 60-ohm electro-magnets to perform these steps.

Stock No.	Code No.	Coil Resistance
209067-000	U-12	60 ohms

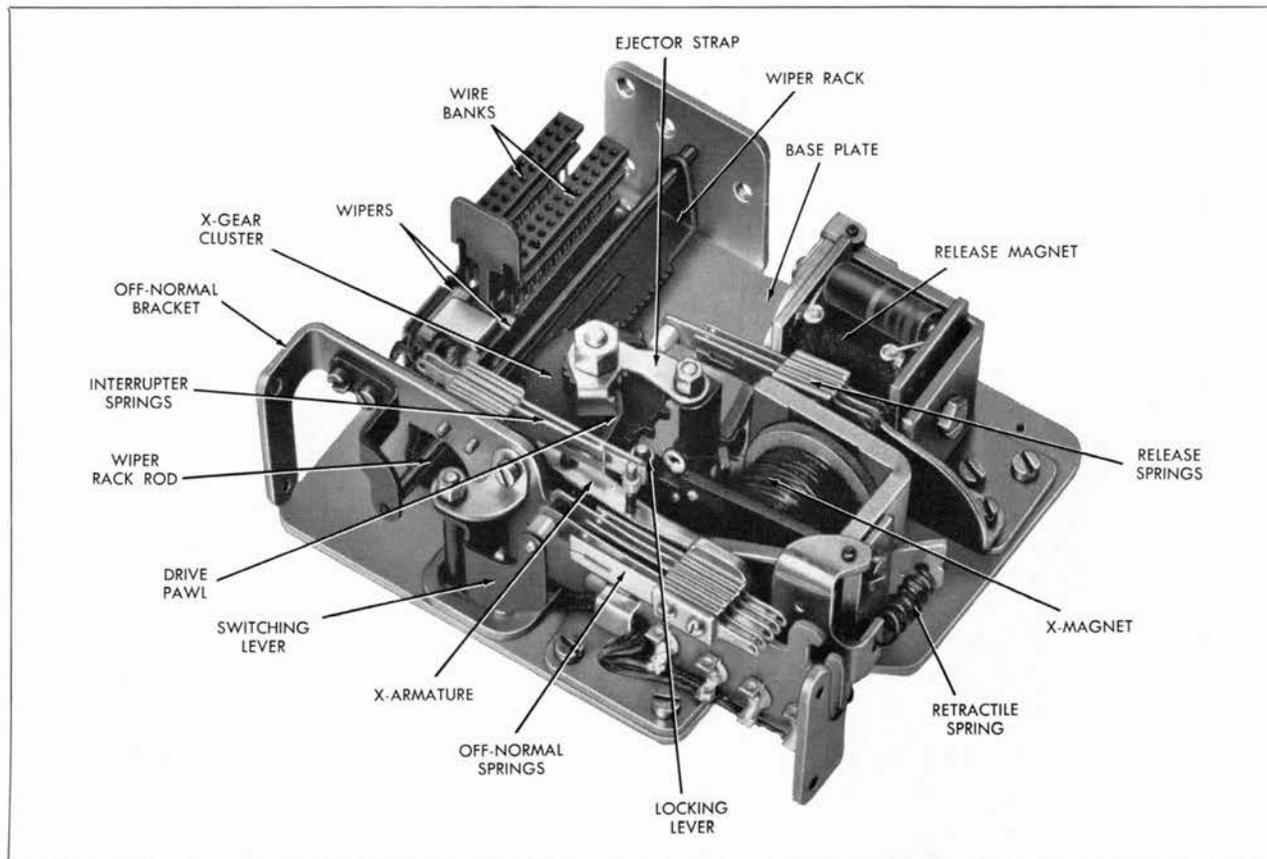
Replaceable Parts for the XY Universal Switch

Stock No.	Description
209074-000	X—Magnet Assembly
213974-000	X—Gear Assembly
216534-000	X—Retaining Pawl Assembly
200227-000	X—Carriage & Pillar Assembly
209075-000	Y—Magnet Assembly
218304-000	Y—Retaining Pawl Assembly
200133-000	Cam Assembly
200196-000	Cog Roller Support
212797-000	Pinion Assembly

Stock No.	Description
205503-000	X & Y—Interrupter Spring Assemblies
300695-112	Cog Roller Assembly
207306-000	Tubular Shaft Assembly
200194-000	Digit Drum
200156-000	Y—Stop Bar
200201-000	XX-X—Pillar Assembly
202132-391	Wiper Assembly
300695-062	XX-X—Rack
200250-000	Y—Carriage
209220-000	Release Spring Pile-Up
209202-000	X & Y Off Normal & Overflow Spring Assem.
209221-000	Release Magnet Assembly
203938-000	Retaining Ring Tru-arc
202436-000	Retaining Ring Tru-arc
202882-000	Switch Oil
217030-000	Package Assembly, Misc. Screws
208406-000	Lock Springs
300695-042	Yoke—Right Bearing
200181-000	Guide Rule
269072-000	Cable and Plug Assembly

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STEPPING SWITCHES (Cont.)



XY Deca Switch

XY Deca Switch

The XY Deca Switch is a 10-point minor switch. It was designed to work in place of the direct-drive, homing (or reset) type of 10-point stepping switch made by other manufacturers. Based on the time-proven acceptability of the XY Universal Switch, the XY Deca Switch incorporates many of the components and design features of this famous Switch—to name a few: "X" Gear Cluster and Drive Mechanism, Vertical Wire Banks, Bifurcated Wipers, Release Magnet and Mechanism, and Parko-Lubrite finished case-hardened working parts. The XY Deca Switch is available with spring combinations engineered to suit a wide variety of requirements.

Stock No.	Code	Coil Res.	Off Normal Spring	Interrupter Springs	Release Spring
212944-000	X-1	87 ohm	A & C	B	C
212945-000	X-2	87 ohm	A & C	B	NONE
212946-000	X-3	87 ohm	A & C	NONE	NONE
216586-000	X-4	38 ohm	A & C	B	C
216632-000	X-5	38 ohm	A & C	B	NONE
216633-000	X-6	38 ohm	A & C	NONE	NONE
216588-000	X-7	60 ohm	A & C	B	C
216634-000	X-8	60 ohm	A & C	B	NONE
216635-000	X-9	60 ohm	A & C	NONE	NONE
218228-000	X-10	87 ohms x 400 N.I.	A & C	B	C
218227-000	X-11	38 ohm	A & C	B	C
218226-000	X-12	60 ohm	A & C	B	C
218407-000	X-13	87 ohm	A & C	NONE	NONE
202135-801	X-14	87 ohm	A & C	NONE	NONE

Replaceable Parts for the XY Deca Switch

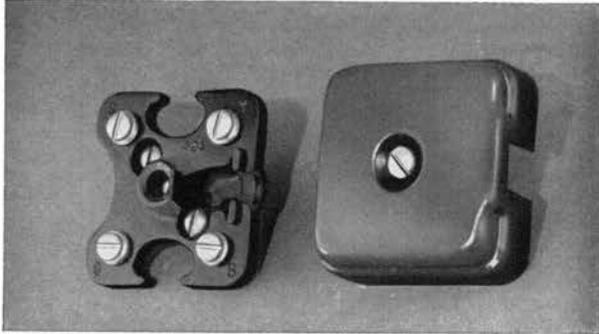
Stock No.	Description
200179-000	Wiper Assembly
200057-000	Drive Pawl
213461-000	Interrupter Spring Assembly, Release Magnet
213450-000	Off-Normal Spring Pile-Up
212953-000	Retractile Spring
	Drive Magnet Coil
216584-000	38 ohm—24V
216587-000	60 ohm—48V
218406-000	87 ohm x 400 N.I.—48V
	Release Magnet Coil
216585-000	38 ohm—24V
212960-000	60 ohm & 87 ohm x 400 N.I.—48V
213974-000	X-Gear Assembly
212972-000	Wire Bank Assembly
213451-000	Interrupter and Off-Normal Spring and Bracket Assembly
212966-000	Cable Assembly
217022-000	Rack Shaft Assembly
212964-000	Rack
212975-000	Front Clip
213449-000	Switching Lever Assembly
213452-000	Locking Lever Assembly
212947-000	Base Plate (for X-4 thru X-13)
301235-061	Base Plate (for X-14)

STROMBERG-CARLSON

TERMINAL EQUIPMENT

Terminal Blocks

This Terminal Block (205106-000) is used with the 1243-W and similar handset telephones for connecting the line cord and station wires.



Stock No. 205106-000 Terminal Block for either 3 or 4 Conductor Line Cord

Terminal Block (205106-000) — Less Cord

This terminal block consists of a removable cover and matching plastic base containing an anchor post and four terminal plates with connecting screws.

The cover is attached to the base by a screw which threads

into the center of the anchor post and notches are provided on opposite sides for the entrance of the line cord and station wires.

Dimensions: 2" x 2" x 3/4" high.

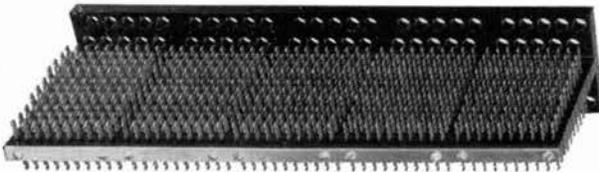
Terminal Boxes

The No. 90-A Terminal Box is used with desk type handset telephones in Stromberg-Carlson Convenience Systems described in Section C. This is a black plastic box — similar to the 1260 Desk Set Box — with removable base on which screw type terminals are mounted for making all necessary connections.

Stock No.	Code	Associated Handset Telephone
201983-000	(90-A)	1270 (2-6 System)
		1271, 1272 (2-10 and 3-9 System)
201730-000	(96-A)	1575-A (6-K System)
211156-000	(96-B)	1575-B (6-K System)
214215-000	(G96-A)	G1575-A (6-K System)
214216-000	(G96-B)	G1575-B (6-K System)
216608-000	(G96-C)	G1575-A1 and B1 (6-K-1 System)
212769-000	(97)	1575-B (6-K System)
214217-000	(G97)	G1575-B (6-K System)
212765-000	(98)	1575-A, or 1575-B (6-K System)
214218-000	(G98)	G1575-A, or G1575-B (6-K System)
212766-000	(99)	1575-A, or 1575-B (6-K System)

NOTE: No. 89-B Terminal Box with buzzer should be used, instead of the new No. 90-A, with the older style 1195 Telephones in a 2-6 Convenience System now in the field.

TERMINAL STRIPS



Terminal Strips — Molded Type for XY Dial Systems Shelf Type

Similar in style to the wood base type of terminal strips, this molded type combines simplicity and economy both in manufacturing and installing. Composed of high grade general purpose black phenolic, this strip is light in weight and is uniform in thickness, giving maximum strength as well as a refined appearance.

The terminals are grouped to give an advantage in the field of quick location, and, at the same time, eliminate lengthy counting in long strips. The separation is also composed of black phenolic but has Hycar added to give flexibility in assembling. Mounting is accomplished through the use of a steel mounting plate that is attached to the strip and into which screws can be driven from the shelf frame.

Stock No.	Code	No. of Circuits	Terminals Per Circuit	Dimensions		
				Lgth.	Thick.	Ht.
203310-000	(110)	10	10	2 3/64"	2 13/16"	4 3/4"
203361-000	(111)	15	1	4 3/32"	2 13/16"	1 21/32"
203362-000	(112)	15	2	4 3/32"	2 13/16"	2"
203363-000	(113)	15	3	4 3/32"	2 13/16"	2 11/32"
203364-000	(114)	15	4	4 3/32"	2 13/16"	2 11/16"
203365-000	(115)	15	5	4 3/32"	2 13/16"	3 1/32"
203366-000	(116)	15	6	4 3/32"	2 13/16"	3 3/8"
203367-000	(117)	15	7	4 3/32"	2 13/16"	3 23/32"
203368-000	(118)	15	8	4 3/32"	2 13/16"	4 1/16"
203369-000	(119)	15	9	4 3/32"	2 13/16"	4 13/32"
203360-000	(120)	15	10	4 3/32"	2 13/16"	4 3/4"
203321-000	(121)	20	1	5 7/32"	2 13/16"	1 21/32"
203322-000	(122)	20	2	5 7/32"	2 13/16"	2"
203323-000	(123)	20	3	5 7/32"	2 13/16"	2 11/32"
203324-000	(124)	20	4	5 7/32"	2 13/16"	2 11/16"
203325-000	(125)	20	5	5 7/32"	2 13/16"	3 1/32"
203326-000	(126)	20	6	5 7/32"	2 13/16"	3 3/8"
203327-000	(127)	20	7	5 7/32"	2 13/16"	3 23/32"
203328-000	(128)	20	8	5 7/32"	2 13/16"	4 1/16"
203329-000	(129)	20	9	5 7/32"	2 13/16"	4 13/32"
203320-000	(130)	20	10	5 7/32"	2 13/16"	4 3/4"
203371-000	(131)	26	1	6 5/64"	2 13/16"	1 21/32"
203372-000	(132)	26	2	6 5/64"	2 13/16"	2"
203373-000	(133)	26	3	6 5/64"	2 13/16"	2 11/32"
203374-000	(134)	26	4	6 5/64"	2 13/16"	2 11/16"
203375-000	(135)	26	5	6 5/64"	2 13/16"	3 1/32"
203376-000	(136)	26	6	6 5/64"	2 13/16"	3 3/8"
203377-000	(137)	26	7	6 5/64"	2 13/16"	3 23/32"
203378-000	(138)	26	8	6 5/64"	2 13/16"	4 1/16"
203379-000	(139)	26	9	6 5/64"	2 13/16"	4 13/32"
203370-000	(140)	26	10	6 5/64"	2 13/16"	4 3/4"
203331-000	(141)	30	1	7 13/16"	2 13/16"	1 21/32"
203332-000	(142)	30	2	7 13/16"	2 13/16"	2"
203333-000	(143)	30	3	7 13/16"	2 13/16"	2 11/32"
203334-000	(144)	30	4	7 13/16"	2 13/16"	2 11/16"
203335-000	(145)	30	5	7 13/16"	2 13/16"	3 1/32"
203336-000	(146)	30	6	7 13/16"	2 13/16"	3 3/8"
203337-000	(147)	30	7	7 13/16"	2 13/16"	3 23/32"
203338-000	(148)	30	8	7 13/16"	2 13/16"	4 1/16"

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Terminal Strips—Molded Type (Cont.)

Stock No.	Code	No. of Circuits	Terminals Per Circuit	Dimensions		
				Lgth.	Thick.	Ht.
203339-000	(149)	30	9	7 ¹³ / ₁₆ "	2 ¹³ / ₁₆ "	4 ¹³ / ₃₂ "
203330-000	(150)	30	10	7 ¹³ / ₁₆ "	2 ¹³ / ₁₆ "	4 ³ / ₄ "
203341-000	(151)	40	1	10 ⁷ / ₁₆ "	2 ¹³ / ₁₆ "	1 ²¹ / ₃₂ "
203342-000	(152)	40	2	10 ⁷ / ₁₆ "	2 ¹³ / ₁₆ "	2"
203343-000	(153)	40	3	10 ⁷ / ₁₆ "	2 ¹³ / ₁₆ "	2 ¹¹ / ₃₂ "
203344-000	(154)	40	4	10 ⁷ / ₁₆ "	2 ¹³ / ₁₆ "	2 ¹¹ / ₁₆ "
203345-000	(155)	40	5	10 ⁷ / ₁₆ "	2 ¹³ / ₁₆ "	3 ¹ / ₃₂ "
203346-000	(156)	40	6	10 ⁷ / ₁₆ "	2 ¹³ / ₁₆ "	3 ³ / ₈ "
203347-000	(157)	40	7	10 ⁷ / ₁₆ "	2 ¹³ / ₁₆ "	3 ²³ / ₃₂ "
203348-000	(158)	40	8	10 ⁷ / ₁₆ "	2 ¹³ / ₁₆ "	4 ¹ / ₁₆ "
203349-000	(159)	40	9	10 ⁷ / ₁₆ "	2 ¹³ / ₁₆ "	4 ¹³ / ₃₂ "
203340-000	(160)	40	10	10 ⁷ / ₁₆ "	2 ¹³ / ₁₆ "	4 ³ / ₄ "
203351-000	(161)	50	1	13 ¹ / ₃₂ "	2 ¹³ / ₁₆ "	1 ²¹ / ₃₂ "
203352-000	(162)	50	2	13 ¹ / ₃₂ "	2 ¹³ / ₁₆ "	2"
203353-000	(163)	50	3	13 ¹ / ₃₂ "	2 ¹³ / ₁₆ "	2 ¹¹ / ₃₂ "
203354-000	(164)	50	4	13 ¹ / ₃₂ "	2 ¹³ / ₁₆ "	2 ¹¹ / ₁₆ "
203355-000	(165)	50	5	13 ¹ / ₃₂ "	2 ¹³ / ₁₆ "	3 ¹ / ₃₂ "
203356-000	(166)	50	6	13 ¹ / ₃₂ "	2 ¹³ / ₁₆ "	3 ³ / ₈ "
203357-000	(167)	50	7	13 ¹ / ₃₂ "	2 ¹³ / ₁₆ "	3 ²³ / ₃₂ "
203358-000	(168)	50	8	13 ¹ / ₃₂ "	2 ¹³ / ₁₆ "	4 ¹ / ₁₆ "
203359-000	(169)	50	9	13 ¹ / ₃₂ "	2 ¹³ / ₁₆ "	4 ¹³ / ₃₂ "
203350-000	(170)	50	10	13 ¹ / ₃₂ "	2 ¹³ / ₁₆ "	4 ³ / ₄ "

Terminal Strips — Molded Type For Main Frames

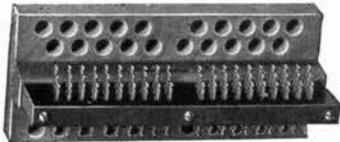
The only difference between this type of terminal strip and the

type used on XY Dial System shelves is the method of mounting. This type has four holes, counter-sunk, for bolting it to the main frame. All other features are the same.

Stock No.	Code	No. of Circuits	Terminals Per Circuit	Dimensions		
				Lgth.	Thick.	Ht.
212800-000	(180)	26	2	7 ³¹ / ₃₂ "	2 ¹ / ₃₂ "	2 ¹ / ₁₆ "
212801-000	(181)	26	3	7 ³¹ / ₃₂ "	2 ¹ / ₃₂ "	2 ¹³ / ₃₂ "
212802-000	(182)	26	4	7 ³¹ / ₃₂ "	2 ¹ / ₃₂ "	2 ³ / ₄ "
212803-000	(183)	26	5	7 ³¹ / ₃₂ "	2 ¹ / ₃₂ "	3 ³ / ₈ "
212804-000	(184)	26	6	7 ³¹ / ₃₂ "	2 ¹ / ₃₂ "	3 ⁷ / ₁₆ "
212805-000	(185)	26	7	7 ³¹ / ₃₂ "	2 ¹ / ₃₂ "	3 ²³ / ₃₂ "
212806-000	(186)	26	8	7 ³¹ / ₃₂ "	2 ¹ / ₃₂ "	4 ¹ / ₁₆ "
212807-000	(187)	26	9	7 ³¹ / ₃₂ "	2 ¹ / ₃₂ "	4 ¹³ / ₃₂ "
212808-000	(188)	26	10	7 ³¹ / ₃₂ "	2 ¹ / ₃₂ "	4 ¹³ / ₁₆ "
212809-000	(189)	26	11	7 ³¹ / ₃₂ "	2 ¹ / ₃₂ "	5 ³ / ₃₂ "
212810-000	(190)	26	12	7 ³¹ / ₃₂ "	2 ¹ / ₃₂ "	5 ¹ / ₂ "
212811-000	(191)	20	2	7 ³¹ / ₃₂ "	2 ¹ / ₃₂ "	2 ¹ / ₁₆ "
212812-000	(192)	20	3	7 ³¹ / ₃₂ "	2 ¹ / ₃₂ "	2 ¹³ / ₃₂ "
212813-000	(193)	20	4	7 ³¹ / ₃₂ "	2 ¹ / ₃₂ "	2 ³ / ₄ "
212814-000	(194)	20	5	7 ³¹ / ₃₂ "	2 ¹ / ₃₂ "	3 ³ / ₃₂ "
212815-000	(195)	20	6	7 ³¹ / ₃₂ "	2 ¹ / ₃₂ "	3 ⁷ / ₁₆ "
212816-000	(196)	20	7	7 ³¹ / ₃₂ "	2 ¹ / ₃₂ "	3 ²³ / ₃₂ "
212817-000	(197)	20	8	7 ³¹ / ₃₂ "	2 ¹ / ₃₂ "	4 ¹ / ₁₆ "
212818-000	(198)	20	9	7 ³¹ / ₃₂ "	2 ¹ / ₃₂ "	4 ¹³ / ₃₂ "
212819-000	(199)	20	10	7 ³¹ / ₃₂ "	2 ¹ / ₃₂ "	4 ¹³ / ₁₆ "
212820-000	(200)	20	11	7 ³¹ / ₃₂ "	2 ¹ / ₃₂ "	5 ³ / ₃₂ "
212821-000	(201)	20	12	7 ³¹ / ₃₂ "	2 ¹ / ₃₂ "	5 ¹ / ₂ "

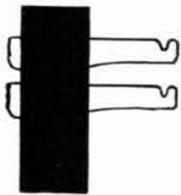
Terminal Strips—Wood Base Type

These Terminal Strips are designed for mounting on the channel irons of distributing frames. They have hard wood maple bases drilled for jumper and cable wires and an elevating strip upon which the hard rubber terminal is mounted. Standard numbering can be applied to these strips.



No. 45 Terminal Strip

Stock No.	Code	No. of Circuits	Terminals per Circuit	Dimensions		
				Lgth.	Thk.	Ht.
802400-000	(44)	20	2	7 x 3 x 2 ⁵ / ₈ "		
802401-000	(45)	20	3	7 x 2 ⁷ / ₁₆ x 3"		
802402-000	(46)	20	4	7 x 3 x 3 ¹ / ₁₆ "		
802405-000	(49)	25	2	7 x 3 x 2 ⁵ / ₈ "		



Terminal Arrangement of No. 70 and No. 71 Terminal Strips

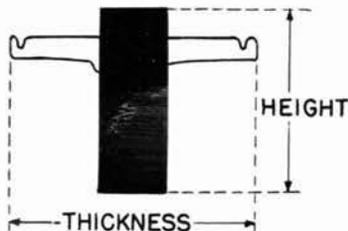


Diagram Showing Application of Dimensions

Terminal Strips—Less Base

Used for mounting on wood bases in accordance with distributing frame requirements. Terminals are made of sheet brass, with nickel finish and soldering ends tinned. Terminals are driven into hard rubber blocks and are staggered for ready wiring. The top face of the hard rubber blocks are smooth and allow the strip to be numbered for ready circuit identification.



No. 72 Terminal Strip



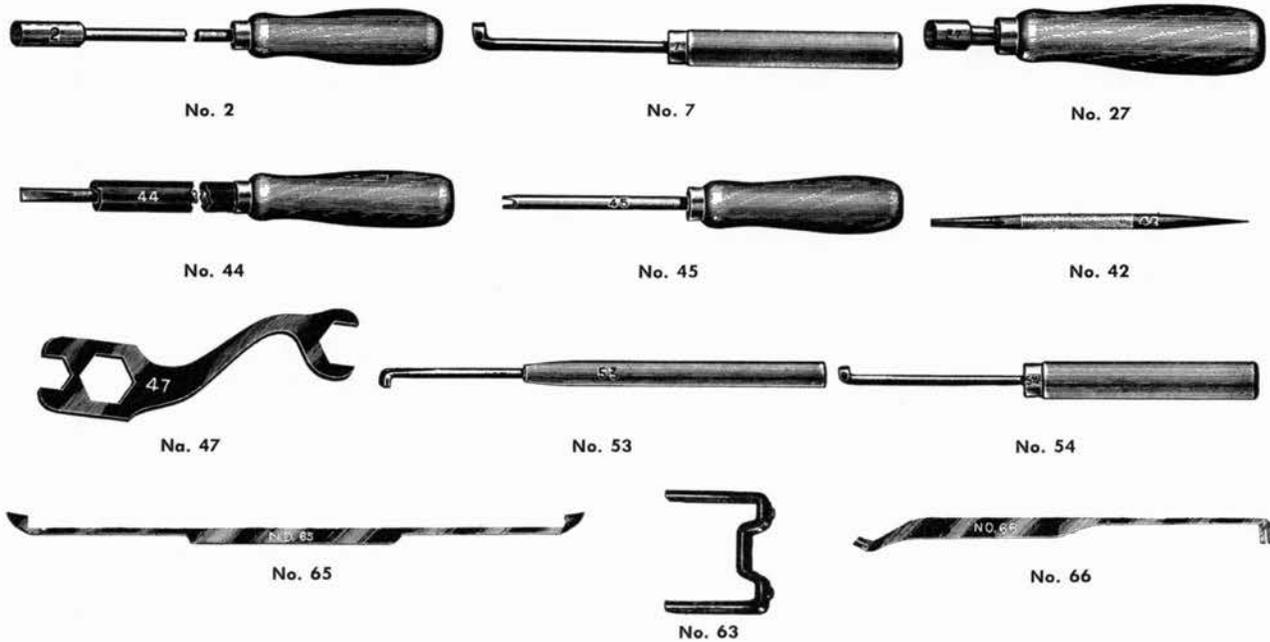
No. 79 Terminal Strip

Stock No.	Code	No. of Circuits	Terminals per Circuit	Dimensions		
				Lgth.	Thk.	Ht.
802418-000	(68)	25	2	6 ³¹ / ₃₂ x 1 ³ / ₈ x 1 ⁵ / ₁₆ "		
802420-000	(70)*	20	1	10 ⁷ / ₃₂ x 1 ¹ / ₈ x 1 ⁵ / ₁₆ "		
802421-000	(71)*	20	2	10 ⁷ / ₃₂ x 1 ¹ / ₈ x 1 ¹ / ₄ "		
802422-000	(72)	10	2	3 ²³ / ₃₂ x 1 ³ / ₈ x 1 ⁵ / ₁₆ "		
802423-000	(73)	10	3	3 ²³ / ₃₂ x 1 ¹ / ₂ x 1 ¹ / ₄ "		
802424-000	(74)	10	4	3 ²³ / ₃₂ x 1 ⁵ / ₈ x 1 ⁵ / ₁₆ "		
802425-000	(75)	10	5	3 ²³ / ₃₂ x 1 ⁵ / ₈ x 1 ³ / ₄ "		
802426-000	(76)	10	6	3 ²³ / ₃₂ x 1 ⁵ / ₈ x 2 ¹ / ₃₂ "		
802427-000	(77)	20	2	6 ³¹ / ₃₂ x 1 ³ / ₈ x 1 ⁵ / ₁₆ "		
802428-000	(78)	20	3	6 ³¹ / ₃₂ x 1 ¹ / ₂ x 1 ¹ / ₄ "		
802429-000	(79)	20	4	6 ³¹ / ₃₂ x 1 ⁵ / ₈ x 1 ¹ / ₄ "		
802430-000	(80)	20	4	6 ³¹ / ₃₂ x 1 ⁵ / ₈ x 1 ¹ / ₄ "		
802431-000	(81)	20	5	6 ³¹ / ₃₂ x 1 ⁵ / ₈ x 1 ³ / ₄ "		
802432-000	(82)	20	6	6 ³¹ / ₃₂ x 1 ⁵ / ₈ x 2 ¹ / ₃₂ "		
802438-000	(88)†	23	6	7 ¹ / ₁₆ x 1 ⁵ / ₈ x 2 ¹ / ₃₂ "		

*No. 70 and No. 71 Terminal Strips are equipped with terminals which have soldering clips on one side only. They are generally used in connection with protector strips on the arrester side of main distributing frames.

†Used in connection with multiple key turret apparatus for terminating six wire circuits, and making connections between turrets.

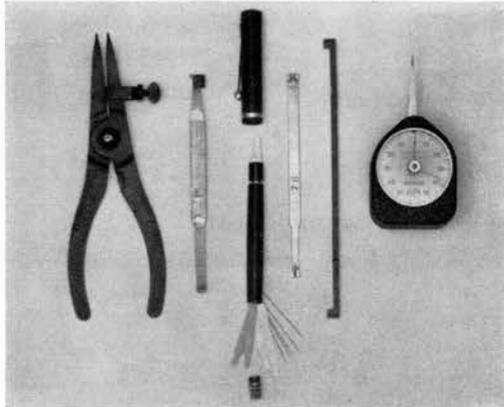
**TOOLS
FOR SWITCHBOARDS, TELEPHONES, AND MISCELLANEOUS USE**



Stock No.	Code	Description	Stock No.	Code	Description
802456-000	(2)	Socket Wrench fits the 3/8" hexagonal mounting nut of all visual signals, impedance coils and relays (except the No. 190 Type Relay). Length, 6".	802482-000	(53)	Spring Adjuster used for adjusting contact springs on the No. 360 Type Relays. Length, 3 7/8".
802457-000	(7)	Spring Adjuster used for adjusting springs up to .03" thick, on relays, keys, jacks, etc. Length, 7 3/32".	802483-000	(54)	Spring Adjuster used for adjusting No. 24 Gauge Springs on the No. 200 Type Relay. Length, 7 7/32".
802465-000	(24)	Screwdriver and Socket Wrench, used with 1/4" and 3/16" nuts and residual screws on the Nos. 200, 500 and "A" Relays.	802485-000	(56)	Small Screw Driver, for little screws such as those used on drop number plates. Length, 4 3/4".
10438-000	(36)	Spring Adjuster for No. 200 Type Relays having three sets of springs. Length, 6 1/16". For smaller pile-ups use No. 268 Spring Adjuster.	16646-000	(62)	Jack Fastener Wrench and Screw Driver similar to No. 44 but designed for No. 21 Jack Fastener. Length, 18 7/8".
12077-000	(42)	Screw Driver for removing both shell and terminal screws from standard plugs except No. 61. One end is pointed and fits in a hole drilled in top of screw, to facilitate starting of screw. Length, 3 7/8".	23877-000	(63)	Used for removing both transmitter and receiver from Nos. 15, 16, and 17 Handsets. Length, 1 1/4".
802474-000	(44)	Jack Fastener Wrench and Screw Driver used with the No. 17 Jack Fastener (Butterfly Type). Consists of a thick metal tubing, the end of which is notched to fit cut-out portion of butterfly jack fastener, and a screw driver which passes through the tubing. The screw driver tightens the screw while the tubing holds the fastener in place. Length, 19".	29372-000	(64)	Flat Wrench to adjust and assemble No. 57, 59, 60 and Stock No. 23365-000 Ringers. Two wrenches required, one for holding, other for drawing nut tight. Length, 3 3/4".
802475-000	(45)	Socket Screw Driver used for removing the Nos. 190, 200 and 300 Type Relays from the bridge plate. Length, 9".	34048-000	(65)	Spring Adjuster for use on moving springs of Nos. 500, 600, "A", "B", and "C" Relays. Length, 5 1/2".
13372-000	(47)	Flat Wrench used for adjusting No. 47 Type Harmonic Ringers. Length, 3 3/4".	34049-000	(66)	Spring Adjuster for ears of rigid springs of Nos. 500 and 600 Relays, and for heavy springs of the "A", "B", and "C" Relays. Length, 4".
			34746-000	(67)	Screw Driver for use with shell and terminal screws of No. 61 Plug. Similar to No. 42. Length, 3 25/32".
			212477-000	(69)	Jack sleeve tool for removing sleeves on Nos. 99 and 100 Jack Mountings. Length, 4 3/8".

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TOOLS (Cont.)



No. 83, No. 72, No. CB-54, No. 78, No. 100, No. 103

Stock No.	Code	Description
209442-000	(86)	X-Armature bending tool for adjusting the armature on an XY Universal Switch. Length, 5½".
209444-000	(88)	Foot bending tool used to bend the feet on the X and Y carriage on the XY Universal Switch. Length, 5".
209445-000	(89)	Z-Armature bending tool for adjusting the release magnet armature on XY Universal Switches. Length, 4".
209446-000	(90)	Y-Armature bending tool for bending the Y-Armature downward on an XY Universal Switch. Length, 1¼".
209447-000	(91)	Knu-vise for holding a magnet operated while making adjustments on an XY Universal Switch. Length, 8½".
209449-000	(93)	Slit screw driver for removing and replacing screws that are difficult to reach on the XY Universal Switch. Length, 6¾".
210187-000	(95)	Cable clip pliers for replacing the cable in the cable clip on the Y-carriage of an XY Universal Switch. Length, 6".
210188-000	(96)	Snap-ring pliers for putting on snap rings on X and Y armatures of an XY Universal Switch. Length, 6".
210189-000	(97)	Cable clip pliers for replacing the cable in the clip on the XX-X wiper rack of an XY Universal Switch. Length, 6".
211712-000	(98)	Wire stripper for stripping switchboard wire. Length, 3¾".
212013-000	(99)	Special pliers used to adjust the interrupters on the XY Universal Switch. Length, 6".
802498-000	(100)	Spring adjusting tool for springs up to .020" thick on Type "A", "B", or "C" Relays. Length, approximately 5½". Replaces former No. 268 tool.
213803-000	(102)	Gram gauge (push-pull) used for measuring contact spring pressure on the XY Universal Switch.
212756-000	(103)	Gram gauge (dial face) used for measuring contact spring pressures on Type "A", "B", or "C" Relays.
213818-000	(104)	¾" x 1¼" x 2⅞" lg. offset box wrench used in installation of XY Dial System.
213819-000	(105)	5/16" x 1¼" x 3¼" lg. offset box wrench used in installation of XY Dial System.
210195-000	(106)	Test Buzzer Assembly for continuity checking.
218169-000	(107)	Lamp Extractor for removing switchboard lamps from lamp sockets, 5/32" diameter, length, 2¼".
202132-715	(108)	Leaf gages used in adjusting "B" and "BB" Type Relays. Length, 3".
211209-000	(CB-54)	Contact burnisher for cleaning contacts on all types of relays. Length, 4¾".
201092-000	(70)	Lamp Cap extractor for all lamp caps. Length, 4¼".
36372-000	(72)	Adjusting tool for light moving springs, armature back stop, and spring clamp plate on Type "A" Relays. Length, 3¾".
36371-000	(73)	Tool for adjusting or removing Type "A" Relay pushers and spring stops. (2-3-4-5-6 steps.) Length, 1⅝".
36377-000	(74)	Adjusting tool. Same as No. 73 only for 6-7-8-9 steps. Length, 1⅝".
203401-000	(75)	Flat Wrench. For adjusting Nos. 61 and 65 Straight Line Ringers. One end (3/16") is used to adjust armature air gap and the other end (½") for loosening nuts to regulate the armature adjusting screw. Length, 3⅞".
204742-000	(76)	Cord Tip Pliers. Used on solderless type switchboard cord tips. Length, 5½".
204954-000	(77)	Thickness Gauges. For adjusting springs on the Type "A" or "C" Relays. Length, 3".
205683-000	(78)	Armature and Armature Back stop adjusting tool used on Type "C" Relays. Length, 4".
207625-000	(79)	End Wrench for use on the XY Universal Switch. Length, 2½".
2810-213-000	(82)	No. 6 Allen Wrench for loosening Allen head screws on the XY Universal Switch. Length, 1¾".
207629-000	(83)	Tru-arc pliers used to remove and replace Tru-arc rings on the tubular shaft and pinion of the XY Universal Switch. Length, 5¼".
892499-000	(84)	Heat coil pliers for use in adjusting the heat coil on older types of XY Universal Switches. Length, 6".
209441-000	(85)	Y-Armature adjusting tool for bending the Y-Armature upward on an XY Universal Switch. Length, 8⅞".

TRANSMITTERS

All Stromberg-Carlson transmitters of recent manufacture are designed for universal service and are highly efficient on common battery, magneto and dial systems under varying current conditions. These transmitters eliminate the use of separate types for different kinds of telephones service. As a result of this, maintenance cost is greatly reduced because, without servicing work being impaired, stocks can be kept at a more economical level, in as much as one transmitter will do the work of two.

No. 29 Transmitter



This is a handset transmitter, capsule type, that is designed to fit handsets on the 1500 Series Telephone (No. 26, No. 28 handsets). The No. 29 Transmitter is a re-designed unit that is smaller in size than previous transmitter capsules and, due to the use of new age-stabilized carbon, its life has been greatly increased.

Replacement is easily accomplished through the simple procedure of unscrewing the mouthpiece, removing the old transmitter, dropping the new capsule into the cavity, and screwing the mouthpiece in place.

An adapter (Stock No. 212705-000) is available to permit usage of this capsule transmitter in No. 23 handsets (1200 and 1400 Series Telephones).

Features

CAPSULE TYPE—This non-positional type of transmitter is ready for instant use when it is dropped into the transmitter cavity and held in place by the mouthpiece.

LONGER LIFE—is assured by the use of new age-stabilized carbon in the capsule unit.

HIGH IN FIDELITY—on both long and short lines. Reproduces the voice naturally and retains the clear articulation demanded by modern telephone practice.

CONTACT SPRINGS—are silver-plated to provide reliable connections when the transmitter is in position and the mouthpiece is screwed down tight.

Stock No.	Code	Description	Telephones Used On
210279-000	(29)	Capsule Type Transmitter	1500 Series Telephones
211969-000	(30)	Capsule Type Transmitter	1500-W Telephones and 1600 Telephones

No. 27 Transmitter

This transmitter is used in older handsets (No. 12 through No. 19).

Stock No.	Code	Description
205784-000	(27)	Capsule Type Transmitter unit

No. 205784-000 Type for Ironclad Telephones

This is a No. 27 transmitter—less the back—and with a special front having a threaded opening for a separate mouthpiece, instead of the moulded mouthpiece-front in one unit. Stock No. 205784-000 transmitter is designed for mounting in the inner compartments of the No. 890 (magneto) and No. 950 (Common Battery) ironclad telephones.

Stock No.	Code	Description
209624-000		Transmitter Assembly, including
205784-000	(27)	Transmitter (Less back and mouthpiece)
209623-000		Mouthpiece (Threaded)

**No. 22 Operator's Suspended Type
(Used with Head Band Receiver)**

This transmitter is of the same construction as the No. 20 telephone type except that the back has bushed openings for suspension from an adjustable arm by means of two single conductor cords.

The No. 22 is an universal transmitter that replaces both the No. 8-CW (Common Battery) and No. 8-L (Magneto) operator's suspended type.

Stock No.	Code	Description
802525-000	(22)	Suspended transmitter complete with back (universal)

Assembly Parts

205784-000	(27)	Transmitter, less back
26791-000		Transmitter, less back and mouthpiece
25600-000		Mouthpiece-front (combined)
9819-000		Back

To complete the suspended type operator's set, the following apparatus is used with the No. 22 type transmitter.

Stock No.	Code	Description
801592-000	(29)	Receiver with headband, less cord
800632-000	(O-1-A)	5' Transmitter Cord

GENERAL INDEX

A complete alphabetical index with cross references for all the products shown in this section or any of the other sections will be found at the rear of this catalog.

Revised 1-1-61

Transmitter Adapters

Stromberg-Carlson desk stand and wall set type transmitters (Present No. 20 and former No. 7 Types) can be mounted on many telephone arms of other makes without the use of adapters. In such cases the current No. 20 Type or replaced No. 7 Type is used with standard Stock No. 12038-000 Back and Stock No. 9077-000 Washer.

When No. 20 or No. 7 Transmitter with back is to be mounted to desk stands, use Stock No. 13073-000 Adapter.

Either by means of direct application or the use of adapters, Stromberg-Carlson transmitters will mount on many types of wall set and desk stand telephone arms of the following makes: American Electric, Automatic Electric, Century, Dean, Garford, Kellogg, Leich, Monarch, North, Western Electric.

No. 20 Transmitter

Wall and Desk Stand Type

The No. 20 transmitter is used on older wall and desk stand telephones.

The front and mouthpiece of the No. 20 transmitter are combined in a single unit of molded black phenol compound which will withstand severe usage without breaking. A permanent finish also assures continued good appearance in actual service.

Stock No.	Code	Description
802522-000	(20)	Transmitter complete with back and mouthpiece
26791-000		No. 20-less back
205784-000	(27)	Transmitter capsule
25600-000		Mouthpiece-front only (No. 20)
12038-000		Back (Black)—No. 20
9077-000		Washer (Back)—No. 20
505255-000		Screw (2) Back to arm—No. 20
500155-000		Screw (4) Body to back—No. 20

VISUAL SIGNALS



No. 18 Visual Signal
on No. 121 Mounting

The No. 18 Type is a compact visual signal used as a "Busy Signal" on toll switchboards. Mounts similarly to jack strips. When operated, the signal appears white through a small window in the mounting. Each mounting is equipped with a designation strip.

The No. 18-A is used on systems operating from 11 cells of storage battery, and the No. 18-B is used on 20 cells. Requires No. 17 Jack Fastener.

Visual Signal Mountings

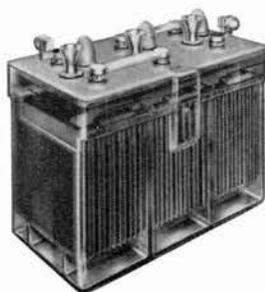
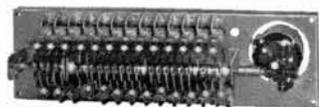
Mtg. No.	Visuals per Strip	Face Length	Face Width	Mtg. Centers
120	20	10 ³ / ₈ "	1"	11 ¹ / ₁₆ "
121	10	10 ³ / ₈ "	1"	11 ¹ / ₁₆ "
122	10	7 ¹ / ₃₂ "	1"	8 ³ / ₈ "

No. 18 Visuals Mounted

Stock No.	Code	Mounting	Resist. Ohms	Used with
49871-000	(18-A)	Visual 120	1700	11 Cell Systems
49872-000	(18-A)	Visual 121	1700	11 Cell Systems
49873-000	(18-A)	Visual 122	1700	11 Cell Systems
49874-000	(18-B)	Visual 120	1700	20 Cell Systems
49875-000	(18-B)	Visual 121	1700	20 Cell Systems
49876-000	(18-B)	Visual 122	1700	20 Cell Systems

STROMBERG-CARLSON

Power and Test Equipment



Accessories to central office equipment, such as batteries, chargers, and ringing machines are described here. Also portable test units, recommended for dial system maintenance.

POWER AND TEST EQUIPMENT

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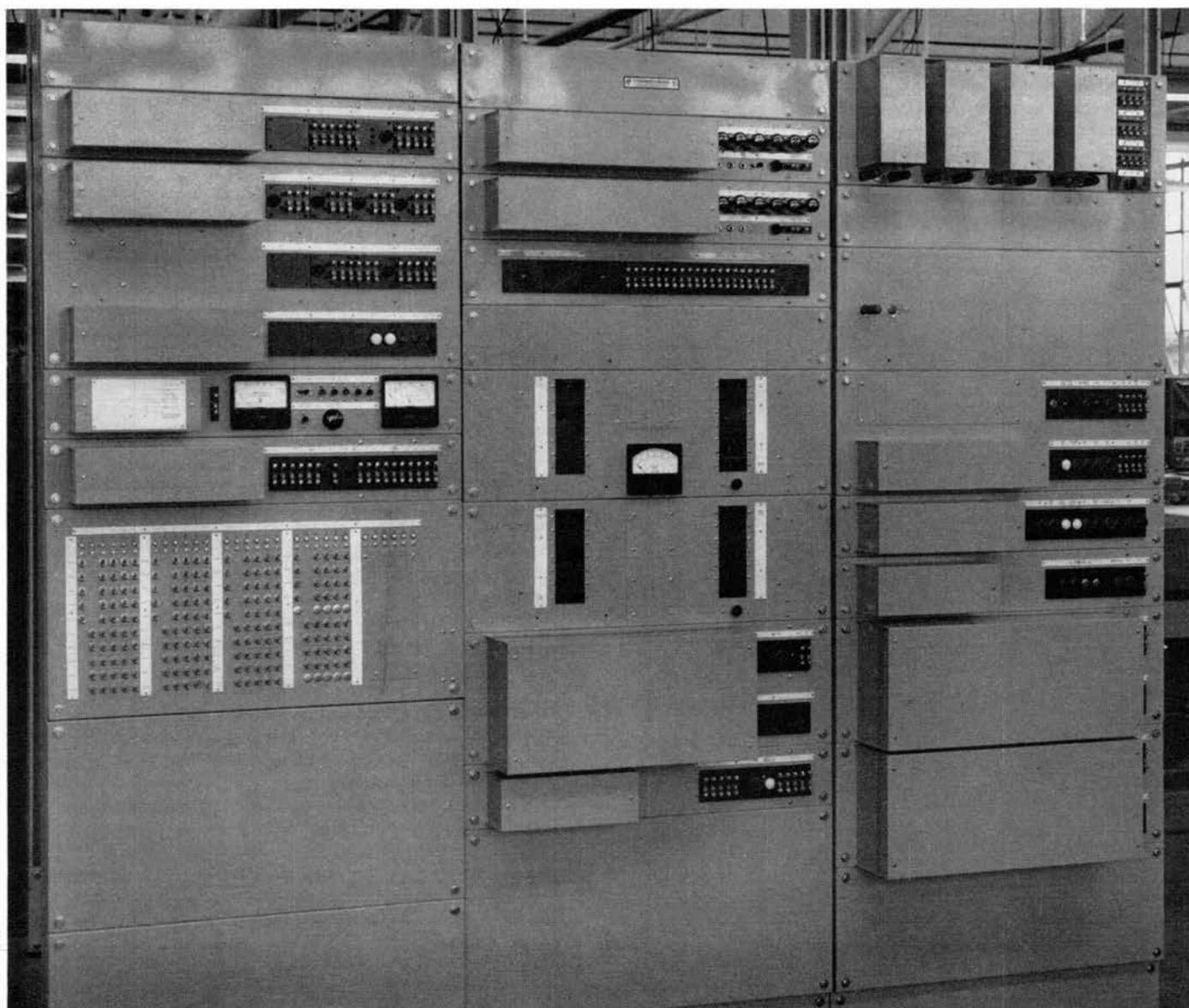
STROMBERG-CARLSON POWER and TEST EQUIPMENT

Functional Versatility

Power Boards must reflect the operational differences to be found in each central office. Stromberg-Carlson pioneered the rack-mounted, unit type power board which makes it easier both to order exactly what is desired and to make additions or changes to take care of growth when it occurs.

Preventative Maintenance

Test Equipment, designed to make routining both easy and dependable, is available for the central office of any size and type. Such equipment, properly used, represents a sound business investment.



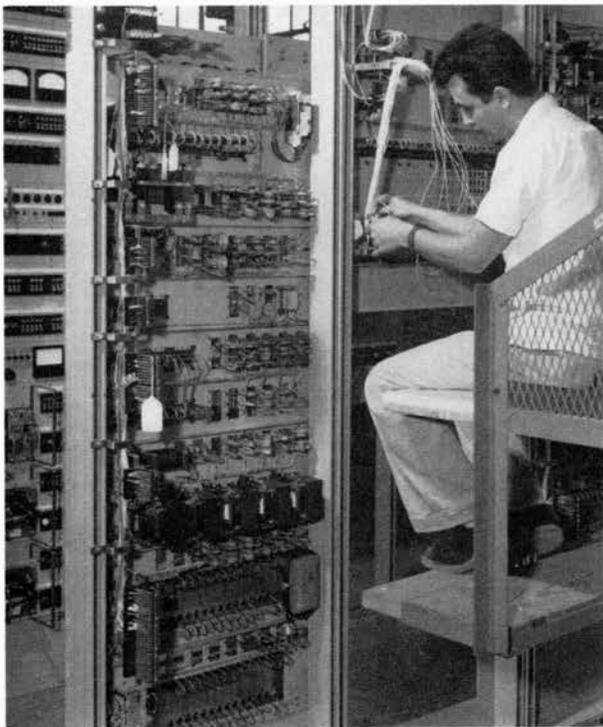
POWER AND SUPERVISORY BOARDS

Stromberg-Carlson Power Boards can be designed and arranged to fit any size of central office—large or small—with equal effectiveness and still have ample room for future growth. This board matches XY Dial System equipment in overall appearance and flexibility. All controls are placed for easy identification and operation.

The essentially new feature of the Stromberg-Carlson Power Board is its flexibility. In assembly, in operation and in future expansion, changes and enlargement of service are not a problem of complete rebuilding, but a simple matter of sliding out one unit and sliding in another. Units can be provided to fit any type of dial equipment, method of charging or type of ringing.

Outstanding Features

1. Frame construction, with identical uprights arranged for mounting any basic unit in any position.
2. The "Unit Control Panel" of functional operations will be selected for individual needs; other panels will then be built up around basic control unit.
3. Motor-Generator or dry disc rectifier for charging batteries may be used.
4. End cell or counter cell battery control may be used.
5. The interrupter machine provides "jacked in" springs and motor. These parts can be readily removed from face of machine without disturbing any wiring.
6. Tone Generator panel provides basic tones for Dial, Busy and Tick. Provision is made for adding the second tone panel when needed.
7. Common Supervisory control panel provides common alarm signals in one location.
8. Locates and types service interruptions.



Power Board Assembly

The illustration at left shows clearly three power frames. The frame on the left constitutes the power and supervisory board for a small XY dial office. The panels on this frame, from top to bottom, are as follows:

1. Combination battery discharge and distribution panel with the main circuit breaker at top center, the distribution circuit breakers on the left. The cutouts on the right are for a voltmeter and an ammeter. Supplies main battery to the office.
2. and 3. Tone generator panels, regular and stand-by, to supply necessary dial tone, busy tone, etc. for the office.
4. Common supervisory panel indicates alarm conditions in the office by means of audible and visual signals. The lamps in the face of the panels give the various visual indications. Also provides for alarm sending and checking during unattended periods.
5. Ringing control panel provides ringing current for the office from an AC operated source during normal operation and automatically cuts in a DC operated source during commercial power failure or failure of the AC source.
6. Space for future equipment.
7. Five frequency vibrator converter panel operates from a DC source to supply the five frequency ringing current mentioned above.
8. and 9. Interrupter panels; one with an AC motor, the other with a DC motor to supply interruptions for tones, alarm timing, etc. Automatically cuts in the DC interrupter during commercial power failure or failure of the AC interrupter.
10. Kick plate or bottom angle.

The second and third frames from the left constitute the power and supervisory board for a larger XY Dial Office. The panels on the second frame, from top to bottom, are as follows:

1. Space for future equipment.
2. A specially designed panel for this job to indicate permanent alarms in the office equipment. (Note use of regular equipment panel and apparatus arrangement for this special requirement.)
3. Tone generator panel identical to the regular tone panel provided for the smaller office.
4. Space for future stand-by tone panel.
5. Common supervisory panel similar to the common supervisory panel provided for the smaller office.
6. A special interrupter marking panel, for the single frequency code ringing used on this job, locates and has provision for isolating the ringing faults. (Note again the use of regular equipment and apparatus arrangement for this special requirement.)
7. Common marking alarm panel to bring in an alarm from the interrupter marking panel after a predetermined time.
8. Ringing control panel for the control of the AC and DC operated ringing sources, with the DC ringing source being a single frequency vibrator converter mounted on the same panel, operates similar to the ringing control panel for the smaller office.

POWER AND SUPERVISORY BOARDS (Cont.)

9. Duplicate AC and DC interrupters similar to those used on the smaller office.

10. Kick plate or bottom angle.

The panels on the third frame are as follows:

1. The main fuse panel.
2. Space for future equipment.
3. Charger transfer panel for switching charger across either 23 or 26 cells of batteries.
4. Space for future charger transfer panel.
5. Discharge panel supplies main battery to the distribution circuits and gives necessary voltage indications and current readings as follows:
 - (a) the current charging the main battery or the current the main battery is supplying to the equipment, whichever is taking place.
 - (b) the current being supplied to the equipment from the battery and the charger.
6. Voltage control panel automatically controls the operation

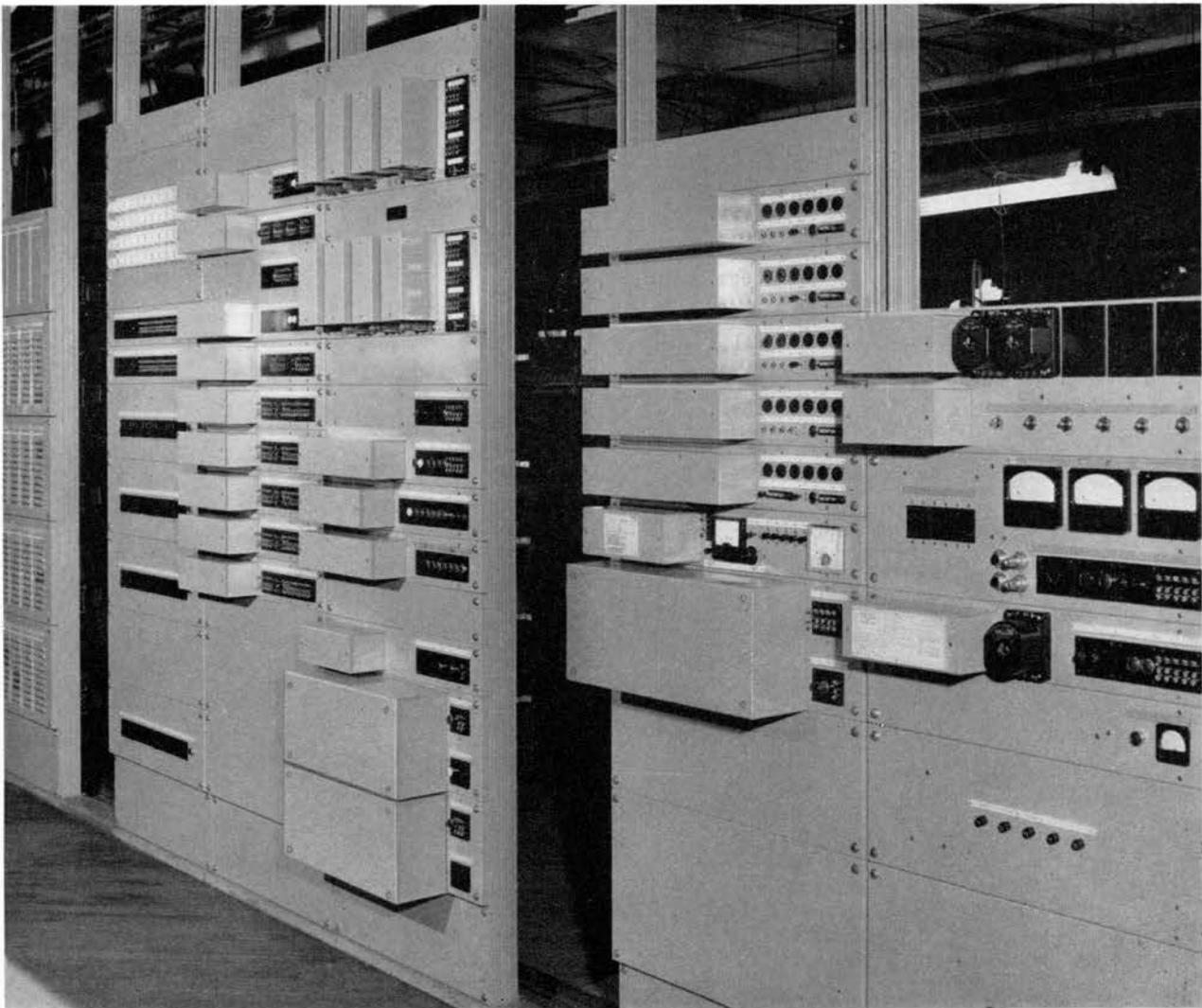
of the end cell switch by means of a voltage sensitive relay which cuts in three additional cells of battery when the main 23 cell battery voltage drops below a predetermined level.

7. End cell switch switches main battery from 23 to 26 cells as mentioned in preceding paragraph.

8. and 9. Space for future equipment.

10. Kick plate or bottom angle.

The general structure of these two power and supervisory boards is similar. The panels can be mounted on the frame or frames in any desirable arrangement. Panels are wired together by means of jumper wire through jumper rings on the rear of the frames. As can be seen by the photograph; frames, panel mountings, covers, apparatus arrangements, and, in some cases, entire panels are similar whether the power and supervisory board is required for a small or large office. The chargers are usually mounted on identical frames located adjacent to the power and supervisory board.



A Typical Power and Supervisory Panel

Revised 9-1-58

STORAGE BATTERIES

Stromberg-Carlson recommends the use of storage batteries for three main purposes:

MAIN BATTERY which is required to provide the main or standby current supply for transmission, signalling and general operation of circuit apparatus.

BOOSTER BATTERY which is required to increase the voltage for toll transmission when the main battery is 11 or 12 cells. When machine ringing is employed this battery is generally used for tripping the ringing.

CONVERTER BATTERY is required to operate the ringing converter. When used separately, this battery maintains the voltage within narrow limits thereby keeping the ringing voltages steady. It also prevents ringing induction from noising the main talking battery. This battery is usually 12 cells of the couple type.

The desirable size for the main battery is dependent upon the number of lines, the calling rate, the answering time, conversation period, time of restoring cords and the reliability of local commercial power supply.

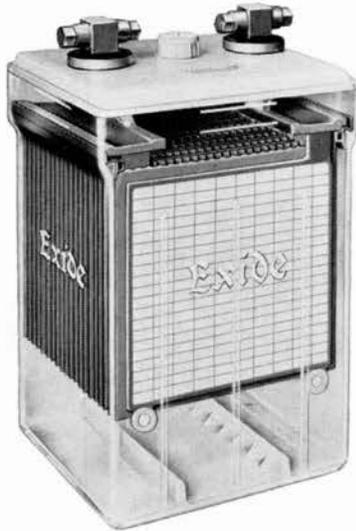
Modern methods applied to the use of storage batteries for

telephone exchanges, employ charging equipment of a noiseless character and usually of a type which is automatic or semi-automatic in operation. By these methods the battery is kept constantly charged and the load is taken directly off the charging machine. Thus the battery, bridged across the load, acts as a "standby" source of power when the city current is interrupted or when a sudden surge in the load demands more current than the charging equipment can supply. The usual method of estimating capacity is to select a battery that will supply the normal load over a period of twenty-four hours.

Booster and Converter Batteries are usually the enclosed couple type group of cells. Main exchange batteries require greater capacity and are chosen from the multiple plate groups. Exide, Gould and C & D are standard makes of high grade batteries suitable for use in telephone exchange service. These batteries are available in one, two or three cells, and in glass cases, plastic cases or molded rubber cases. Technical data, over-all dimensions and weights in Exide, Gould and C & D batteries are given on the following pages.



STROMBERG-CARLSON



Type EOP



Type FOP

**EXIDE-TYTEX BATTERIES
IN PLASTIC CONTAINERS**

TYPES DOP, EOP, FOP

Technical Data, Overall Dimensions, and Weights

Type of Cell	Cells Per Unit	CAPACITY AT 77°F					Overall Dimensions of Unit in Inches			Approximate Weight Per Unit in Lbs.		Electrolyte Gallons Per Unit
		Ampere Hour at 8 Hr. Rate to *1.75 F.V.	Amperes Per Hour For 8 Hours to *1.75 F.V.	5 Hour Discharge Rate in Amperes Per Hour			Length	Width	Height	Net	Packed	
				For 23 Cells to 44 F.V.	For 24 Cells to 44 F.V.	For 26 Cells to 45 F.V.						
DOP-5	1	50	6.25	6.24	7.9	8.9	3 1/8	7 1/2	13 7/16	21	26	.57
DOP-7	1	75	9.375	9.36	11.8	13.4	4 1/8	7 1/2	13 7/16	27	33	.81
DOP-9	1	100	12.5	12.48	15.8	17.9	5 1/8	7 1/2	13 7/16	34	41	1.04
2-EOP-7	2	120	15.0	15.45	19.1	21.5	6 1/8	10 1/8	17	77	93	2.40
3-EOP-7	3	120	15.0	15.45	19.1	21.5	10 1/4	10 1/8	17	119	141	3.61
EOP-9	1	160	20.0	20.6	25.4	28.7	4 1/2	10 1/8	17	49	57	1.46
EOP-11	1	200	25.0	25.75	31.8	35.9	5 1/2	10 1/8	17	61	71	1.75
EOP-13	1	240	30.0	30.9	38.1	43.1	6 3/8	10 1/8	17	76	91	2.50
EOP-15	1	280	35.0	36.0	44.5	50.3	6 3/8	10 1/8	17	81	96	2.40
EOP-17	1	320	40.0	41.2	50.8	57.4	6 3/8	10 1/8	17	86	101	2.31
EOP-19	1	360	45.0	46.3	57.2	64.6	8 1/2	10 1/8	17	100	120	3.04
EOP-21	1	400	50.0	51.5	63.5	71.8	8 1/2	10 1/8	17	105	125	2.95
FOP-13	1	469	58.6	61.2	75.8	85.8	7 1/2	14 1/2	22 3/16	146	160	5.18
FOP-15	1	547	68.4	71.4	88.5	100.1	7 1/2	14 1/2	22 3/16	154	168	5.00
FOP-17	1	626	78.2	81.6	101.1	114.4	7 1/2	14 1/2	22 3/16	162	176	4.81
FOP-19	1	704	88.0	91.8	113.8	128.7	8 3/4	14 1/2	22 3/16	191	209	6.38
FOP-21	1	782	97.7	102.0	126.4	143.0	8 3/4	14 1/2	22 3/16	199	217	6.20
FOP-23	1	860	107.5	112.2	139.0	157.3	10 2 1/2	14 1/2	22 3/16	227	246	7.59
FOP-25	1	938	117.25	122.4	151.7	171.6	10 2 1/2	14 1/2	22 3/16	235	254	7.40
FOP-27	1	1017	124.6	132.6	164.3	185.9	13 3/16	14 1/2	22 3/16	274	296	9.72
FOP-29	1	1095	136.9	142.8	177.0	200.2	13 3/16	14 1/2	22 3/16	283	305	9.53
FOP-31	1	1173	146.6	153.0	189.6	214.5	13 3/16	14 1/2	22 3/16	291	313	9.35

*Includes the resistance drop across the standard inter-cell connectors in series with the cell.

These Exide-Tytex batteries are assembled in heat-resistant, shock absorbing polystyrene containers and covers. The containers and covers are cemented together to form a permanent leak-proof bond against seepage of acid.

The insulation in these batteries consists of microporous rubber separators and Vitrex retainers. DOP and EOP types have two terminal posts. FOP types have four terminal posts. EOP-11 cells and larger have copper inserts to provide an ample electrical path for high current requirements at maximum sustained voltages. Burned seal ring construction in all sizes assures complete freedom from creepage of acid. Ample electrolyte is pro-

vided to enable the cells to deliver all rated capacities. Large sediment spaces are built into all sizes to take care of even the most severe cycle service.

Cells are furnished with necessary connector bolts and lead-plated copper inter-cell connectors for 1/2" spacing between cells. For Railway Signal service, cells are furnished with connector bolts and flexible braided tinned copper inter-cell connectors. Exide-Tytex batteries are also available with lead-calcium alloy type plates for controlled full float operation.

Full charge specific gravity 1.200-1.220.

STROMBERG-CARLSON

Revised 2-1-62



Type EMP

EXIDE-MANCHEX BATTERIES WITH SILVIUM IN PLASTIC CONTAINERS

TYPE DMP, EMP, FMP



Type FMP

Technical Data, Overall Dimensions, and Weights

Type of Cell	Cells Per Unit	CAPACITY AT 77°F					Overall Dimensions of Unit in Inches			Approximate Weight Per Unit in Lbs.		Electrolyte Gallons Per Unit
		Ampere Hour at 8 Hr. Rate to *1.75 F.V.	Amperes Per Hour For 8 Hours to *1.75 F.V.	5 Hour Discharge Rate in Amperes Per Hour			Length	Width	Height	Net	Packed	
				For 23 Cells to 44 F.V.	For 24 Cells to 44 F.V.	For 26 Cells to 45 F.V.						
DMP-5	1	40	5.0	5.3	6.5	7.3	3 $\frac{1}{8}$	7 $\frac{1}{2}$	13 $\frac{5}{16}$	23	28	.55
DMP-7	1	60	7.5	8.0	9.75	11.0	4 $\frac{1}{8}$	7 $\frac{1}{2}$	13 $\frac{5}{16}$	31	37	.78
DMP-9	1	80	10.0	10.7	13.0	14.6	5 $\frac{1}{8}$	7 $\frac{1}{2}$	13 $\frac{5}{16}$	39	46	1.0
2-EMP-5	2	80	10.0	10.4	12.9	14.6	6 $\frac{1}{4}$	10 $\frac{1}{8}$	17	79	95	2.48
3-EMP-5	3	80	10.0	10.4	12.9	14.6	10 $\frac{1}{4}$	10 $\frac{1}{8}$	17	124	146	3.72
EMP-7	1	120	15.0	15.6	19.3	21.9	4 $\frac{1}{2}$	10 $\frac{1}{8}$	17	54	62	1.47
EMP-9	1	160	20.0	20.8	25.7	29.3	5 $\frac{1}{2}$	10 $\frac{1}{8}$	17	69	79	1.72
EMP-11	1	200	25.0	26.0	32.2	36.6	6 $\frac{1}{8}$	10 $\frac{1}{8}$	17	87	102	2.44
EMP-13	1	240	30.0	31.2	38.6	43.9	6 $\frac{1}{2}$	10 $\frac{1}{8}$	17	95	110	2.31
EMP-15	1	280	35.0	36.4	44.1	51.2	8 $\frac{1}{2}$	10 $\frac{1}{8}$	17	113	133	3.02
EMP-17	1	320	40.0	41.6	50.5	58.5	10 $\frac{1}{4}$	10 $\frac{1}{8}$	17	131	153	3.73
EMP-19	1	360	45.0	46.8	56.9	65.9	10 $\frac{1}{4}$	10 $\frac{1}{8}$	17	141	163	3.58
FMP-11	1	415	51.9	54.0	66.5	75.1	7 $\frac{1}{2}$	14 $\frac{1}{2}$	22 $\frac{3}{16}$	172	186	5.09
FMP-13	1	498	62.25	64.8	79.8	90.2	7 $\frac{1}{2}$	14 $\frac{1}{2}$	22 $\frac{3}{16}$	187	201	4.81
FMP-15	1	581	72.6	75.6	93.1	105.2	8 $\frac{1}{2}$	14 $\frac{1}{2}$	22 $\frac{3}{16}$	222	240	6.20
FMP-17	1	664	83.0	86.4	106.4	120.2	10 $\frac{1}{2}$	14 $\frac{1}{2}$	22 $\frac{3}{16}$	257	276	7.59
FMP-19	1	747	93.4	97.2	119.7	135.2	10 $\frac{1}{2}$	14 $\frac{1}{2}$	22 $\frac{3}{16}$	273	292	7.41
FMP-21	1	830	103.75	108.0	133.0	150.3	13 $\frac{3}{16}$	14 $\frac{1}{2}$	22 $\frac{3}{16}$	318	340	9.62
FMP-23	1	913	114.1	118.8	146.3	165.3	13 $\frac{3}{16}$	14 $\frac{1}{2}$	22 $\frac{3}{16}$	333	355	9.35
FMP-25	1	996	124.5	129.6	159.6	180.3	13 $\frac{3}{16}$	14 $\frac{1}{2}$	22 $\frac{3}{16}$	348	370	9.07

*Includes the resistance drop across the standard inter-cell connectors in series with the cell.

These Exide-Manchex batteries, equipped with manchester Planté positive plates, are assembled in heat-resistant, shock-absorbing polystyrene containers and covers. The containers and covers are cemented together to form a permanent leak-proof bond against seepage of acid.

The insulation in these batteries consists of microporous separators combined with molded one-piece polystyrene dowels. DMP and EMP types have two terminal posts. FMP types have four terminal posts. EMP-9 cells and larger have copper inserts to provide an ample electrical path for high current requirements at maximum sustained voltages. Burned seal ring con-

struction in all sizes assures complete freedom from creepage of acid. Ample electrolyte is provided to enable the cells to deliver all rated capacities. Large sediment spaces are built into all sizes to take care of even the most severe cycle service.

Cells are furnished with necessary connector bolts and lead-plated copper inter-cell connectors for $\frac{1}{2}$ " spacing between cells. For Railway Signal service, cells are furnished with connector bolts and flexible braided tinned copper inter-cell connectors.

Full charge specific gravity 1.200-1.220.

EXIDE BATTERIES IN PLASTIC CONTAINERS

TYPE PLX, PWA



Type PWA



Type PLX

Technical Data, Overall Dimensions, and Weights

Type of Cell	Cells Per Unit	CAPACITY AT 77°F					Overall Dimensions of Unit in Inches			Approximate Weight Per Unit in Lbs.		Electrolyte Gallons Per Unit
		Ampere Hour at 8 Hr. Rate to *1.75 F.V.	Amperes Per Hour For 8 Hours to *1.75 F.V.	5 Hour Discharge Rate in Amperes Per Hour			Length	Width	Height	Net	Packed	
				For 23 Cells to 44 F.V.	For 24 Cells to 44 F.V.	For 26 Cells to 45 F.V.						
2-PWA-7	2	50	6.25	6.5	8.0	8.9	4 1/2	7 5/8	10 1/8	22	31	.52
3-PWA-7	3	50	6.25	6.5	8.0	8.9	6 7/8	7 5/8	10 1/8	32	42	.78
2-PWA-13	2	100	12.5	13.0	16.0	17.8	7 3/4	7 5/8	10 1/8	38	51	1.1
3-PWA-13	3	100	12.5	13.0	16.0	17.8	11 3/8	7 5/8	10 1/8	57	72	1.52

*Cell final volts at all discharge ratings include the resistance drop across a standard intercell connector in series with the cell.

These new Exide batteries are assembled in two and three compartment plastic containers. Pilot ball assemblies are not furnished in PWA units.

All PWA types have double insulation consisting of Micro-porous separators and Vitrex retainers.

All PWA types can be furnished charged and wet (C&W) or dry charged (DC). Dry types require 1.200 Sp. Gr. electrolyte for

filling.

Batteries come equipped with plastic vent caps and gas cylinder vent-filling funnels which are a part of the built-in explosion control feature.

Terminals are fitted with connector bolts. Inter-unit connectors are furnished when two or more units are ordered.

Full charge specific gravity, 1.200-1.220.

Type of Cell	Cells Per Unit	CAPACITY AT 77°F					Overall Dimensions of Unit in Inches			Approximate Weight Per Unit in Lbs.		Electrolyte Gallons Per Unit
		Ampere Hour at 8 Hr. Rate to *1.75 F.V.	Amperes Per Hour For 8 Hours to *1.75 F.V.	5 Hour Discharge Rate in Amperes Per Hour			Length	Width	Height	Net	Packed	
				For 23 Cells to 44 F.V.	For 24 Cells to 44 F.V.	For 26 Cells to 45 F.V.						
2-PLX-7	2	50	6.25	6.5	8.0	8.9	4 1/2	7 5/8	10 1/8	24	33	.52
3-PLX-7	3	50	6.25	6.5	8.0	8.9	6 7/8	7 5/8	10 1/8	36	46	.78
2-PLX-13	2	100	12.5	13.0	16.0	17.8	7 3/4	7 5/8	10 1/8	41	54	1.1
3-PLX-13	3	100	12.5	13.0	16.0	17.8	11 3/8	7 5/8	10 1/8	61	76	1.52

*Cell final volts at all discharge ratings includes the resistance drop across a standard intercell in series with the cell.

These Exide batteries are assembled in two and three compartment plastic containers. Each two-cell unit is equipped with one set of pilot balls and each three-cell unit with two sets of pilot balls, one being visible from either side of the battery to indicate approximate state of charge.

All PLX types have double insulation consisting of Micro-porous separators and Vitrex retainers.

All PLX types can be furnished charged and wet (C&W), un-

charged and dry (U&D), or charged and dry (C&D). Dry types require 1.200 Sp. Gr. electrolyte for filling.

Batteries come equipped with plastic vent caps and gas cylinder vent-filling funnels which are a part of the built-in explosion control feature.

Terminals are fitted with connector bolts. Inter-unit connectors are furnished when two or more units are ordered.

Full charge specific gravity, 1.200-1.220.

Revised 2-1-62

EXIDE CALCIUM BATTERIES IN PLASTIC CONTAINERS TYPE DCP, ECP, EW, FW



Type DCP



Type EW



Type FW

Technical Data, Overall Dimensions, and Weights TYPE DCP, ECP

Type of Cell	Cells Per Unit	CAPACITY AT 77°F					Overall Dimensions of Unit in Inches			Approximate Weight Per Unit in Lbs.		Electrolyte Gallons Per Unit
		Ampere Hour at 8 Hr. Rate to *1.75 F.V.	Amperes Per Hour For 8 Hours to *1.75 F.V.	5 Hour Discharge Rate in Amperes Per Hour			Length	Height	Width	Net	Packed	
				For 23 Cells to 44 F.V.	For 24 Cells to 44 F.V.	For 26 Cells to 45 F.V.						
DCP-5	1	50	6.25	6.24	7.9	8.9	3 ³ / ₈	7 ¹ / ₂	13 ⁷ / ₈	21	26	.57
DCP-7	1	75	9.375	9.36	11.8	13.4	4 ¹ / ₈	7 ¹ / ₂	13 ⁷ / ₈	27	33	.81
DCP-9	1	100	12.5	12.48	15.8	17.9	5 ¹ / ₈	7 ¹ / ₂	13 ⁷ / ₈	34	41	1.04
2-ECP-7	2	120	15.0	15.45	19.1	21.5	6 ⁷ / ₈	10 ¹ / ₈	17	77	93	2.40
3-ECP-7	3	120	15.0	15.45	19.1	21.5	10 ¹ / ₄	10 ¹ / ₈	17	119	141	3.61
ECP-9	1	160	20.0	20.6	25.4	28.7	4 ¹ / ₂	10 ¹ / ₈	17	49	57	1.46
ECP-11	1	200	25.0	25.75	31.8	35.9	5 ¹ / ₂	10 ¹ / ₈	17	61	71	1.75
ECP-13	1	240	30.0	30.9	38.1	43.1	6 ⁷ / ₈	10 ¹ / ₈	17	76	91	2.50
ECP-15	1	280	35.0	36.0	44.5	50.3	6 ⁷ / ₈	10 ¹ / ₈	17	81	96	2.40
ECP-17	1	320	40.0	41.2	50.8	57.4	6 ⁷ / ₈	10 ¹ / ₈	17	86	101	2.31
ECP-19	1	360	45.0	46.3	57.2	64.6	8 ¹ / ₂	10 ¹ / ₈	17	100	120	3.04
ECP-21	1	400	50.0	51.5	63.5	71.8	8 ¹ / ₂	10 ¹ / ₈	17	105	125	2.95

TYPES EW, FW

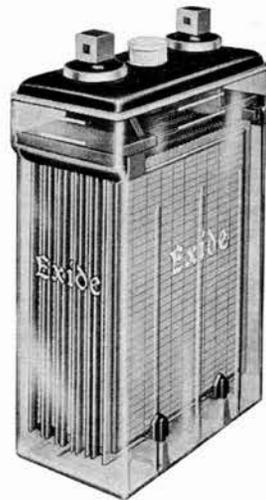
Type of Cell	Cells Per Unit	CAPACITY AT 77°F					Overall Dimensions of Unit in Inches			Approximate Weight Per Unit in Lbs.		Electrolyte Gallons Per Unit
		Ampere Hour at 8 Hr. Rate to *1.75 F.V.	Amperes Per Hour For 8 Hours to *1.75 F.V.	5 Hour Discharge Rate in Amperes Per Hour			Length	Width	Height	Net	Packed	
				For 23 Cells to 44 F.V.	For 24 Cells to 44 F.V.	For 26 Cells to 45 F.V.						
2-EW-7	2	180	22.5	22.5	28.2	32.1	6 ⁷ / ₈	10 ¹ / ₈	18 ¹ / ₄	86	102	1.88
3-EW-7	3	180	22.5	22.5	28.2	32.1	10 ¹ / ₄	10 ¹ / ₈	18 ¹ / ₄	129	149	2.83
EW-9	1	240	30.0	30.0	37.6	42.8	4 ¹ / ₂	10 ¹ / ₈	18 ¹ / ₄	54	64	1.19
EW-11	1	300	37.5	37.5	47.0	53.4	5 ¹ / ₂	10 ¹ / ₈	18 ¹ / ₄	67	77	1.43
EW-13	1	360	45.0	45.0	56.4	64.1	6 ⁷ / ₈	10 ¹ / ₈	18 ¹ / ₄	84	100	2.03
EW-15	1	420	52.5	52.5	65.9	74.8	6 ⁷ / ₈	10 ¹ / ₈	18 ¹ / ₄	89	105	1.93
EW-17	1	480	60.0	60.0	75.2	85.5	8 ¹ / ₂	10 ¹ / ₈	18 ¹ / ₄	105	123	2.54
EW-19	1	540	67.5	67.5	84.7	96.2	8 ¹ / ₂	10 ¹ / ₈	18 ¹ / ₄	110	128	2.42
EW-21	1	600	75.0	75.0	94.0	106.9	10 ¹ / ₄	10 ¹ / ₈	18 ¹ / ₄	127	147	3.05
EW-23	1	660	82.5	82.5	103.5	117.6	10 ¹ / ₄	10 ¹ / ₈	18 ¹ / ₄	132	152	2.92
FW-15	1	840	105.0	105.0	131.8	149.6	7 ¹ / ₂	14 ¹ / ₂	23	169	187	3.61
FW-19	1	1080	135.0	135.0	169.5	192.3	8 ¹ / ₂	14 ¹ / ₂	23	209	233	4.44
FW-23	1	1320	165.0	165.0	207.1	235.1	10 ² / ₄	14 ¹ / ₂	23	248	276	5.18
FW-29	1	1680	210.0	210.0	263.6	299.2	13 ³ / ₈	14 ¹ / ₂	23	308	333	6.48

*Cell final volts at all discharge ratings includes the resistance drop across a standard inter-cell connector in series with the cell. These Exide lead-calcium alloy grid batteries are assembled in one, two and three cell plastic containers. Full charge specific gravity 1.200-1.220.

All types have double insulation consisting of microporous

STROMBERG-CARLSON

EXIDE-IRONCLAD BATTERIES WITH SILVIUM IN PLASTIC CONTAINERS
TYPE EHGS



These Exide-Ironclad batteries are assembled in heat-resistant, shock-absorbing polystyrene containers and covers. The containers and covers are cemented together to form a permanent leak-proof bond against seepage of acid.

The insulation in these batteries consists of the plastic tubes used in the positives where the active material is stored, and the grooved microporous rubber separators between the positive and negative plates. The polyethylene bottom bar used to seal the plastic tubes of the positive plate, also insulates the bottom edges of the positive plates, thus making it impossible to develop shorts at the bottom of the element. The extra wide separator used between plates eliminates any possibility of mousing at the plate edges.

All EHGS cells have two terminal posts equipped with cop-

per inserts to provide an ample electric path for high current requirements at maximum sustained voltages. Heat fused ring seal construction at the post terminals, used in all sizes, assures complete freedom from creepage of acid. Ample electrolyte is provided to enable the cells to deliver all rated capacities and to limit watering to every 9-15 months when charged with a constant voltage charger and when installed in an average ambient temperature of 77°F. Ample sediment spaces are built into all sizes to take care of the accumulated sediment for the lifetime of the cell.

Cells are furnished with necessary connector bolts and lead-plated copper inter-cell connectors for 1/2 inch spacing between cells.

Full charge specific gravity 1.200-1.220.

Type of Cell	Cells Per Unit	CAPACITY AT 77°F					Overall Dimensions of Unit in Inches			Approximate Weight Per Unit in Lbs.		Electrolyte Gallons Per Unit
		Ampere Hour at 8 Hr. Rate to *1.75 F.V.	Amperes Per Hour For 8 Hours to *1.75 F.V.	5 Hour Discharge Rate in Amperes Per Hour			Length	Width	Height	Net	Packed	
				For 23 Cells to 44 F.V.	For 24 Cells to 44 F.V.	For 26 Cells to 45 F.V.						
2-EHGS-7	2	200	25.0	23.5	32.0	36.9	6 1/8	10 1/4	17	88	97	2.3
3-EHGS-7	3	200	25.0	23.5	32.0	36.9	10 1/4	10 1/4	17	131	143	3.4
EHGS-9	1	267	33.375	31.3	42.6	49.2	4 1/32	10 1/8	17	55	60	1.4
EHGS-11	1	333	41.625	39.2	53.3	61.5	5 1/32	10 1/8	17	68	72	1.7
EHGS-13	1	400	50.0	47.0	63.9	73.8	6 1/8	10 1/8	17	84	89	2.4
EHGS-15	1	466	58.25	54.8	74.6	86.1	6 1/8	10 1/8	17	90	96	2.3
EHGS-17	1	533	66.625	62.6	85.2	98.4	6 1/8	10 1/8	17	96	101	2.1
EHGS-19	1	600	75.0	70.5	95.9	110.7	8 1/32	10 1/8	17	113	117	2.9
EHGS-21	1	666	83.25	78.3	106.5	123.0	8 1/32	10 1/8	17	119	124	2.7
EHGS-23	1	732	91.5	86.1	117.2	135.3	10 1/4	10 1/8	17	139	144	3.6
EHGS-25	1	800	100.0	94.0	127.8	147.6	10 1/4	10 1/8	17	145	150	3.4

*Includes the resistance drop across the standard inter-cell connectors in series with the cell.

Revised 2-1-62



Type EWA

EXIDE LEAD ANTIMONY BATTERIES IN PLASTIC CONTAINERS

TYPE EWA, FWA



Type FWA

Technical Data, Overall Dimensions, and Weights

Type of Cell	Cells Per Unit	CAPACITY AT 77°F					Overall Dimensions of Unit in Inches			Approximate Weight Per Unit in Lbs.		Electrolyte Gallons Per Unit
		Ampere Hour at 8 Hr. Rate to *1.75 F.V.	Amperes Per Hour For 8 Hours to *1.75 F.V.	5 Hour Discharge Rate in Amperes Per Hour			Length	Width	Height	Net	Packed	
				For 23 Cells to 44 F.V.	For 24 Cells to 44 F.V.	For 26 Cells to 45 F.V.						
2-EWA-7	2	180	22.5	22.5	28.2	32.1	6 $\frac{5}{8}$	10 $\frac{1}{8}$	18 $\frac{1}{4}$	86	102	1.88
3-EWA-7	3	180	22.5	22.5	28.2	32.1	10 $\frac{1}{4}$	10 $\frac{1}{8}$	18 $\frac{1}{4}$	129	149	2.83
EWA-9	1	240	30.0	30.0	37.6	42.8	4 $\frac{1}{2}$	10 $\frac{1}{8}$	18 $\frac{1}{4}$	54	64	1.19
EWA-11	1	300	37.5	37.5	47.0	53.4	5 $\frac{1}{2}$	10 $\frac{1}{8}$	18 $\frac{1}{4}$	67	77	1.43
EWA-13	1	360	45.0	45.0	56.4	64.1	6 $\frac{1}{8}$	10 $\frac{1}{8}$	18 $\frac{1}{4}$	84	100	2.03
EWA-15	1	420	52.5	52.5	65.9	74.8	6 $\frac{1}{2}$	10 $\frac{1}{8}$	18 $\frac{1}{4}$	89	105	1.83
EWA-17	1	480	60.0	60.0	75.2	85.5	8 $\frac{1}{2}$	10 $\frac{1}{8}$	18 $\frac{1}{4}$	105	123	2.55
EWA-19	1	540	67.5	67.5	84.7	96.2	8 $\frac{1}{2}$	10 $\frac{1}{8}$	18 $\frac{1}{4}$	110	128	2.42
EWA-21	1	600	75.0	75.0	94.0	106.9	10 $\frac{1}{4}$	10 $\frac{1}{8}$	18 $\frac{1}{4}$	127	147	3.05
EWA-23	1	660	82.5	82.5	103.5	117.6	10 $\frac{1}{4}$	10 $\frac{1}{8}$	18 $\frac{1}{4}$	132	152	2.92
FWA-15	1	840	105.0	105.0	131.8	149.6	7 $\frac{1}{2}$	14 $\frac{1}{2}$	23	169	187	3.61
FWA-19	1	1080	135.0	135.0	169.5	192.3	8 $\frac{3}{4}$	14 $\frac{1}{2}$	23	209	233	4.44
FWA-23	1	1320	165.0	165.0	207.1	235.1	10 $\frac{1}{2}$	14 $\frac{1}{2}$	23	248	276	5.18
FWA-29	1	1680	210.0	210.0	263.6	299.2	13 $\frac{1}{8}$	14 $\frac{1}{2}$	23	308	333	6.48

*Cell final volts at all discharge ratings includes the resistance drop across a standard inter-cell connector in series with the cell.

These Exide lead-antimony grid batteries are assembled in two and three cell plastic containers with capacities of 180 A. H. and in single cell plastic containers with capacities ranging from 240 to 660 A. H., all at the 8 hour rate.

All EWA and FWA types have double insulation consisting of microporous separators and Vitrex (spun glass) retainers. Full charge specific gravity 1.200-1.220.

EXIDE BATTERIES IN MONOBLOC RUBBER CONTAINERS

TYPE FB

Positive plates are 0.32 inch thick. Because of the tight fit of the elements, shedding of active material is greatly reduced.

A special feature of this battery is its explosion-control construction. A hood below the level of the electrolyte, inclining gradually upward from all four sides of the cell toward the center, collects the gas bubbles before they reach the surface of the electrolyte and guides them to a vent in the cover.

A plastic float extending above the covers and visible at a glance, shows the height of the electrolyte within each cell.



Type FB Cell

Technical Data, Overall Dimensions, and Weights

Type of Cell	Cells Per Unit	CAPACITY AT 77°F					Overall Dimensions of Unit in Inches			Approximate Weight Per Unit in Lbs.		Electrolyte Gallons Per Unit
		Ampere Hour at 8 Hr. Rate to *1.75 F.V.	Amperes Per Hour For 8 Hours to *1.75 F.V.	5 Hour Discharge Rate in Amperes Per Hour			Length	Width	Height	Net	Packed	
				For 23 Cells to 44 F.V.	For 24 Cells to 44 F.V.	For 26 Cells to 45 F.V.						
FB-15	1	840	105	104.3	126.7	147	8 $\frac{7}{8}$	14 $\frac{1}{2}$	23 $\frac{3}{4}$	225	245	3.72
FB-19	1	1080	135	134.1	162.9	189	10 $\frac{7}{8}$	14 $\frac{1}{2}$	23 $\frac{3}{4}$	281	305	4.74
FB-23	1	1320	165	163.9	199.1	231	12 $\frac{7}{8}$	14 $\frac{1}{2}$	23 $\frac{3}{4}$	337	365	5.76
FB-29	1	1680	210	208.6	253.4	294	15 $\frac{1}{4}$	14 $\frac{1}{2}$	23 $\frac{3}{4}$	415	455	6.48

*Full charge specific gravity 1.200-1.220

STROMBERG-CARLSON



CE-420



CE-660



CE-300



F



CE-240

C & D
LEAD ANTIMONY GRID BATTERIES
PLASTIC JAR BATTERIES

TYPES: CE, F

Capacities: 180 to 1680 Ampere Hours

Technical Data, Overall Dimensions, and Weights

Type of Cell	Cells Per Unit	CAPACITY AT 77°F					Overall Dimensions of Unit in Inches			Approximate Unit Weight in Lbs.		Electrolyte Gallons Per Unit
		Ampere Hour at 8 Hr. Rate of Discharge	Amperes Per Hour For 8 Hours to 1.75 F.V.	5 Hour Discharge Rate in Amperes Per Hour			Length	Width	Height	Net	Packed	
				For 23 Cells to 44 Volts F.V.	For 24 Cells to 44 Volts F.V.	For 26 Cells to 45 Volts F.V.						
2CE-180	2	180	22.5	23.4	28.8	31.8	7½	10½	18	100	120	2.40
3CE-180	3	180	22.5	23.4	28.8	31.8	11¼	10½	18	145	170	3.50
CE-240	1	240	30.0	31.2	38.4	42.4	4¾	10¾	18	60	78	1.50
CE-300	1	300	37.5	39.0	48.0	53.0	5½	10¾	18	75	93	1.75
CE-360	1	360	45.0	46.8	57.6	63.6	7½	10½	18	92	112	2.45
CE-420	1	420	52.5	54.6	67.2	74.2	7½	10½	18	100	120	2.40
CE-480	1	480	60.0	62.5	76.8	84.8	9¾	10½	18	122	144	3.05
CE-540	1	540	67.5	70.2	86.4	95.4	9¾	10½	18	130	152	3.00
CE-660	1	660	82.5	85.8	105.6	116.6	11¼	10½	18	155	179	3.70
F-720	1	720	90.0	93.0	115.5	127.8	7½	14½	22½	168	200	5.00
F-840	1	840	105.0	108.5	134.8	149.1	7½	14½	22½	180	210	4.60
F-960	1	960	120.0	124.0	154.0	170.4	8¾	14½	22½	216	248	6.20
F-1080	1	1080	135.0	139.5	173.3	191.7	8¾	14½	22½	228	260	5.80
F-1320	1	1320	165.0	170.5	211.8	234.3	10½	14½	22½	276	315	7.10
F-1680	1	1680	210.0	217.0	269.5	298.2	13¾	14½	22½	348	400	8.90

POSITIVE PLATE THICKNESSES—All types .266".

Specific Gravity of Electrolyte Fully Charged 1.200 to 1.220 at 77° F.

LONG LIFE—C&D's exclusive design combines advantages of both suspended and supported plate construction.

TRIPLE INSULATION—Thick Fiberglas mat—Plastic or Hard Rubber Separators—Perforated Koroseal retainer.

HIGH HEAT RESISTANT crystal-clear polystyrene jars and covers are hermetically sealed—permit easy visual internal inspection.

POST SEALS—CE Plastite; CF lead-inserted.

SAFTEE-VENT—Reduces explosion hazard; eliminates necessity of removing vents for water additions or hydrometer readings.

BALL GAGE INDICATOR—Available up to 160 A.H., when specified.

INTERCELL CONNECTORS—Lead Plated Copper. All Cells shipped completely assembled, sealed and charged; with necessary accessories.

Racks available, complete information on request.

The C&D batteries listed are built in accordance with telephone industry standards.

Revised 2-1-62



3C-50



3D-100



2C-50



2D-100

C & D

LEAD ANTIMONY GRID BATTERIES PLASTIC JAR BATTERIES

TYPES: C, D, PKT

Capacities: 50 to 200 Ampere Hours



3PKT-100

Technical Data, Overall Dimensions, and Weights

Type of Cell	Cells Per Unit	CAPACITY AT 77°F					Overall Dimensions of Unit in Inches			Approximate Unit Weight in Lbs.		Electrolyte Gallons Per Unit
		Ampere Hour at 8 Hr. Rate of Discharge	Amperes Per Hour For 8 Hours to 1.75 F.V.	5 Hour Discharge Rate in Amperes Per Hour			Length	Width	Height	Net	Packed	
				For 23 Cells to 44 Volts F.V.	For 24 Cells to 44 Volts F.V.	For 26 Cells to 45 Volts F.V.						
2C-50	2	50	6.25	6.5	8.2	9.0	6 $\frac{1}{8}$	7 $\frac{3}{8}$	10	29	39	0.70
3C-50	3	50	6.25	6.5	8.2	9.0	9	7 $\frac{3}{8}$	10	44	57	1.00
2C-60	2	60	7.50	7.8	9.8	10.8	6 $\frac{1}{8}$	7 $\frac{3}{8}$	10	30	40	0.65
3C-60	3	60	7.50	7.8	9.8	10.8	9	7 $\frac{3}{8}$	10	45	58	1.00
2D-75	2	75	9.37	9.7	12.3	13.5	7 $\frac{1}{2}$	7 $\frac{3}{16}$	10 $\frac{3}{8}$	40	47	1.30
3D-75	3	75	9.37	9.7	12.3	13.5	11 $\frac{1}{8}$	7 $\frac{3}{16}$	10 $\frac{3}{8}$	60	68	1.95
2D-100	2	100	12.50	13.0	16.4	18.0	7 $\frac{1}{2}$	7 $\frac{3}{16}$	10 $\frac{3}{8}$	44	51	1.10
3D-100	3	100	12.50	13.0	16.4	18.0	11 $\frac{1}{8}$	7 $\frac{3}{16}$	10 $\frac{3}{8}$	65	73	1.65
D-125	1	125	15.62	16.2	20.5	22.5	7 $\frac{1}{2}$	7 $\frac{3}{16}$	10 $\frac{1}{2}$	37	44	1.50
D-150	1	150	18.75	19.5	24.6	27.0	7 $\frac{1}{2}$	7 $\frac{3}{16}$	10 $\frac{1}{2}$	40	47	1.40
D-175	1	175	21.87	22.7	28.7	31.5	7 $\frac{1}{2}$	7 $\frac{3}{16}$	10 $\frac{1}{2}$	42	49	1.25
D-200	1	200	25.00	26.0	32.8	36.0	7 $\frac{1}{2}$	7 $\frac{3}{16}$	10 $\frac{1}{2}$	44	51	1.15
2PKT-100	2	100	12.50	13.0	16.4	18.0	9	7 $\frac{3}{8}$	10	46	60	1.20
3PKT-100	3	100	12.50	13.0	16.4	18.0	13 $\frac{3}{8}$	7 $\frac{3}{8}$	10	67	81	1.80
2PKT-50	2	50	6.25	6.5	8.2	9.0	5	7 $\frac{1}{4}$	10	28	38	0.70
3PKT-50	3	50	6.25	6.5	8.2	9.0	7 $\frac{3}{8}$	7 $\frac{1}{4}$	10	42	55	1.05

POSITIVE PLATE THICKNESSES—Type PKT .220"; All others .266". Specific Gravity of Electrolyte Fully Charged 1.200 to 1.220 at 77° F.

LONG LIFE—C&D's exclusive design combines advantages of both suspended and supported plate construction.

TRIPLE INSULATION—Thick Fiberglass mat—Plastic or Hard Rubber separators—Perforated Koroseal retainer.

HIGH HEAT RESISTANT crystal-clear polystyrene jars and covers are hermetically sealed—permit easy visual internal inspection.

PLASTITE POST SEALS

SAFTEE-VENT—Reduces explosion hazard; eliminates necessity of removing vents for water additions or hydrometer readings.

BALL CAGE INDICATOR—Available up to 160 A.H., when specified.

INTERUNIT CONNECTORS—Lead Plated Copper on CE; Flexible cable on C. All Cells shipped completely assembled, sealed and charged and with necessary accessories.

Racks available, complete information on request.

The C&D batteries listed are built in accordance with telephone industry standards.

STROMBERG-CARLSON

C & D

LEAD CALCIUM GRID BATTERIES

C & D Plastical (PCE) Batteries

This basically new battery combines a durable clear-plastic case with revolutionary lead-calcium grids. The alloying of pure lead with calcium gives these grids a tensile strength equal to that of grids containing a high percentage of antimony—but with none of the harmful effects of antimony.

Delivers high output throughout life. Rated capacity remains steady because the negative plates stay healthy, active, and free from contamination.

Reduces the frequency of equalizing charges, because there

is no antimony in the battery to cause low cells through “antimony poisoning” of the negative plates. Plastical’s rate of self-discharge stays low, its capacity high. The amount of calcium in the grids is controlled to within plus or minus 20/1000th of 1%! The resultant uniformity in the grids means uniform cells, uniform operation.

Works five times as long without needing water. Because it consumes less current, there is less electrolysis of water. Thus, fewer inspections—fewer water additions.



PCE-540



PCE-420



CF



PCE-300



PCE-240

PLASTIC AND RUBBER JAR BATTERIES

TYPES: PCE, CF

Capacities: 180 to 1680 Ampere Hours

Technical Data, Overall Dimensions, and Weights



PCE-660

Type of Cell	Cells Per Unit	CAPACITY AT 77°F					Overall Dimensions of Cell in Inches			Approximate Weight Per Unit in Lbs.		Electrolyte Gallons Per Unit
		Ampere Hour at 8 Hr. Rate of Discharge	Amperes Per Hour For 8 Hours to 1.75 F.V.	5 Hour Discharge Rate in Amperes Per Hour			Length	Width	Height	Net	Packed	
				For 23 Cells to 44 Volts F.V.	For 24 Cells to 44 Volts F.V.	For 26 Cells to 45 Volts F.V.						
2PCE-180	2	180	22.50	23.4	28.8	31.8	7 1/2	10 1/2	18	100	120	2.40
3PCE-180	3	180	22.50	23.4	28.8	31.8	11 1/4	10 1/2	18	145	170	3.60
PCE-240	1	240	30.00	31.2	38.4	42.4	4 3/4	10 3/4	18	60	78	1.50
PCE-300	1	300	37.50	39.0	48.0	53.0	5 3/8	10 3/4	18	75	93	1.75
PCE-360	1	360	45.00	46.8	57.6	63.6	7 1/2	10 1/2	18	92	112	2.45
PCE-420	1	420	52.50	54.6	67.2	74.2	7 1/2	10 1/2	18	100	120	2.40
PCE-480	1	480	60.00	62.5	76.8	84.8	9 3/8	10 1/2	18	122	144	3.05
PCE-540	1	540	67.50	70.2	86.4	95.4	9 3/8	10 1/2	18	130	152	3.00
PCE-660	1	660	82.50	85.8	105.6	116.6	11 1/4	10 1/2	18	155	179	3.70
CF-720	1	720	90.00	93.0	115.5	127.8	7 1/8	14 1/8	22 1/16	168	200	5.00
CF-840	1	840	105.00	108.5	134.8	149.1	7 1/8	14 1/8	22 1/16	180	210	4.60
CF-960	1	960	120.00	124.0	154.0	170.4	8 7/8	14 1/8	22 1/16	216	248	6.20
CF-1080	1	1080	135.00	139.5	173.3	191.7	8 7/8	14 1/8	22 1/16	228	260	5.80
CF-1320	1	1320	165.00	170.5	211.8	234.3	10 3/8	14 1/8	22 1/16	276	315	7.10
CF-1680	1	1680	210.00	217.0	269.5	298.2	13 3/16	14 1/8	22 1/16	348	400	8.90

POSITIVE PLATE THICKNESSES—0.266”.

Specific Gravity of Electrolyte Fully Charged 1.200 to 1.220 at 77° F.

40 % EXTRA LIFE IN FLOAT SERVICE—C&D’s exclusive design combines advantages of both suspended and supported plate construction.

TRIPLE INSULATION—Thick Fiberglas mat—Plastic or Hard Rubber separators—Perforated Koroseal retainer.

HIGH HEAT RESISTANT crystal-clear polystyrene jars and covers are hermetically sealed—permit easy visual internal inspection.

POST SEALS—PCE Plastite: CF lead-inserted.

SAFTEE-VENT—Reduces explosion hazard; eliminates necessity of removing vents for water additions or hydrometer readings.

FLOAT INDICATOR—used on RCT.

INTERCELL CONNECTORS—Lead Plated Copper. All Cells shipped completely assembled, sealed and charged; with necessary accessories.

Racks available, complete information on request.

The C&D batteries listed are built in accordance with telephone industry standards.

STROMBERG-CARLSON

Revised 2-1-62



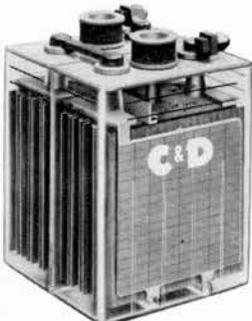
2PCC-50



5AAC-6



3DC-100



2DC-100



3PCC-50

C & D LEAD CALCIUM BATTERIES PLASTIC JAR BATTERIES

TYPES: AAC, PCC, DC

Capacities: 50 to 200 Ampere Hours

Technical Data, Overall Dimensions, and Weights

Type of Cell	Cells Per Unit	CAPACITY AT 77°F					Overall Dimensions of Unit in Inches			Approximate Unit Weight in Lbs.		Electrolyte Gallons Per Unit
		Ampere Hour at 8 Hr. Rate of Discharge	Amperes Per Hour For 8 Hours to 1.75 F.V.	5 Hour Discharge Rate in Amperes Per Hour			Length	Width	Height	Net	Packed	
				For 23 Cells to 44 Volts F.V.	For 24 Cells to 44 Volts F.V.	For 26 Cells to 45 Volts F.V.						
5AAC-6	5	6	.75	.75	.9	1.05	6 ⁵ / ₈	3 ³ / ₈	7	9 ¹ / ₂	11	0.25
2PCC-50	2	50	6.25	6.5	8.2	9.0	6 ¹ / ₈	7 ³ / ₈	10	29	39	0.70
3PCC-50	3	50	6.25	6.5	8.2	9.0	9	7 ³ / ₈	10	44	57	1.00
2PCC-60	2	60	7.50	7.8	9.8	10.8	6 ¹ / ₈	7 ³ / ₈	10	30	40	0.65
3PCC-60	3	60	7.50	7.8	9.8	10.8	9	7 ³ / ₈	10	45	58	1.00
2DC-75	2	75	9.37	9.7	12.3	13.5	7 ¹ / ₂	7 ³ / ₈	10 ³ / ₈	40	47	1.30
3DC-75	3	75	9.37	9.7	12.3	13.5	11 ¹ / ₈	7 ³ / ₈	10 ³ / ₈	60	68	1.95
2DC-100	2	100	12.50	13.0	16.4	18.0	7 ¹ / ₂	7 ³ / ₈	10 ³ / ₈	44	51	1.10
3DC-100	3	100	12.50	13.0	16.4	18.0	11 ¹ / ₈	7 ³ / ₈	10 ³ / ₈	65	73	1.65
DC-125	1	125	15.62	16.2	20.5	22.5	7 ¹ / ₂	7 ³ / ₈	10 ¹ / ₂	37	44	1.50
DC-150	1	150	18.75	19.5	24.6	27.0	7 ¹ / ₂	7 ³ / ₈	10 ¹ / ₂	40	47	1.40
DC-175	1	175	21.87	22.7	28.7	31.5	7 ¹ / ₂	7 ³ / ₈	10 ¹ / ₂	42	49	1.25
DC-200	1	200	25.00	26.0	32.8	36.0	7 ¹ / ₂	7 ³ / ₈	10 ¹ / ₂	44	51	1.15

POSITIVE PLATE THICKNESSES—Type AAC; .300"; PCC; .250"; DC; .266".

Specific Gravity of Electrolyte Fully Charged 1.200 to 1.220 at 77° F.

40% EXTRA LIFE IN FLOAT SERVICE—C&D's exclusive design combines advantages of both suspended and supported plate construction.

TRIPLE INSULATION—Thick Fiberglas mat—Plastic or Hard Rubber separators—Perforated Koroseal retainer.

HIGH HEAT RESISTANT crystal-clear polystyrene jars and covers are hermetically sealed—permit easy visual internal inspection.

PLASTITE POST SEALS

SAFTEE-VENT—Reduces explosion hazard; eliminates necessity of removing vents for water additions or hydrometer readings.

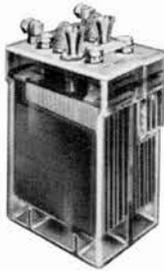
BALL CAGE INDICATOR—Available up to 160 A.H., when specified.

INTERUNIT CONNECTORS—Flexible cable on multi-unit assemblies, lead plated copper on single cell units. All Cells shipped completely assembled, sealed and charged; with necessary accessories.

Racks available, complete information on request.

The C&D batteries listed are built in accordance with telephone industry standards.

STROMBERG-CARLSON



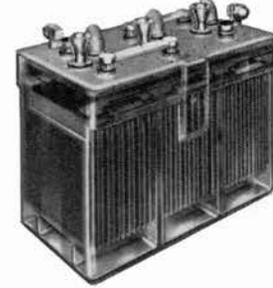
CSC-74

**GOULD LEAD CALCIUM
PLASTIC JAR BATTERIES**

Explosion-Protected Construction

TYPES CSC-74, CSC-76, CSC-134, CSC-136, OCSC*

Capacities—50 to 100 Ampere Hours



CSC-136

Technical Data, Overall Dimensions, and Weights

Type of Cell	Cells Per Unit	CAPACITY AT 77°F					Overall Dimensions of Unit in Inches			Approximate Unit Weight in Lbs.		Electrolyte Gallons Per Cell
		Ampere Hour at 8 Hr. Rate of Discharge	Amperes Per Hour For 8 Hours to 1.75 F.V.	5 Hour Discharge Rate in Amperes Per Hour			Length	Width	Height	Net	Packed	
				For 23 Cells to 44 Volts F.V.	For 24 Cells to 44 Volts F.V.	For 26 Cells to 45 Volts F.V.						
CSC-74	2	50	6.25	6.5	8.0	8.8	5	7½	10⅞	28	40	.32
CSC-76	3	50	6.25	6.5	8.0	8.8	7⅞	7½	10⅞	41	50	.32
CSC-134	2	100	12.50	13.0	16.0	17.6	8⅞	7½	10⅞	55	65	.54
CSC-136	3	100	12.50	13.0	16.0	17.6	12⅞	7½	10⅞	71	85	.54

*OCSC Types are the same as CSC except without charge ball indicator.

SPECIFIC GRAVITY OF ELECTROLYTE: Fully Charged, 1.215 at 77°F.

CHARGE INDICATOR: One set per each Multi-Unit.

INTERCELL CONNECTORS: Lead.

INTERUNIT CONNECTORS: Lead Tape.

SEPARATORS: Durapor Porous Rubber.

RETAINERS: Perforated Envelope.

CONTAINERS: Transparent Plastic.

CELL COVER: One piece Molded Plastic.



DD-9

**GOULD SUPERDREADNAUGHT
PLASTIC JAR BATTERIES**

TYPE DD

Capacities: 40 to 960 Ampere Hours

SINGLE CELLS: Sealed Plastic Jars and Plastic Covers. Suspended Elements.

SEPARATION: Durapor Porous Rubber Separators. Folded Perforated Plastic Retainers.

POSTS: 2 posts per cell.

SPECIFIC GRAVITY OF ELECTROLYTE: Fully Charged 1.210 to 1.220 at 77°F. (25°C.).

ELECTROLYTE: Height above plate tops 1⅝".

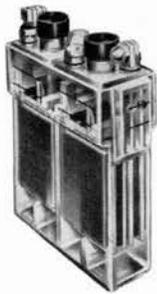
SEDIMENT SPACE: 2¾".

INTERCELL CONNECTORS: Lead plated copper. All cells shipped completely assembled, sealed and charged, with necessary accessories.

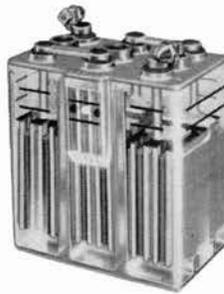
Technical Data, Overall Dimensions and Weights

Type of Cell	CAPACITY AT 77°F					Overall Dimensions of Cell in Inches			Approximate Weight Per Cell in Lbs.		Electrolyte Gallons Per Cell
	Ampere Hour at 8 Hr. Rate of Discharge	Amperes Per Hour For 8 Hours to 1.75 F.V.	5 Hour Discharge Rate in Amperes Per Hour			Length	Width	Height	Net	Packed	
			For 23 Cells to 44 Volts F.V.	For 24 Cells to 44 Volts F.V.	For 26 Cells to 45 Volts F.V.						
DD-5	36	4.50	4.4	5.6	6.4	2⅞	7⅞	12⅞	16	19	.37
DD-7	54	6.75	6.7	8.5	9.6	4⅞	7⅞	12⅞	23	26	.69
DD-9	72	9.00	8.9	11.3	12.9	4⅞	7⅞	12⅞	26	29	.65
DD-11	90	11.25	11.2	14.1	16.1	5⅞	7⅞	12⅞	31	34	.97
DD-13	108	13.50	13.4	16.9	19.3	5⅞	7⅞	12⅞	34	39	.94
DD-15	126	15.75	15.6	19.8	22.5	6⅞	7½	13⅞	41	46	1.09
DD-17	144	18.00	17.9	22.6	25.7	7⅞	7½	13⅞	47	52	1.29

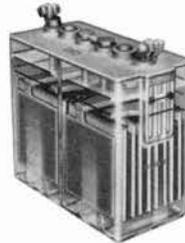
Revised 2-1-62



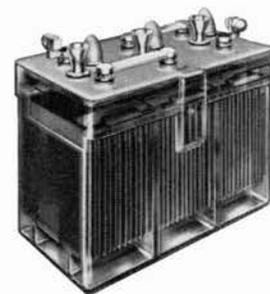
AS
54



BS
56



BT
94



CS
136

GOULD PLASTIC JAR BATTERIES

TYPES AS, AT, BS, BT, CS and OCS*

Capacities—10 to 100 Ampere Hours

Technical Data, Overall Dimensions and Weights

Type of Cell	Cells Per Unit	CAPACITY AT 77°F					Overall Dimensions of Unit in Inches			Approximate Unit Weight in Pounds		Electrolyte Gallons Per Cell
		Ampere Hour at 8 Hr. Rate of Discharge	Amperes Per Hour For 8 Hrs. to 1.75 F.V.	5 Hr. Discharge Rate in Amperes Per Hour			Length	Width	Height	Net	Packed	
				For 23 Cells to 44 Volts F.V.	For 24 Cells to 44 Volts F.V.	For 26 Cells to 45 Volts F.V.						
AS-52	1	10	1.25	1.3	1.6	1.76	2 $\frac{5}{8}$	3 $\frac{1}{2}$	7 $\frac{3}{8}$	4	7	.1
AS-54	2	10	1.25	1.3	1.6	1.76	2 $\frac{5}{8}$	6 $\frac{1}{2}$	7 $\frac{3}{8}$	7.5	13	.1
AT-56	3	10	1.25	1.3	1.6	1.76	6 $\frac{3}{16}$	3 $\frac{1}{2}$	7 $\frac{3}{8}$	12	21	.1
BS-54	2	15	1.88	1.95	2.4	2.64	2 $\frac{1}{4}$	8 $\frac{1}{16}$	8	10	15	.12
BS-56	3	15	1.88	1.95	2.4	2.64	6 $\frac{1}{2}$	4 $\frac{1}{4}$	7 $\frac{13}{16}$	15	22	.14
BS-94	2	30	3.75	3.9	4.8	5.28	3 $\frac{13}{16}$	8 $\frac{1}{16}$	8	17	23	.22
BT-76	3	30	3.75	3.9	4.8	5.28	8 $\frac{3}{8}$	4 $\frac{3}{16}$	8 $\frac{1}{2}$	27	35	.25
CS-74	2	50	6.25	6.5	8.0	8.8	5	7 $\frac{1}{2}$	10 $\frac{3}{8}$	28	40	.3
CS-76	3	50	6.25	6.5	8.0	8.8	7 $\frac{3}{8}$	7 $\frac{1}{2}$	10 $\frac{3}{8}$	41	55	.3
CS-134	2	100	12.5	13.0	16.0	17.6	8 $\frac{3}{8}$	7 $\frac{1}{2}$	10 $\frac{3}{8}$	55	65	.55
CS-136	3	100	12.5	13.0	16.0	17.6	12 $\frac{7}{8}$	7 $\frac{1}{2}$	10 $\frac{3}{8}$	71	85	.55

*OCS Types are the same as the CS except without charge ball indicator.

SPECIFIC GRAVITY OF ELECTROLYTE: Fully charged, 1.215 at 77°F.

INTERUNIT CONNECTORS: Lead tape.

CHARGE INDICATOR BALLS: One set per 10 cell for Type AS-52. One set per each Multi Unit all other types.

TERMINALS: Bolted Type.

INTERCELL CONNECTORS: Lead.

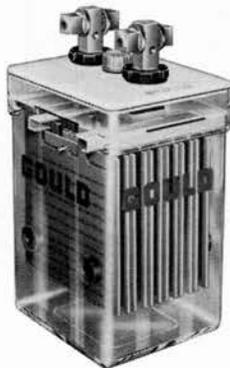
SEPARATORS: Porous rubber and perforated retainer.

STANDARD TRAYED ARRANGEMENTS

Type and Description	Overall Dimensions in Inches			Weight in Pounds	
	Length	Width	Height	Net	Packed
24V-AT56T-1 (24 Volt) (4-3 Cell Units)	26 $\frac{3}{4}$	4 $\frac{1}{8}$	8 $\frac{3}{4}$	55	90
24V-BS56T-1 (24 Volt) (4-3 Cell Units)	28	4 $\frac{3}{4}$	9 $\frac{1}{4}$	65	100
24V-BT76T-1 (24 Volt) (4-3 Cell Units)	35 $\frac{1}{2}$	4 $\frac{3}{4}$	9 $\frac{7}{8}$	120	160
24V-CS76T-1 (24 Volt) (4-3 Cell Units)	31 $\frac{7}{8}$	8	11 $\frac{3}{8}$	175	225
12V-CS136T-1 (12 Volt) (2-3 Cell Units)	27 $\frac{3}{8}$	8	11 $\frac{3}{8}$	160	200

When multiples of above units are required, specify the total voltage required so that necessary intertray connectors may be supplied; thus 2 units 12V-CS136T-1 for 24 volts total.

Trays are of wood, painted black. Interunit connectors are bolted type, lead tape.



DPR-13, EPR-13

**GOULD PLANTÉ
PLASTIC JAR BATTERIES**

TYPES DPR, EPR, FPR

Capacities—40 to 960 Ampere Hours



FPR-25

Technical Data, Overall Dimensions and Weights

Type of Cell	CAPACITY AT 77°F					Overall Dimensions of Cell in Inches			Approximate Weight Per Cell in Lbs.		Electrolyte Gallons Per Cell
	Ampere Hour at 8 Hr. Rate of Discharge	Amperes Per Hour For 8 Hours to 1.75 F.V.	5 Hour Discharge Rate in Amperes Per Hour			Length	Width	Height	Net	Packed	
			For 23 Cells to 44 Volts F.V.	For 24 Cells to 44 Volts F.V.	For 26 Cells to 45 Volts F.V.						
DPR-5	40	5.0	5.0	6.3	7.1	2 ⁷ / ₁₆	7 ³ / ₈	12 ³ / ₈	18	21	0.35
DPR-7	60	7.5	7.4	9.4	10.7	4 ¹ / ₁₆	7 ³ / ₈	12 ³ / ₈	26	30	0.65
DPR-9	80	10.0	9.9	12.5	14.3	4 ¹ / ₁₆	7 ³ / ₈	12 ³ / ₈	29	33	0.63
DPR-11	100	12.5	12.4	15.7	17.9	5 ³ / ₈	7 ³ / ₈	12 ³ / ₈	37	41	0.83
DPR-13	120	15.0	14.9	18.8	21.4	6 ¹ / ₄	7 ¹ / ₂	13 ³ / ₈	45	50	1.03
DPR-15	140	17.5	17.4	22.0	25.0	7 ⁷ / ₁₆	7 ¹ / ₂	13 ³ / ₈	52	58	1.25
DPR-17	160	20.0	19.8	25.1	28.6	7 ⁷ / ₁₆	7 ¹ / ₂	13 ³ / ₈	56	61	1.17
EPR-9	160	20.0	19.8	25.1	28.6	6 ⁵ / ₁₆	9 ⁹ / ₁₆	15 ¹ / ₂	58	64	1.8
EPR-11	200	25.0	24.8	31.4	35.7	6 ⁵ / ₁₆	9 ⁹ / ₁₆	15 ¹ / ₂	69	75	1.7
EPR-13	240	30.0	29.7	37.6	42.9	6 ⁵ / ₁₆	9 ⁹ / ₁₆	15 ¹ / ₂	80	86	1.6
EPR-15	280	35.0	34.7	43.9	50.0	7 ¹ / ₁₆	9 ⁹ / ₁₆	15 ¹ / ₂	90	97	1.8
EPR-17	320	40.0	39.7	50.2	57.2	8 ¹ / ₁₆	9 ⁹ / ₁₆	15 ¹ / ₂	102	110	2.5
EPR-19	360	45.0	44.6	56.4	64.3	8 ¹ / ₁₆	9 ⁹ / ₁₆	15 ¹ / ₂	111	120	2.4
EPR-21	400	50.0	49.6	62.7	71.4	10 ¹ / ₈	9 ⁹ / ₁₆	15 ¹ / ₂	124	133	2.7
EPR-23	440	55.0	54.6	69.0	78.6	11 ³ / ₈	9 ⁹ / ₁₆	15 ¹ / ₂	136	145	3.2
EPR-25	480	60.0	59.5	75.3	85.7	11 ³ / ₈	9 ⁹ / ₁₆	15 ¹ / ₂	145	154	3.1
FPR-15	560	70.0	70.0	88.0	100.0	8 ¹ / ₁₆	13	19 ³ / ₈	180	192	4.0
FPR-17	640	80.0	79.0	100.0	114.0	8 ¹ / ₁₆	13	19 ³ / ₈	194	205	3.7
FPR-19	720	90.0	89.0	113.0	129.0	9 ¹ / ₁₆	13	19 ³ / ₈	222	234	5.2
FPR-21	800	100.0	99.0	125.0	142.0	9 ¹ / ₁₆	13	19 ³ / ₈	236	250	4.8
FPR-23	880	110.0	109.0	138.0	157.0	12 ¹ / ₂	13	19 ³ / ₈	270	285	6.4
FPR-25	960	120.0	119.0	150.0	172.0	12 ¹ / ₂	13	19 ³ / ₈	287	302	6.1

SINGLE CELLS: Sealed Plastic Jars and Plastic Covers. Suspended Elements.

SEPARATION: Durapor Porous Rubber Separators.

POSTS: DPR-5 to EPR-11 have two posts per cell. EPR-13 to FPR-25 have 4 posts per cell.

SPECIFIC GRAVITY OF ELECTROLYTE: Fully Charged—1.215 at 77°F. (25°C.).

ELECTROLYTE: Height above plates DPR—1¹/₈", EPR—1¹/₂", FPR—2¹/₄".

SEDIMENT SPACE: DPR—2", EPR—1¹³/₁₆", FPR—2¹¹/₁₆".

INTERCELL CONNECTORS: Lead plated copper. All cells shipped completely assembled, sealed and charged, with necessary accessories.

20g · POWER AND TEST EQUIPMENT

Revised 2-1-62



ET-76
EWT-76

GOULD KATHANODE PLASTIC JAR BATTERIES

EXPLOSION PROTECTED CONSTRUCTION

TYPES ET, FT Lead Calcium

TYPES EWT, FWT Lead Antimony

Capacities—180 to 1680 Ampere Hours



FT-29
FWT-29

Technical Data, Overall Dimensions and Weights

Type of Cell	Cells Per Unit	CAPACITY AT 77°F					Overall Dimensions of Unit in Inches			Approximate Weight Per Unit in Lbs.		Electrolyte Gallons Per Cell	
		Ampere Hour at 8 Hr. Rate of Discharge	Amperes Per Hour For 8 Hours to 1.75 F.V.	5 Hour Discharge Rate in Amperes Per Hour			Length	Width	Height	Net	Packed		
				For 23 Cells to 44 F.V.	For 24 Cells to 44 F.V.	For 26 Cells to 45 F.V.							
ET-74	LEAD CALCIUM	2	180	22.5	23.4	28.8	31.7	7	10½	17¾	100	120	1.0
ET-76		3	180	22.5	23.4	28.8	31.7	10½	10½	17¾	151	163	1.0
ET-9		1	240	30.0	31.2	38.4	42.2	5½	10½	17¾	70	76	1.6
ET-11		1	300	37.5	39.0	48.0	52.8	6	10½	17¾	83	88	2.0
ET-13		1	360	45	46.8	57.6	63.3	7¾	10½	18	99	108	3.0
ET-15		1	420	52.5	54.6	67.2	73.9	7¾	10½	17¾	108	117	2.8
ET-17		1	480	60	62.4	76.8	84.5	9½	10½	18	128	136	3.7
ET-19		1	540	67.5	70.2	86.4	95.0	9½	10½	17¾	135	144	3.5
ET-21		1	600	75	78.0	96.0	105.6	11¼	10½	18	156	160	4.4
ET-23		1	660	82.5	85.8	105.6	116.1	11¼	10½	17¾	162	172	4.2
FT-13	LEAD CALCIUM	1	720	90	93.6	115.2	126.7	7¾	14½	22½	185	191	4.6
FT-15		1	840	105.0	109.2	134.4	147.8	7¾	14½	23¾	202	218	3.6
FT-17		1	960	120	124.8	153.6	168.9	8½	14½	22½	237	242	5.6
FT-19		1	1080	135.0	140.4	172.8	190.0	8½	14½	23¾	258	274	5.3
FT-21		1	1200	150	156.0	192.0	211.2	10¼	14½	22½	286	292	6.3
FT-23		1	1320	165.0	171.6	211.2	232.3	10¼	14½	23¾	300	316	5.8
FT-29		1	1680	210.0	218.4	268.8	295.7	13¾	14½	23¾	376	392	7.4
EWT-74		LEAD ANTIMONY	2	180	22.5	23.4	28.8	31.7	7	10½	17¾	100	120
EWT-76	3		180	22.5	23.4	28.8	31.7	10½	10½	17¾	151	163	1.0
EWT-9	1		240	30.0	31.2	38.4	42.2	5½	10½	17¾	70	76	1.6
EWT-11	1		300	37.5	39.0	48.0	52.8	6	10½	17¾	83	88	2.0
EWT-13	1		360	45	46.8	57.6	63.3	7¾	10½	18	99	108	3.0
EWT-15	1		420	52.5	54.6	67.2	73.9	7¾	10½	17¾	108	117	2.8
EWT-17	1		480	60	62.4	76.8	84.5	9½	10½	18	128	136	3.7
EWT-19	1		540	67.5	70.2	86.4	95.0	9½	10½	17¾	135	144	3.5
EWT-21	1		600	75	78.0	96.0	105.6	11¼	10½	18	156	160	4.4
EWT-23	1		660	82.5	85.8	105.6	116.1	11¼	10½	17¾	162	172	4.2
FWT-13	LEAD ANTIMONY	1	720	90	93.6	115.2	126.7	7¾	14½	22½	185	191	4.6
FWT-15		1	840	105.0	109.2	134.4	147.8	7¾	14½	23¾	202	218	3.6
FWT-17		1	960	120	124.8	153.6	168.9	8½	14½	22½	237	242	5.6
FWT-19		1	1080	135.0	140.4	172.8	190.0	8½	14½	23¾	258	274	5.3
FWT-21		1	1200	150	156.0	192.0	211.2	10¼	14½	22½	286	292	6.3
FWT-23		1	1320	165.0	171.6	211.2	232.3	10¼	14½	23¾	300	316	5.8
FWT-29		1	1680	210.0	218.4	268.8	295.7	13¾	14½	23¾	376	392	7.4

CELLS: Sealed Plastic Jars and Plastic Covers. Suspended elements.

SEPARATION: Durapor Porous Rubber Separators, Fibrous Glass Mats and Folded Perforated Plastic Retainers.

POSTS: Type ET and EWT have 2 posts per cell. Types FT and FWT have four posts per cell.

SPECIFIC GRAVITY OF ELECTROLYTE: Fully Charged 1.215 at 77°F.

INTERCELL CONNECTORS: Lead Plated Copper.

VENTS: Porous Ceramic, Flash-back proof.

ELECTROLYTE ABOVE PLATES: Types ET, EWT—2¾"; Types FT, FWT—2½".

SEDIMENT SPACE: 1½".

PLATE THICKNESS: Positive plates .260". Negative plates .175".

FILLING FUNNEL: Cell includes plastic filling funnel.

STROMBERG-CARLSON



DC-9

**GOULD LEAD CALCIUM
PLASTIC JAR BATTERIES**

TYPES DC, EC, FC

Capacities—50 to 1140 Ampere Hours



FC-23

Technical Data, Overall Dimensions, and Weights

Type of Cell	CAPACITY AT 77°F					Overall Dimensions of Cell in Inches			Approximate Weight Per Cell in Lbs.		Electrolyte Gallons Per Cell
	Ampere Hour at 8 Hr. Rate of Discharge	Amperes Per Hour For 8 Hours to 1.75 F.V.	5 Hour Discharge Rate in Amperes Per Hour			Length	Width	Height	Net	Packed	
			For 23 Cells to 44 Volts F.V.	For 24 Cells to 44 Volts F.V.	For 26 Cells to 45 Volts F.V.						
DC-5	50	6.25	6.2	7.8	8.9	2 ⁷ / ₁₆	7 ³ / ₁₆	12 ³ / ₁₆	17	20	0.34
DC-7	75	9.37	9.3	11.8	13.4	4 ¹ / ₁₆	7 ³ / ₁₆	12 ³ / ₁₆	25	28	0.64
DC-9	100	12.50	12.4	15.7	17.9	4 ¹ / ₁₆	7 ³ / ₁₆	12 ³ / ₁₆	28	31	0.59
DC-11	125	15.62	15.5	19.6	22.3	5 ³ / ₁₆	7 ³ / ₁₆	12 ³ / ₁₆	34	39	0.90
DC-13	150	18.75	18.6	23.5	26.8	5 ³ / ₁₆	7 ³ / ₁₆	12 ³ / ₁₆	37	42	0.79
DC-15	175	21.87	21.7	27.4	31.3	6 ¹ / ₁₆	7 ¹ / ₂	13 ³ / ₁₆	45	50	1.00
DC-17	200	25.0	24.8	31.4	35.7	7 ⁷ / ₁₆	7 ¹ / ₂	13 ³ / ₁₆	51	57	1.19
EC-11	200	25.0	24.8	31.4	35.7	6 ⁵ / ₁₆	9 ⁹ / ₁₆	15 ¹ / ₂	66	72	1.7
EC-13	240	30.0	29.7	37.7	42.9	6 ⁵ / ₁₆	9 ⁹ / ₁₆	15 ¹ / ₂	71	77	1.6
EC-15	280	35.0	34.7	43.9	50.0	6 ⁵ / ₁₆	9 ⁹ / ₁₆	15 ¹ / ₂	81	88	1.5
EC-17	320	40.0	39.7	50.2	57.2	7 ¹ / ₁₆	9 ⁹ / ₁₆	15 ¹ / ₂	91	98	1.8
EC-19	360	45.0	44.6	56.4	64.3	8 ¹ / ₁₆	9 ⁹ / ₁₆	15 ¹ / ₂	105	113	2.3
EC-21	400	50.0	49.7	62.7	71.4	8 ¹ / ₁₆	9 ⁹ / ₁₆	15 ¹ / ₂	110	119	2.2
EC-23	440	55.0	54.6	69.0	78.6	10 ¹ / ₁₆	9 ⁹ / ₁₆	15 ¹ / ₂	122	131	2.7
EC-25	480	60.0	59.5	75.3	85.7	10 ¹ / ₁₆	9 ⁹ / ₁₆	15 ¹ / ₂	128	137	2.6
EC-27	520	65.0	64.5	81.6	92.9	11 ³ / ₁₆	9 ⁹ / ₁₆	15 ¹ / ₂	138	148	3.1
EC-29	560	70.0	69.5	87.8	100.0	11 ³ / ₁₆	9 ⁹ / ₁₆	15 ¹ / ₂	147	157	3.0
FC-17	608	76.0	75.0	95.0	109.0	8 ¹ / ₁₆	13	19 ⁹ / ₁₆	166	178	3.6
FC-19	684	85.5	85.0	107.0	122.0	8 ¹ / ₁₆	13	19 ⁹ / ₁₆	177	189	3.4
FC-21	760	95.0	94.0	119.0	136.0	9 ¹ / ₁₆	13	19 ⁹ / ₁₆	200	212	4.9
FC-23	836	104.5	104.0	131.0	149.0	9 ¹ / ₁₆	13	19 ⁹ / ₁₆	213	225	4.8
FC-25	912	114.0	113.0	143.0	163.0	12 ¹ / ₂	13	19 ⁹ / ₁₆	238	253	6.7
FC-27	988	123.5	122.0	155.0	176.0	12 ¹ / ₂	13	19 ⁹ / ₁₆	252	267	6.5
FC-29	1064	133.0	132.0	167.0	190.0	12 ¹ / ₂	13	19 ⁹ / ₁₆	264	279	6.3
FC-31	1140	142.5	141.0	177.0	204.0	12 ¹ / ₂	13	19 ⁹ / ₁₆	276	292	6.1

SINGLE CELLS: Sealed Plastic Jars and Plastic Covers. Suspended Elements.

SEPARATION: Durapor Porous Rubber Separators, Fibrous Glass Mats and Folded Perforated Plastic Retainers.

POSTS: Types DC-5 to EC-13 have 2 posts per cell. Types FC-15 to FC-31 have 4 posts per cell.

SPECIFIC GRAVITY OF ELECTROLYTE: Fully Charged—1.215 at 77°F. (25°C.).

ELECTROLYTE: Height above plate tops: Type DC—1⁵/₁₆", EC—1¹/₂", FC—2¹/₄".

SEDIMENT SPACE: Type DC—1¹/₂", EC—1³/₁₆", FC—2³/₁₆".

INTERCELL CONNECTORS: Lead plated copper. All cells shipped completely assembled, sealed and charged, with necessary accessories.

LEAD CALCIUM GRIDS: Cells are designed for Full Float Operation.

Revised 2-1-62

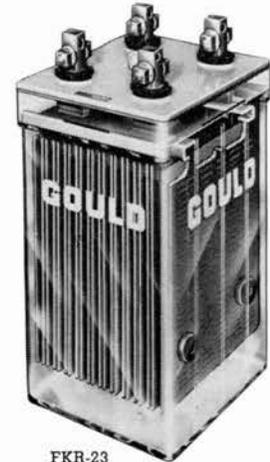


DKR-15
EKR-15

GOULD KATHANODE PLASTIC JAR BATTERIES

TYPES DKR, EKR, FKR

Capacities—50 to 1140 Ampere Hours



FKR-23

Technical Data, Overall Dimensions, and Weights

Type of Cell	CAPACITY AT 77°F					Overall Dimensions of Cell in Inches			Approximate Weight Per Cell in Lbs.		Electrolyte Gallons Per Cell
	Ampere Hour at 8 Hr. Rate of Discharge	Amperes Per Hour For 8 Hours to 1.75 F.V.	5 Hour Discharge Rate in Amperes Per Hour			Length	Width	Height	Net	Packed	
			For 23 Cells to 44 Volts F.V.	For 24 Cells to 44 Volts F.V.	For 26 Cells to 48 Volts F.V.						
DKR-5	50	6.25	6.2	7.8	8.9	2 ⁷ / ₁₆	7 ³ / ₈	12 ³ / ₈	17	20	0.34
DKR-7	75	9.37	9.3	11.8	13.4	4 ¹ / ₁₆	7 ³ / ₈	12 ³ / ₈	25	28	0.64
DKR-9	100	12.50	12.4	15.7	17.9	4 ¹ / ₁₆	7 ³ / ₈	12 ³ / ₈	28	31	0.59
DKR-11	125	15.62	15.5	19.6	22.3	5 ¹ / ₈	7 ³ / ₈	12 ³ / ₈	34	39	0.90
DKR-13	150	18.75	18.6	23.5	26.8	5 ¹ / ₈	7 ³ / ₈	12 ³ / ₈	37	42	0.79
DKR-15	175	21.87	21.7	27.4	31.3	6 ¹ / ₄	7 ¹ / ₂	13 ³ / ₈	45	50	1.00
DKR-17	200	25.0	24.8	31.4	35.7	7 ¹ / ₁₆	7 ¹ / ₂	13 ³ / ₈	51	57	1.19
EKR-11	200	25.0	24.8	31.4	35.7	6 ⁵ / ₁₆	9 ⁹ / ₁₆	15 ¹ / ₂	66	72	1.7
EKR-13	240	30.0	29.7	37.7	42.9	6 ⁵ / ₁₆	9 ⁹ / ₁₆	15 ¹ / ₂	71	77	1.6
EKR-15	280	35.0	34.7	43.9	50.0	6 ⁵ / ₁₆	9 ⁹ / ₁₆	15 ¹ / ₂	81	88	1.5
EKR-17	320	40.0	39.7	50.2	57.2	7 ¹ / ₁₆	9 ⁹ / ₁₆	15 ¹ / ₂	91	98	1.8
EKR-19	360	45.0	44.6	56.4	64.3	8 ¹³ / ₁₆	9 ⁹ / ₁₆	15 ¹ / ₂	105	113	2.3
EKR-21	400	50.0	49.7	62.7	71.4	8 ¹³ / ₁₆	9 ⁹ / ₁₆	15 ¹ / ₂	110	119	2.2
EKR-23	440	55.0	54.6	69.0	78.6	10 ¹ / ₁₆	9 ⁹ / ₁₆	15 ¹ / ₂	122	131	2.7
EKR-25	480	60.0	59.5	75.3	85.7	10 ¹ / ₁₆	9 ⁹ / ₁₆	15 ¹ / ₂	128	137	2.6
EKR-27	520	65.0	64.5	81.6	92.9	11 ¹ / ₈	9 ⁹ / ₁₆	15 ¹ / ₂	138	148	3.1
EKR-29	560	70.0	69.5	87.8	100.0	11 ¹ / ₈	9 ⁹ / ₁₆	15 ¹ / ₂	147	157	3.0
FKR-17	608	76.0	75.0	95.0	109.0	8 ¹ / ₁₆	13	19 ¹ / ₈	166	178	3.6
FKR-19	684	85.5	85.0	107.0	122.0	8 ¹ / ₁₆	13	19 ¹ / ₈	177	189	3.4
FKR-21	760	95.0	94.0	119.0	136.0	9 ¹³ / ₁₆	13	19 ¹ / ₈	200	212	4.9
FKR-23	836	104.5	104.0	131.0	149.0	9 ¹³ / ₁₆	13	19 ¹ / ₈	213	225	4.8
FKR-25	912	114.0	113.0	143.0	163.0	12 ¹ / ₂	13	19 ¹ / ₈	238	253	6.7
FKR-27	988	123.5	122.0	155.0	176.0	12 ¹ / ₂	13	19 ¹ / ₈	252	267	6.5
FKR-29	1064	133.0	132.0	167.0	190.0	12 ¹ / ₂	13	19 ¹ / ₈	264	279	6.3
FKR-31	1140	142.5	141.0	177.0	204.0	12 ¹ / ₂	13	19 ¹ / ₈	276	292	6.1

SINGLE CELLS: Sealed Plastic Jars and Plastic Covers. Suspended Elements.

SEPARATION: Durapor Porous Rubber Separators, Fibrous Glass Mats and Folded Perforated Plastic Retainers.

POSTS: Types DKR-5 to EKR-13 have 2 posts per cell. Types EKR-15 to FKR-31 have 4 posts per cell.

SPECIFIC GRAVITY OF ELECTROLYTE: Fully Charged—1.215 at 77°F. (25°C.).

ELECTROLYTE: Height above plate tops: Type DKR-1¹/₈" , EKR-1¹/₂" , FKR-2¹/₄" .

SEDIMENT SPACE: Type DKR-1¹/₂" , EKR-1¹/₈" , FKR-2³/₁₆" .

INTERCELL CONNECTORS: Lead plated copper. All cells shipped completely assembled, sealed and charged, with necessary accessories.

BATTERY CHARGING EQUIPMENT

Raytheon Rectichargers are completely automatic charging units employing dry disc rectifier elements with no moving parts, used for the development of direct current from A. C. city mains.** Alarm relays are built in for signaling in case of power failure.

Stabilization of varying line voltage is obtained through a magnetic control circuit. Models RC50A3 through RC50K400 use a magnetic amplifier for closer control.

The following description and claims of the manufacturer indicate the application of the Recticharger to modern methods of supplying power for exchanges and switchboards.

The Raytheon Recticharger carries the normal current demand and it is usually possible to use smaller batteries, particularly when compared to cycle charging. The Recticharger's constant potential method of charging these batteries lengthens their life and fewer renewals are necessary.

A small storage battery is floated across the terminals of the Recticharger and the combination of the two makes a complete A. C. to D. C. telephone power unit.

When the load current demand is less than the Recticharger rating, the Recticharger supplies all the current required and at the same time, delivers to the battery a trickle charge of the right amount to make up for internal battery losses and to prevent destructive chemical action. If the current demand exceeds the rating, the excess is supplied by the battery. When the load drops back to a value below the Recticharger rating, the Recticharger output remains at its rated value. The difference between the Recticharger rating and the load current is thus supplied to the battery until it is fully charged. The principal cause of battery failure is the under-charging and over-charging that results from the use of non-automatic battery chargers.

The constant voltage chargers automatically compensate for changes in line and load. With either line or load change, the Recticharger holds the DC output voltage within the close limits required for best operation of switchboards.

Common Points Applicable to all Chargers

No extra equipment to purchase—all instruments and controls are furnished with the Recticharger.

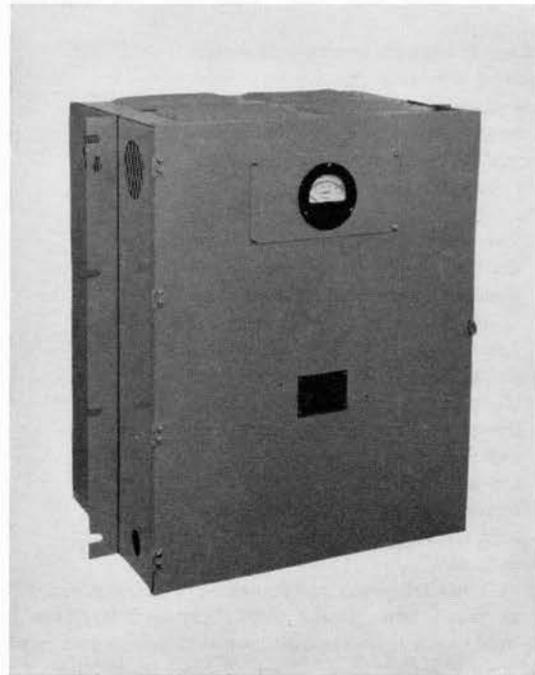
- Entirely automatic.
- Contains no tubes.
- Rectifiers protected by a built-in current limiting circuit.
- Provision for an equalizing charge.
- Very high efficiency—low "no load" losses.
- Low cubic space requirements.
- Battery activity very low—smaller batteries possible.
- Batteries and Recticharger need only annual or semi-annual inspections—low maintenance.

Models 1066B, 1058B, 1067B and 1068B

- Trickle rate can be manually adjusted to meet the battery manufacturer's specifications for longest battery life.
- Simple rectifier aging adjustment.
- Voltage output stability plus/minus 2%.

Models RC50A3 thru RC50K400

- Automatic compensation for rectifier aging.
- Close no load voltage control.
- Battery automatically receives trickle current required.
- Voltage output stability plus/minus 1%.



Recticharger Model RC50C12

Rectichargers for XY Systems

Constant Voltage Chargers (plus/minus 2%)

Code No.	Battery Cells	Amps.
1066B	11-12	1
1058B	11-12	3
1067B	11-12	6
1068B	22-24	1

Constant Voltage Chargers (plus/minus 1%)

Code No.	Battery Cells	Amps.
RC50A3	22-25	3
RC50A6	22-25	6
RC50C12	23-25	12
RC50C25	23-26	25
RC50K25	23-26	25
RC50K50	23-26	50
RC50K100	23-26	100
RC50K200	23-26	200
RC50K400	23-26	400

Auxiliary Chargers

Code No.	Battery Cells	Amps.
NA50C3	22-26	3
NA50C6	22-26	6
NA50C12	23-26	12
NA50C25	23-26	25

The above constant voltage chargers and constant current chargers which mount on XY frames may be combined as follows. Example:

Output Required	Constant Voltage Ch.	Constant Current Ch.
12 amperes	RC50A6	with NA50A6
18 amperes	RC50A12	with NA50A6

*Approximate cabinet sizes and detailed mounting dimensions available upon request.

**While the standard chargers are normally designed for fixed supply frequency operation, special chargers can be supplied at a slight additional cost for operation over a $\pm 5\%$ (57-63 cycles) range for a nominal 60 cycle supply.

Revised 9-1-58

BATTERY ELIMINATORS—RAYTHEON RECTIFIERS

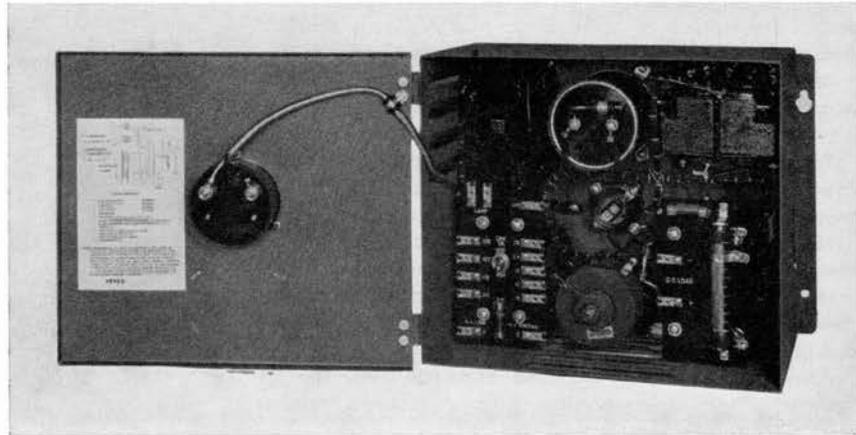
Raytheon Rectifiers furnish a desirable method of obtaining direct current telephone power directly from an alternating current source of supply. The manufacturers' claims and descriptions which follow show the economies and service which this modern way of supplying telephone power provides.

- A. Outlasts many sets of batteries.
- B. Eliminates the trouble and expense of routine service for battery inspection.
- C. Releases conductors carrying charging current or supplying power between central office and switchboards, for revenue producing purposes.
- D. Minimizes power cost because of high efficiency in converting A. C. to D. C.

Many large telephone companies have found it desirable to replace their present power installations with Raytheon Rectifiers and to equip new installations with this modern means of supplying power.

Output power ratings indicated in the following table are conservative and it will not be necessary to derate any of them by adding a safety factor. Ratings are based upon two assumptions; first, the Rectifiers must be installed in live air and second, they must be placed where the maximum ambient temperature does not exceed 95° F. If higher temperature conditions normally exist, write for suggestions before making your selection of the proper unit.

Change of source relays may be added to any model and this is indicated by adding "R" to the code in cases where this designation is not already shown. This relay automatically disconnects the Rectifier and connects an outside source of power such as dry cells or storage batteries in its place whenever there is a power failure. When the A. C. power returns, the Rectifier is automatically switched back into service. Stromberg-Carlson recommends the use of Rectifiers equipped with change of source relays for all telephone switchboard installations.



Catalog Number	DC Output For Talking		No Load Output Volts	Full Load Output Volts	AC Supply Frequency	60 Cycle Output For Ringing		Ship. Weight Lbs.
	Volts	Amps				Volts	Amps	
RFR 1057BR	4	0.23	—	4	50/60	None	—	10
RFR 1024C	6	0.5	8.5	5.5	50/60	6-10-18-24 AC	4.0	10
RFR 1026A	12	0.5	15.5	11.5	50/60	6-10-18-24 AC	4.0	11
RFR 1027C	24	0.5	28	20	50/60	6-10-18-24 AC	4.0	13
RFR 1027CR	24	0.5	28	20	50/60	6-10-18-24 AC	4.0	13
RFR 1044G	24	1.0	26	24	60	6-10-18-24 AC	4.0	47
RFR 1044GR	24	1.0	26	24	60		AC	4.0	47
RFR 1043AR	24	1.5	26	24	60	75-100	4.0	53
RFR 1040A	24	3.0	26	24	60	24 V. DC	—	60
RFR 1040AR	24	3.0	26	24	60	24 V. DC	—	60
RFR 1041AR	24	4.5	26	24	60	24 V. DC	—	107
RFR 1042AR	24	6.0	26	24	60	24 V. DC	—	117
RFR 1079AR	48	4.0	52	48	60	48 V. DC	—	109
RFR 1080AR	48	6.0	52	48	60	48 V. DC	—	168

Change of source relay can be applied on all models; when not listed, order by adding suffix "R" (Example: RFR-1040-AR). For approximate cabinet sizes and detailed mounting dimensions, request outline drawing from your supplier or from factory.

STROMBERG-CARLSON

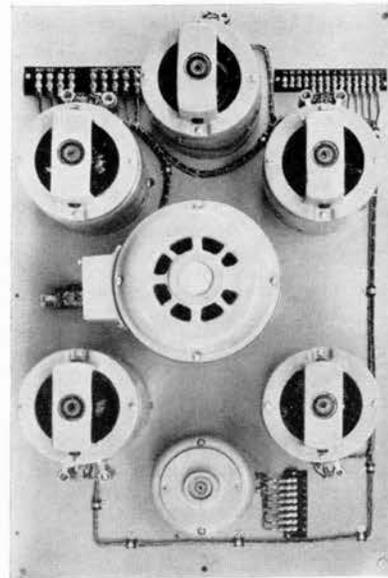
**MULTI-FREQUENCY RINGING MACHINE
25 WATTS**

Electric Specialty's multi-frequency ringing machine has been designed to meet the ringing requirements of selective party lines. The power board mounted ringing machine, which is approximately 21 in. high, 30 in. wide and 12 in. deep, consists of a single drive motor connected by cog belts to five ringing generators. Coin control and 1, 2 or 3 channel tones (individually or collectively) are available as optional equipment.

The motors are either AC types, reluctance synchronous for absolute control of frequencies, or DC Types supplied with time-tested speed regulators to hold frequencies within $\pm 1\%$. No commutators are used on generators (unless coin-control is specified), eliminating all brush problems. The generators are separately excited from station battery on either 24 or 48 volts. Voltage regulation is approximately 10%, and the harmonic content is below 10% for all units.

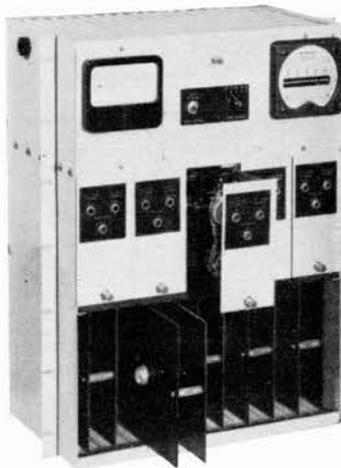
Specifications

- INPUT:** Any voltage, frequency or phase AC, or 24 or 48V DC.
OUTPUT: Multiple, non-multiple, decimonic, synchrononic, Harmonic or special frequencies.
SIZE: Approximately 21 in. high x 30 in. wide x 12 in. deep for power rack mounting.



HOLTZER-CABOT 5 Frequency
Panel Mounted 25 Watt Ringing Machine
(Covers Removed)

LORAIN TRANSISTOR SUB-CYCLE



The Lorain transistor Sub Cycle is the nearest approach to an ideal ringing generator yet developed. It operates directly from the 50-volt exchange battery. D.C. operation eliminates switching in case of a.c. power failure and increases the flexibility of the installation because the stand by unit is identical with the normal running unit. The current drain is only 0.6 ampere at no load and 5 ampere with full load on all frequencies. A built-in battery filter insures that no noise from the Sub-Cycle will reach the talking circuit.

- A few of the many features of the transistor Sub-Cycle are:
1. Adequate Load Capacity

2. Adjustable Regulated Output Voltage
3. Inherent Overload Protection
4. Line-Wave Output
5. Adjustable Reverting Tone

Cabinet dimensions are: 18 $\frac{1}{4}$ " wide x 10 $\frac{3}{4}$ " deep x 24 $\frac{3}{4}$ " high and will mount in 2 standard 19" relay rack.

Ordering Information
Model No.

TH5	Frequency	16 $\frac{2}{3}$	25	33 $\frac{1}{3}$	50	66 $\frac{2}{3}$
	Voltage	90	100	110	125	140
TH4	Frequency	16 $\frac{2}{3}$	33 $\frac{1}{3}$	50	66 $\frac{2}{3}$	
	Voltage	90	110	125	140	
TJ5	Frequency	16	30	42	54	66
	Voltage	90	105	115	125	140
TS5	Frequency	20	30	42	54	66
	Voltage	95	105	115	125	140
TS4	Frequency	30	42	54	66	
	Voltage	105	115	125	140	
TK5	Frequency	20	30	40	50	60
	Voltage	95	105	115	125	135
TK4	Frequency	20	30	40	50	
	Voltage	95	105	115	125	

Voltages shown are nominal ringing voltages, individually adjustable on each frequency generator. In addition, output taps approximately 15% above and 15% below nominal voltages are available on the output transformer. The models listed above do not include meters.

Revised 9-1-58

SUB-CYCLES

Relay Start Sub-Cycles

The Lorain RELAY START SUB-CYCLES are frequency changers operating without moving parts. They supply an output frequency which is a fixed fraction of the input frequency. The

regular models supply one-third the input frequency or 20 cycle ringing current when powered from a 60 cycle line or 16 2/3 cycle current when supplied from a 50-cycle line.

RELAY START SUB-CYCLES for operation from 60 cycle single phase

Model	No. of Stations Up To	Duty Ringing	Input Volts	20 Cycle Output in RMS unless stated Volts		Watts	Size
				No Load	Full Load		
**M7.5-60	100	Light	105-125	90	75	7.5	6 5/8 x 5 1/8 x 11 1/4
**BX-60	1600	Regular	105-125	90	75	15-20	5 3/4 x 9 3/8 x 14 1/8
**S-60	1600	Regular	105-125	90	75	15-20	5 3/4 x 9 3/8 x 14 1/8
*S1-60	1600	Regular	105-125	90	75	15-20	5 3/4 x 9 3/8 x 14 1/8
SP-60	1600	Regular with Pulsating	105-125	90, 110 peak	75, 90 peak	15-20	5 3/4 x 9 3/8 x 14 1/8
**CC-60	4000	Heavy	105-125 or 210-250	90 or 130	75 or 100	45	8 1/4 x 10 3/4 x 16 3/8
*CC1-60	4000	Heavy	105-125 or 210-250	90 or 130	75 or 100	45	8 1/4 x 10 3/4 x 16 3/8
**CCR-60	4000	Heavy	105-125 or 210-250	90 or 130	75 or 100	45	8 1/4 x 10 3/4 x 16 3/8
CCP-60	4000	Heavy with Pulsating	105-125 or 210-250	90 or 130, 160 peak	75 or 100, 120 peak	45	8 1/4 x 10 3/4 x 16 3/8

*Same as CC-60 or S-60 except arranged for operating with or without output capacitor.

**Same as CC-60 except has resistor, instead of capacitor, in output circuit.

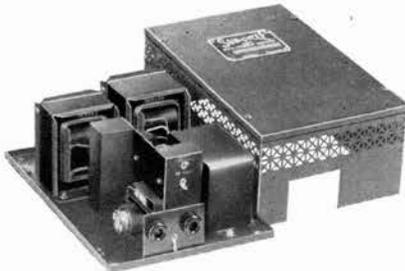
***Saturable shunt choke should be added to these SUB-CYCLES if ringing loads are highly inductive to prevent excessive operation of the SUB-CYCLE starting relay.

NOTES

1. The above Models with suffix-50 instead of -60 are available for 50 cycle operation.
2. Higher output ringing voltages are obtainable by means of auxiliary transformers. Also output transformers are avail-

able to provide a direct current path for superimposed ringing. For 230 volt input use auxiliary step down transformers.

3. An additional variety of Special Relay Start SUB-CYCLES is available for special duties.



S-60 Relay Start Sub-Cycle



BC-20C-19 "B-C" Sub-Cycle

"BC" Sub-Cycles

"BC" SUB-CYCLES use metallic rectifiers to bias the core of saturable inductances. These SUB-CYCLES are self-starting and operate without moving parts. They are characterized by instant starting with low inrush current, protection on overload, reserve capacity, regulated output ringing voltage, DC path for super-

imposed ringing and, of course, by ever-important, fixed frequency output. There are two types of BC SUB-CYCLES: 20 cycle models and 30 cycle models, all operable from 105-125 volt 60 cycle supply.

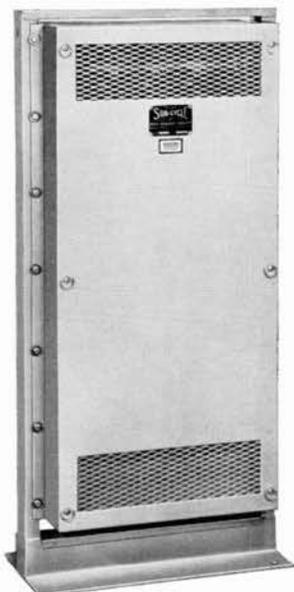
Model	Recommended No. of Stations	20 CYCLE OUTPUT		Size In Inches
		No Load Volts	F. L. Watts	
BC-20X	PBX 1 Position	90	3.5	5" x 8" x 9 1/8"
BC-20M-19	100 or less	88, 101	8.5	7" space on 19" relay rack
BC-20M-23	100 or less	88, 101	8.5	5 1/4" space on 23" relay rack
BC-20S-19	1600	88, 101, 110	20	10 1/2" space on 19" relay rack
BC-20S-23	1600	88, 101, 110	20	8" space on 23" relay rack
BC-20C-19	4000	88, 101, 110	40	10 1/2" space on 19" relay rack
BC-20C-23	4000	88, 101, 110	40	8 3/4" space on 23" relay rack
30 CYCLE OUTPUT				
BC-30X	PBX 1 Position	110	5	5 x 4 1/8 x 6 3/4
BC-30M	100 or less	90	7.5	5 3/8 x 8 x 9 1/8
BC-30S	1600	90, 120	20	5 3/8 x 8 3/8 x 12 1/2
BC-30C	4000	90, 130	60	6 7/8 x 9 1/4 x 16 1/2

STROMBERG-CARLSON

MULTIPLE FREQUENCY SUB-CYCLES

The line of Lorain Multiple Frequency Sub-Cycles consists of three ringing converters: Model K-5 for Decimonic ringing systems, H-5 for Harmonic ringing frequencies and S-5 for Synchromonic systems. S-5 generates either 15 or 20 cycles besides four other synchromonic frequencies.

All Sub-Cycles have no moving parts. Output frequencies are locked to the AC line frequency with a definite ratio and the ringing voltages are regulated.



Models	Ring. Frequencies	Mounting
K-5-19	20, 30, 40, 50, 60	Single Cabinet
K-5-23	20, 30, 40, 50, 60	2 Cabinets 52" RR
K-4-19	20, 30, 40, 50	Single Cabinet
*H-5	16 2/3, 25, 33 1/3	64 1/2" RR
	50 and 66 2/3	24 3/8" Wide
*H-4	16 2/3, 33, 50	64 1/2" RR
	and 66 2/3	24 3/8" Wide
*S-4-19	30, 42, 54, 66	19" Relay Rack
*S-4-23	30, 42, 54, 66	23" Relay Rack
*S-5-15-19	15, 30, 42, 54, 66	19" Relay Rack
*S-5-15-23	15, 30, 52, 54, 66	23" Relay Rack
*S-5-20-19	20, 30, 42, 54, 66	19" Relay Rack
*S-5-20-23	20, 30, 42, 54, 66	23" Relay Rack

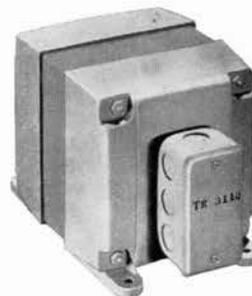
*Prefix R indicates remote control relay added.

LORAIN TRANSFORMERS for Use with Sub-Cycles

Model	Description	Used With
T-155	230/115 v. 50/60 cy. 150 va transformer	M, S or BX
TR-3113	Same as above, but 1 kva	
TR-5218	Same as above, but 1.5 kva	
T-1891	Booster transformer	S-50, S-60
T-2259	90-130 v. transformer for superimposed ringing	S-60, BX-60
T-2378	Step-up output transformer for voltages up to 300 v.	CC-60
TR-2542	Same as T-2259	CC-60, BC-20C
TR-2666	Same as T-2259	S-50, BX-50, SGB-50
TR-3131	Same as T-2259	M-7.5-60
TR-3146	Same as T-2259	M-7.5-50
T-4282	Same as T-2259, with adtl. 90 v. 200 ma winding	S-60, BX-60

LORAIN SATURABLE SHUNT CHOKES to prevent relay operation when ringing on inductive loads for use with SUB-CYCLES.

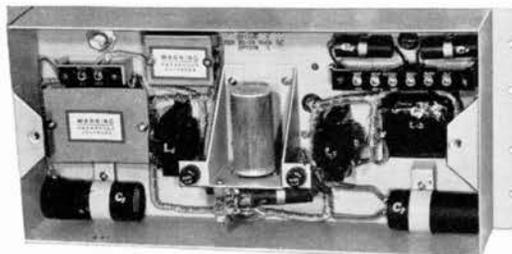
Model	Used With	Model	Used With
T-2653	BX-60	T-4061	CC-60
TR-2664	M-7.5-60		90 v. tap
	M-7.5-50	T-4344	CC-60
T-2668	S-60		130 v. tap



Power Supply Units Calculagraphs and Timers

Lorain Power Supply Units for calculagraphs and switchboard clock motors furnish low voltage 60 cycle current from commercial power supply or from a DC source.

Model	Input		Output Volts	Output Cycles	Dimensions, Relay Rack
	1 ph. 60 cy. Volts	DC Volts			
5590A	115	20-23 and/or 30-35	17-24	58 ± 2	19 x 8 23/32 x 7 7/8
5590B	208	44-50	17-24	58 ± 2	19 x 8 23/32 x 6 1/2
5590C	230	44-50	17-24	58 ± 2	23 x 8 23/32 x 6 1/2

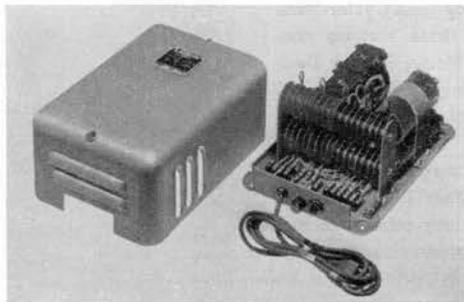


Revised 9-1-58

DC POWER SUPPLY

T Units

LORAIN T UNITS are essentially the same type equipment as RT units (see page 28g) but filtered DC power supplies and with ringing circuits omitted. Most of them operate on either 50 or 60 cycle 115v input.

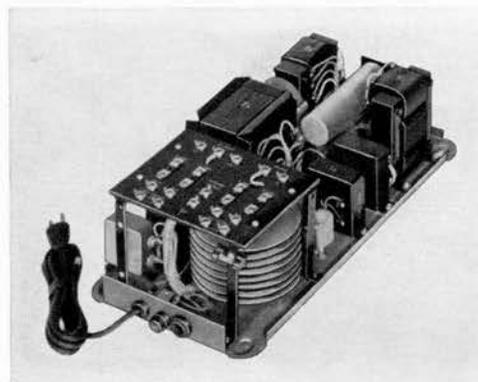


Model No.	Talking D.C. Supply	Signalling AC and DC	Cabinet Size	Application
T 1B	1 Amp 21V DC	8 Amp 10V 60CY AC .5 Amp 20V 60CY AC 2 Amp 23V DC	8 $\frac{7}{8}$ " x 13 $\frac{7}{8}$ " x 5 $\frac{1}{4}$ "	Key sets or small communication systems.
T 1B-50	1 Amp 21V DC	8 Amp 10V 50CY AC .5 Amp 20V 50CY AC 2 Amp 2V DC	8 $\frac{7}{8}$ " x 13 $\frac{7}{8}$ " x 5 $\frac{1}{4}$ "	Same as T 1B except 50 cycle operation.
T 2A	1.5 Amp 40V DC	1.5 Amp 10 or 20V 60CY AC	8 $\frac{5}{8}$ " x 17 $\frac{5}{8}$ " x 5 $\frac{1}{4}$ "	Same as T 2B except has a current limiting feature. Equipped with transfer relay for switching to stand-by batteries in case of power failure.
T 2B	4 Amp 24 or 34V DC	10 Amp 10V 60CY AC .5 Amp 20V 60CY AC	8 $\frac{5}{8}$ " x 13 $\frac{7}{8}$ " x 5 $\frac{1}{4}$ "	Heavy duty power supply for medium size communication system, transformer taps give choice of either 24 or 34V DC output.
T 3	.5 Amp 24V DC	4 Amp 6-10-18-24V 60CY AC	8" x 8 $\frac{7}{8}$ " x 5 $\frac{1}{4}$ "	Small communication system used in magneto offices having some common battery lines. Has capacity to operate 3 to 5 lines simultaneously. Operates on either 50 or 60 cycles.
T 4	1 Amp 48V DC	1.5 Amp 10 or 20V 60CY AC	8 $\frac{5}{8}$ " x 13 $\frac{7}{8}$ " x 5 $\frac{1}{4}$ "	(Power Supply for) small communication systems requiring 48V talking battery. Operates on either 50 or 60 cycle.
T 4-19	1 Amp 48V DC	1.5 Amp 10 or 20V 60CY AC	6 $\frac{5}{16}$ " x 19" x 6"	Same as T 4 except arranged for mounting on 19" rack.
T 5B	1.5 Amp 12V DC	4 Amp 6-10-18-24V 60CY AC	8" x 8 $\frac{7}{8}$ " x 5 $\frac{1}{4}$ "	(Power Supply for) small communication systems requiring 12V talking battery. Operates on 50 or 60 cycle.
T 6	1 Amp 6V DC	4 Amp 6-10-18-24V 60CY AC	8" x 8 $\frac{7}{8}$ " x 5 $\frac{1}{4}$ "	(Power Supply for) small communication systems requiring 6V battery. Operates on 50 or 60 cycle.
T 7		.25 Amp + 120V DC .25 Amp - 120V DC	8 $\frac{5}{8}$ " x 12 $\frac{1}{4}$ " x 5 $\frac{1}{4}$ "	(Power Supply for) paystation coin collect and return. Operates on either 50 or 60 cycle input. Provides both + and - outputs.
T 8		.25 Amp + 120V DC .25 Amp - 120V DC	8 $\frac{5}{8}$ " x 12 $\frac{1}{4}$ " x 5 $\frac{1}{4}$ "	DC bias for superimposed ringing operates on either 50 or 60 cycle input. Provides both + and - outputs.
T 9	1 Amp 6V DC		4 $\frac{7}{8}$ " x 4 $\frac{1}{8}$ " x 6 $\frac{7}{8}$ "	Talking battery supply for small communication systems.

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**DC POWER SUPPLY (Cont.)
RT Units**

LORAIN RT UNITS are the combination of ringing (R) and talking (T) power supplies, operable from 111, 117 or 123 volt 60 cycle input and tolerating voltage fluctuations of plus or minus 5%. All units are equipped with 6 foot cords and plugs. Flat type telephone fuses are used in talking and signaling output circuits. Selenium rectifiers of Lorain make are used for obtaining the DC for talking and signaling supply.

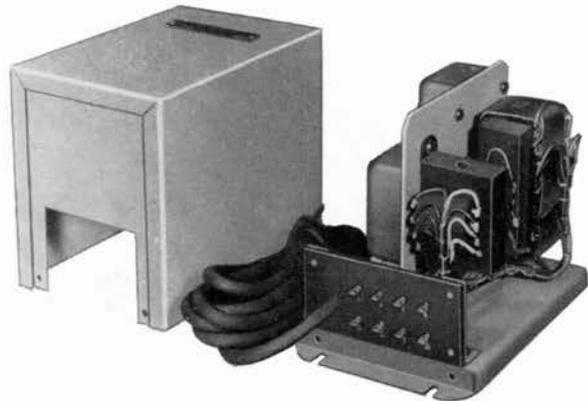


Model No.	Ringing Output	Talking DC Supply	Signaling AC & DC	Cabinet Size	Application
RT 1B	50 MA 90V 20CY AC	1 Amp 21V DC	8 Amp 10V 60CY AC .5 Amp 20V 60CY AC 2 Amp 23V DC	8 5/8" x 13 7/8" x 5 1/4"	Key sets or small communication systems. Uses sub-cycle BC 20X for ringing.
RT 2B	50 MA 90V 30CY AC	4 Amp 24 or 34V DC	10 Amp 10V 60CY AC .5 Amp 20V 60CY AC	8 5/8" x 17 5/8" x 5 1/4"	Heavy duty power supply for medium size communication systems, transformer taps give choice of either 24 or 34V DC output. Uses Sub-cycle BC 20X for ringing.
RT 3B	50 MA 110V 30CY AC	1 Amp 21V DC	8 Amp 10V 60CY AC .5 Amp 20V 60CY AC 2 Amp 23V DC	8 5/8" x 12 1/4" x 5 1/4"	Same as RT 1B except 30 cycle is provided for ringing.
RT 3B-50	50 MA 110V 25CY AC	1 Amp 21V DC	8 Amp 10 V 50CY AC .5 Amp 20V 50CY AC 2 Amp 23V DC	8 5/8" x 12 1/4" x 5 1/4"	Same as RT 3B except for 50 cycle input.
RT 4B	50 MA 110V 30CY AC	4 Amp 24 or 34V DC	10 Amp 10V 60CY AC .5 Amp 20V 60CY AC	8 5/8" x 17 5/8" x 5 1/4"	Same as RT 2B except 30 cycle is provided for ringing.
RT 5	50 MA 110V 30CY AC	1 Amp 48V DC	1.5 Amp 10 or 20 V 60CY AC	8 5/8" x 17 5/8" x 5 1/4"	Communications systems requiring 48V talking battery and 30CY ringing.
RT 5-19A	50 MA 110V 30CY AC	1 Amp 48V DC	1 Amp 48V DC	6 15/16" x 19" x 6"	Same as RT 5 except arranged for mounting on 19" relay rack.
RT 5-19-50	50 MA 75V 25CY AC	1 Amp 48V DC	1 Amp 48V DC	6 15/16" x 19" x 6"	Same as RT 5-19A except 50 cycle operation, provides 25 cycle ringing.
RT 6	20 MA 110V 30CY AC	.4 Amp 21V DC	1.5 Amp 10 or 20V 60CY AC	8" x 8 7/8" x 5 1/4"	Private line telephone systems using high impedance straight line ringers.
RT 7	50 MA 90V 20CY AC	1 Amp 48V DC	1.5 Amp 10 or 20V 60CY AC	8 5/8" x 17 5/8" x 5 1/4"	Same as RT 5 except 20 cycle ringing.
RT9-19A	50 MA 110V 30CY AC	.5 Amp 48V DC	.5 Amp 48V DC	3 15/32" x 19" x 6"	Small communication systems, provides 30 cycle ringing and arranged for mounting on 19" relay rack.

Revised 9-1-58

TONE AND RINGING GENERATORS

Dial Tone Generators



LORAIN DIAL TONE GENERATORS are static type, self-contained, compact and trouble-free. Models AA, D and DK for offices up to 4000 stations, Models C and CK for offices up to 1000 stations. All models except E, are operable from 105-125 volt 60 cycle.

Model	Description	Size
AA	High tone—480 cycles Low tone—600 cycles Modulated at 120 cycles	8 x 13 1/4 x 5 1/4
C	Single tone—600 cycle Modulated at 120 cycles, 25 mw output	4 1/8 x 6 3/4 x 5 1/4
CK	Same as Model C but fits Time-O-Matic panel, no cover	4 1/4 x 6 x 4 3/4
D	The same as C, except rated at 100 mw output	4 1/8 x 6 3/4 x 5 1/4
DK	Same as Model D but fits Time-O-Matic panel, no cover	4 1/8 x 6 x 4 3/4
DK-50	The same as DK, but for 50 cycle input	4 1/8 x 6 x 4 3/4
E	Operates from 230 volt 60 cycle input, Low tone 30v 500 mw, High tone 30v 100 mw.	12 1/4 x 8 3/8 x 5 1/4

Stand-By Ringing Generators

LORAIN STAND-BY RINGING GENERATORS supply 10 watt 20 cycle plus or minus 0.5 cycle ringing current during commercial AC power failure.

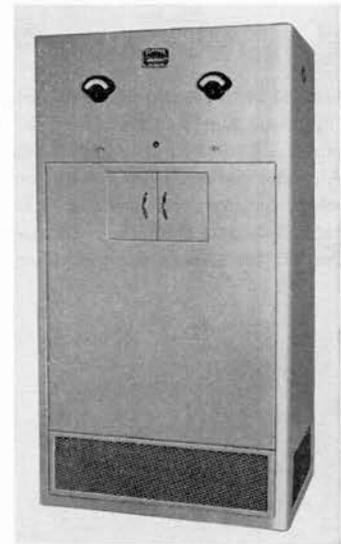


Model	Input DC Volts	Output Volts	Size
G581-501	20-26	100-115	7 3/8 x 5 1/8 x 12 3/4
G581-504	40-52	94-101	7 3/8 x 5 1/8 x 12 3/4

FLOTROLS

Three Phase

ALL LORAIN THREE PHASE FLOTROLS have output voltage regulation of plus or minus 1% from 2% load to full load with input voltage variation of plus or minus 8%. All 3-phase FLOTROLS listed below are equipped with voltmeter and ammeter, have filter choke and condenser (except 260 volt models) and have DC relay for remote control of input contactor, 24 volt and 48 volt FLOTROLS have magnetic contactors on AC input, on DC output and overload relays on AC contactor. 130v and 260v FLOTROLS are



equipped with circuit breakers in AC input and DC output. 230 volt input FLOTROL Models are tapped for 208 or 230 volt 60 cycle 3-phase input. 460 volt models are tapped for 420 or 460 volts. Charge failure alarm relays are available for all models when specified.

Model	Input Volts	Output Cells	Amps.	Size	Mount- ing
24 VOLT FLOTROLS					
*U1250A	230	11-12	50	23 x 14 7/8 x 45 1/2	RR
U2500A	230	11-12	100	32 x 19 x 60	F1
U5KA	230	11-12	200	36 x 26 x 72	F1
48 VOLT FLOTROLS					
*U1250B	230	23-24-25	25	23 x 14 7/8 x 45 1/2	RR
*2501B	230	23-24-25	50	23 x 14 7/8 x 45 1/2	RR
U3750B	230	23-24-25	75	32 x 19 x 60	F1
U5KB	230	23-24-25	100	36 x 26 x 72	F1
U7.5KB	230	23-24-25	150	36 x 26 x 72	F1
U10KB	230	23-24-25	200	42 x 28 x 78	F1
10KB4	460	23-24-25	200	42 x 28 x 78	F1
20KB	230	23-24-25	400	42 x 28 x 78	F1
130 VOLT FLOTROLS					
2100H	230	57-60-63	15	20 1/2 x 15 x 60	F1
3300H	230	57-60-63	25	32 x 19 x 60	F1
4600H	230	57-60-63	35	32 x 19 x 60	F1
6.5KH	230	53-60-63	50	36 x 26 x 72	F1
6.5KH4	460	53-60-63	50	36 x 26 x 72	F1
260 VOLT FLOTROLS					
6.5KLN4	460	120	25	36 x 26 x 72	F1
13KLN4	460	120	50	42 x 28 x 78	F1

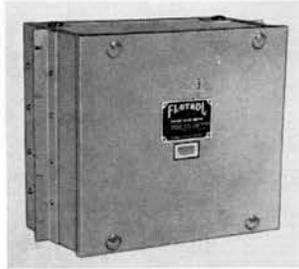
U—Underwriters Laboratories' approved.

*Mounts on any standard 23" relay rack or floor mounts on 119E relay rack.

FLOTROLS (Cont.)

Carrier Supply Units

LORAIN FLOTROL CARRIER SUPPLY UNITS supply 130 volt plus or minus 3% 0.5 ampere plate current for carrier or repeater operation when powered from either 115 volt or 230 volt single phase 60 cycle source. During power interruption they automatically transfer to a built-in vibrator operating from either 24 or 48 volt battery. All models are 19" w, 15 $\frac{3}{8}$ " d and 15 $\frac{3}{8}$ " h, extend 3" from the front of the relay rack. When suffix "C" is added to any model number the unit extends 5".



Model	AC Volts	Input	DC Volts
CS1	100-130		45-52
CS2	100-130		22-25
CS12	190-250		45-52
CS22	190-250		22-25
CS1A*	100-130		45-52
CS2A*	100-130		22-25
CS12A*	190-250		45-52
CS22A*	190-250		22-25
CS1B**	100-130		45-52
CS2B**	100-130		22-25

*Equipped with alarm lamps.

**Equipped with special features: extra condensers, marginal transfer relay, time delay relay and remote output failure alarm.

Single-Phase Flotrols

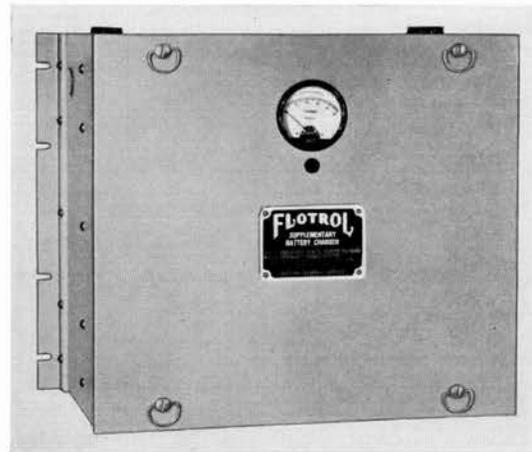
LORAIN SINGLE-PHASE FLOTROLS are completely automatic battery chargers with no moving parts. The output voltage regulation is accomplished by magnetic reactors and the rectification by means of selenium rectifiers. On overloads the FLOTROLS are automatically protected against damage by changing their operation from constant voltage type chargers to constant current type chargers. They maintain voltage regulation of plus or minus 1% from 10% load (some models from no load) to full load.

Most single-phase FLOTROLS are available as battery eliminators. Some popular models are listed below. The quiet model FLOTROLS are characterized by their extremely low sound level.



Model	Input Volts	Output Volts	Cells	Amps	Size	Mounting
24 VOLT FLOTROLS						
U24A	115	24	10-11-12	1	19 x 5 x 7	RR, W
U75A	115	24	10-11-12	3	19 x 9 x 15 $\frac{3}{8}$	RR, W
U150A	115	24	10-11-12	6	19 x 8 $\frac{3}{8}$ x 24 $\frac{3}{8}$	RR, W
150AF	115	22	9-10-11	6	19 x 8 $\frac{3}{8}$ x 24 $\frac{3}{8}$	RR, W
U300A	115	24	10-11-12	12	19 x 12 $\frac{1}{8}$ x 28	RR, W
300AA	115	18	8	12	19 x 12 $\frac{1}{8}$ x 28	RR, W
300AF	115	22	9-10-11	12	19 x 12 $\frac{1}{8}$ x 28	RR, W
U600A	230	24	11-12	24	23 x 15 x 45 $\frac{1}{2}$	RR
U600A1	115	24	11-12	24	23 x 15 x 45 $\frac{1}{2}$	RR
600AF1	115	22	9-10-11	24	23 x 15 x 45 $\frac{1}{2}$	RR

Supplementary Flotrols



LORAIN SUPPLEMENTARY FLOTROLS are unregulated chargers designed to supply a constant current to supplement the output current of a standard, regulated FLOTROL. The rating of the regulated charger must always be equal to or greater than that of the supplementary charger. Each supplementary charger is equipped with either built-in or separately mounted CONTROL RELAY, actuated by the output current of the regulated FLOTROL to turn on the supplementary charger when it is needed, and to turn it off when it is not needed. When ordering a supplementary charger the current rating of the regulated FLOTROL should always be specified.

Model	Input Volts	Output Volts	Amps	Size
150SA	115/230	24	6	19 x 8 $\frac{1}{2}$ x 13 $\frac{1}{16}$
300SA	115/230	24	12	19 x 12 $\frac{1}{16}$ x 15 $\frac{1}{16}$
600SA	115/230	24	24	23 x 14 $\frac{7}{8}$ x 19 $\frac{3}{16}$
150SB	115/230	48	3	19 x 8 $\frac{1}{2}$ x 13 $\frac{1}{16}$
300SB	115/230	48	6	19 x 12 $\frac{1}{16}$ x 15 $\frac{1}{16}$
600SB	115/230	48	12	23 x 14 $\frac{7}{8}$ x 19 $\frac{3}{16}$
1200SB	115/230	48	24	23 x 15 x 29 $\frac{1}{2}$

CONTROL RELAYS

Model	Amps	Model	Amps	Model	Amps
FS1R-3	3	XFS1R-3	3	XFS2R-24	24
FS1R-6	6	XFS1R-6	6	XFS2R-50	50
FS1R-12	12	XFS1R-12	12	XFS2R-75	75
FS1R-24	24	XFS1R-24	24	XFS2R-100	100
		XFS1R-50	50		

Relays with prefix "X" are mounted externally and have contacts to control "ON" and "OFF" DC relay in supplementary charger.

Revised 9-1-58

SINGLE-PHASE FLOTROLS (Cont.)

Model	Input Volts	Volts	Output Cells	Amps	Size	Mounting
DUAL RANGE FLOTROLS						
U150D	115	24	11-12	6	19 x 8 3/8 x 24 3/8	RR, W
	230	48	22-23-24	3		
U300D	115	24	11-12	12	19 x 12 1/8 x 28	RR, W
	230	48	22-23-24	6		
48 VOLT FLOTROLS						
U75B	115	50	22-23-24	1.5	19 x 9 x 15 3/8	RR, W
U150B	115	50	22-23-24	3	19 x 8 3/8 x 24 3/8	RR, W
U300B	115	50	22-23-24	6	19 x 12 1/8 x 28	RR, W
300BA	115	43	20	6	19 x 12 1/8 x 28	RR, W
U600B	230	52	23-24-25	12	23 x 15 x 45 1/2	RR
U600B1	115	52	23-24-25	12	23 x 15 x 45 1/2	RR
*600BA1	115	43-50	20-23-24	12	23 x 15 x 45 1/2	RR
**UAE600B	230	52	23-24-25	12	23 x 15 x 45 1/2	RR
U1200B	230	52	23-24-25	24	23 x 15 x 45 1/2	RR
1200B1	115	52	23-24-25	24	23 x 15 x 45 1/2	RR
*1200BA	230	43-50	20-23-24	24	23 x 15 x 45 1/2	RR
**UAE1200B	230	52	23-24-25	24	23 x 15 x 45 1/2	RR
130 AND 140 VOLT FLOTROLS						
350J	230	140	66	2.5	19 x 12 1/8 x 28	RR, W
***U400H	115/230	130	57-60-63	3	19 x 12 1/8 x 28	RR, W
700H	230	130	57-60-63	5	20 1/2 x 15 x 60	Floor
700J	230	140	66	5	23 x 15 x 45 1/2	RR
***1400H	230	130	57-60-63	10	20 1/2 x 15 x 60	Floor
1400J	230	140	66	10	23 x 15 x 45 1/2	RR
***3302HN	230	130	57-60-63	25	20 1/2 x 15 x 60	Floor
QUIET MODEL FLOTROLS						
22A	115	24	10-11-12	1	19 x 5 x 7	RR, W
72A	115	24	9-10-11-12	3	19 x 8 3/8 x 24 1/2	RR, W
152A	115	24	9-10-11-12	6	19 x 8 3/8 x 24 3/8	RR, W
302A	115	24	9-10-11-12	12	19 x 12 1/8 x 28	RR, W
112BA	115	38	17-18	3	19 x 8 3/8 x 24 1/2	RR, W
222BA	115	38	17-18	6	19 x 8 3/8 x 24 3/8	RR, W
152B	115	50	23-24	3	19 x 8 3/8 x 24 3/8	RR, W
PLUS OR MINUS 2 1/2% V REGULATION FLOTROLS						
***12EB	230	4.3	2	3		
***40EB	230	4.3	2	10		
24E	115	6.5	3	4	19 x 5 x 7	RR, W
130E	115	6.5	3	20	19 x 8 3/8 x 24 3/8	RR, W
***24EA	230	8.6	4	3	19 x 5 x 7	RR, W
U40MA3	115/230	13.0	6	3	19 x 9 x 15 3/8	RR, W
140MA3	115/230	13.0	6	10	19 x 8 3/8 x 24 3/8	RR, W
280MA3	115/230	13.0	6	20	19 x 12 1/8 x 28	RR, W
15AA	115	18	8-9	.75	12 1/4 x 8 3/8 x 5 1/4	Wall
U1700G	230	86	40	20	23 x 15 x 45 1/2	RR
PLUS OR MINUS 2% V REGULATION BATTERY ELIMINATORS WITH MAX. 30 MV RIPPLES						
BE75A	115	24		3	19 x 9 x 15 3/8	RR, W
BE150A	115	24		6	19 x 8 1/2 x 24 1/8	RR, W
BE300AF	115	24		12	19 x 12 1/8 x 28	RR, W
BE300A	115	24		12	19 x 12 1/8 x 28	RR, W
BE600A1	115	24		24	23 x 15 x 45 1/2	RR
BE112BA	115	38		3	19 x 9 x 15 3/8	RR, W
BE150B	115	48		3	19 x 8 1/2 x 24 1/8	RR, W
BE300B	115	48		6	19 x 12 x 28	RR, W
BE600B	230	48		12	23 x 15 x 45 1/2	RR
BE600B1	115	50		12	23 x 15 x 45 1/2	RR
BET1400HA	230	120 ± 5%		12	20 1/2 x 15 x 60	Floor
PLUS OR MINUS 5% V REGULATION BATTERY ELIMINATORS WITH MAX. 200 MV RIPPLES						
TT	115	120		.8	19 3/8 x 7 3/8 x 9 3/8	Shelf
XTTB	115	90		.8	8 1/2 x 7 x 16 1/2	Shelf
TT2	115	48/55		2.0	19 x 8 3/4 x 9	RR
TT3	115	10/20		5.0	19 x 8 3/4 x 9	RR
T192B	115	48		4.0	19 x 10 1/2 x 10	RR

U—Underwriters Laboratories' approved.

*Regulation on 20 cell tap plus or minus 2 1/2%.

**Has magnetic AC and DC contactors, voltmeter and ammeter and end cell switch to float 26 volt battery.

***Equipped with voltmeter and ammeter.

STROMBERG-CARLSON

TECHNICAL DATA

Diesel Engine Driven Emergency Power Plants

Model Number	Rating		1 Phase Amperes		3 Phase Amperes		Wire Size A.W.G.	Transfer Switch Rating	Fuel Tank		Starting Battery		Exhaust Pipe Size	Engine
	KW	KVA	120 Volt 2 Wire	120/240V. 3 Wire	120/208V. 4 Wire	240 Volt 3 Wire			Gals.	Hrs.	Volts	AH		
SC5D	5	6.25	52	26	17.5	15	6 10	60 30	58	105	12	150	2"	Waukesha 180DLC
SC705D	7.5	9.4	78	39	26	22.5	3 8 10	100 60 30	58	70	12	150	2"	Waukesha 180DLC
SC10D	10	12.5	52	38	30	30	6 10	60 30	58	50	12	150	2"	Waukesha 180DLC
SC15D	15	18.75	78	52	45	45	3 6	100 60	58	42	12	150	2"	Waukesha 180DLC
SC20D	20	25		69	60	60	4 4	100 60	58	32	12	150	2"	Hercules DD198
SC25D	25	31		87	75	75	2	100	58	26	12	150	2"	Hercules DD198
SC30D	30	37.5		104	90	90	1 2	150 100	58	20	12	150	2"	Hercules DD226
SC35D	35	43.75		122	105	105	1/0	150	58	15	12	150	2"	Hercules DD260
SC40D	40	50		139	120	120	2/0	150	117	32	12	150	2"	Hercules DD298
SC50D	50	62.5		174	150	150	4/0 3/0	200 150	117	26	12	150	2½"	Hercules DD339
SC60D	60	75		208	180	180	250M 4/0	300 200	117	22	24	204	2½"	Waukesha 135DK
SC75D	75	94		260	225	225	350M	300	265	40	24	204	3½"	Continental RD572
SC100D	100	125		347	300	300	600M 2-4/0 500M 2-3/0	400 300	265	32	24	204	3½"	Hercules DFXC

Gasoline Engine Driven Emergency Power Plants

Model Number	Rating		1 Phase Amperes		3 Phase Amperes		Wire Size A.W.G.	Transfer Switch Rating	Fuel Tank		Starting Battery		Exhaust Pipe Size	Engine
	KW	KVA	120 Volt 2 Wire	120/240V. 3 Wire	120/208V. 4 Wire	240 Volt 3 Wire			Gals.	Hrs.	Volts	AH		
SC6G	6	6	50	25		14.5	6 10	60 30	58	48	12	45	1¼"	Wisconsin TF
SC10G	10	12.5	52	38	30	30	6 10	60 30	58	25	6	100	1¼"	Continental Y 91
SC15G	15	18.75	78	52	45	45	3 6	100 60	58	21	6	100	1½"	Continental FA 162
SC20G	20	25		69	60	60	4 4	100 60	58	16	6	100	1½"	Continental FA 162-S
SC25G	25	31		87	75	75	2	100	58	13	6	100	2"	Hercules GO198
SC30G	30	37.5		104	90	90	1 2	150 100	58	10	6	100	2"	Hercules GO226
SC35G	35	43.75		122	105	105	1/0	150	117	19	6	100	2"	Hercules GO260
SC40G	40	50		139	120	120	2/0	150	117	16	6	100	2"	Hercules GO298
SC50G	50	62.5		174	150	150	4/0 3/0	200 150	117	13	6	100	2"	Hercules GO339
SC60G	60	75		208	180	180	250M 4/0	300 200	117	11	12	100	2½"	Hercules WXLC3
SC75G	75	94		260	225	225	350M	300	265	20	12	100	3"	Hercules RXLD
SC100G	100	125		347	300	300	600M 2-4/0 500M 2-3/0	400 300	265	16	12	100	3"	Waukesha 145GKB

CONVERTERS
Multi-Frequency Ringing

These converters transform direct current obtained from 24 cells of storage battery, to ringing frequencies for use with tuned frequency signaling systems. They are of the vibrating reed type.

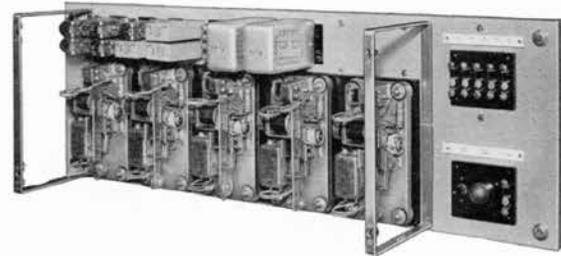
Mounted on a 10" x 30" panel, these converters are set up in units of 4 or 5 frequencies with or without transformers. Each series of converters is complete with its own control relays, fusing and starting circuit. The vibrators and relays are protected by a steel cover that has a plastic window on the face of the cover.

These multi-frequency ringing machines may also be used as a stand-by source of ringing current when used in conjunction with sub-cycles and other types of ringing machines, described elsewhere in this section.

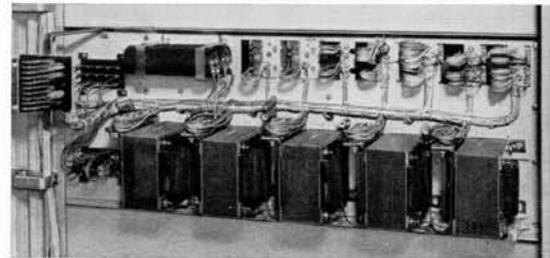
Ringing converters are used to provide party line ringing service for all sizes of telephone exchanges and operate indefinitely with the maximum degree of efficiency. Only occasional replacements of contact springs and screws are necessary, together with the usual check-up of frequencies and voltages.

The standard multiple frequency converters for operation from a 48 volt direct current circuit, are listed below.

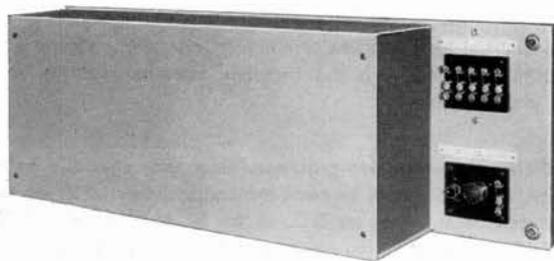
Besides the multi-frequency ringing converters, Stromberg-Carlson also has a single frequency converter available. This type of converter is used in straight line ringing applications.



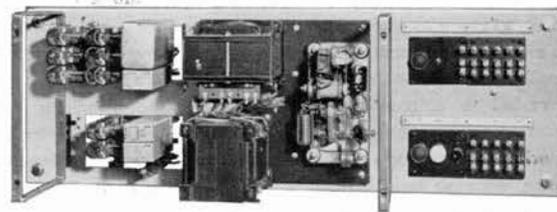
5-Frequency Ringing Vibrators (with cover removed)



Rear view of 5-Frequency Ringing Vibrators



5-Frequency Ringing Vibrators (with cover in place)



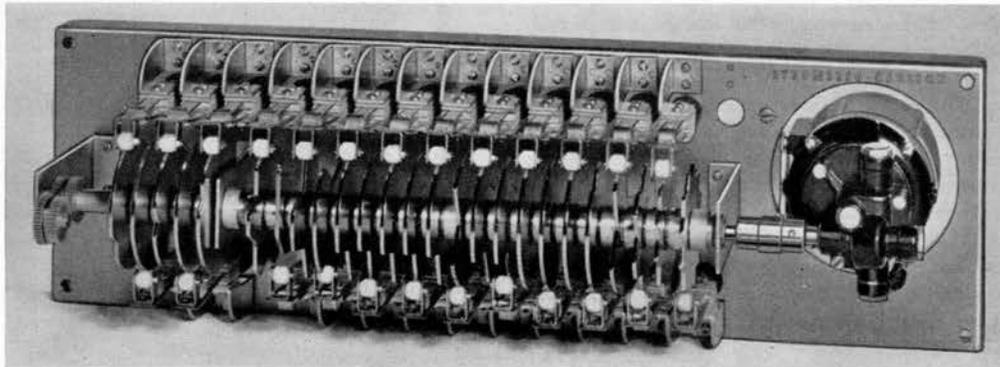
Single Frequency with insulating transformer

ORDERING INFORMATION

Stock No.	Description	No. of Parties	Stock No.	Description	No. of Parties
DECIMONIC SERIES					
485665-000	20, 30, 40, 50, 60 cycles, with transformers	5	485668-000	16 2/3, 33 1/3, 50, 66 2/3 cycles, without transformers	4
485666-000	20, 30, 40, 50, 60 cycles, without transformers	5	SYNCHROMONIC SERIES		
HARMONIC SERIES					
485659-000	16 2/3, 25, 33 1/3, 50, 66 2/3 cycles, with transformers	5	485661-000	20, 30, 42, 54, 66 cycles, with transformers	5
485660-000	16 2/3, 25, 33 1/3, 50, 66 2/3 cycles, without transformers	5	485662-000	20, 30, 42, 54, 66 cycles, without transformers	5
485667-000	16 2/3, 33 1/3, 50, 66 2/3 cycles, with transformers	4	485663-000	16, 30, 42, 54, 66 cycles, with transformers	5
			485664-000	16, 30, 42, 54, 66 cycles, without transformers	5

Revised 9-1-58

STROMBERG-CARLSON INTERRUPTER MACHINE New Multiple-Use, High-Low Motor Driven Unit



Front View of Stromberg-Carlson's Type Interrupter Machine.
Dust Cover Removed to Show Motor, Cams, and Drive Shafts.

The Stromberg-Carlson Motor-Driven Interrupter machine — designed by telephone engineers for telephone use, answers a long-felt need in the industry. The engineers' problem was to design a machine that was versatile, easily powered, inexpensive in first cost and easily maintained. Their objective has been accomplished; the Interrupter now stands with the XY Switch and other fine products which have made the name Stromberg-Carlson a symbol for quality with the telephone industry.

Versatility

The need for accurately timing and interrupting a circuit has grown apace with each new substitution of electrical power for the slower, less accurate hand operation. New needs are continually arising, as more manually controlled functions are converted to automatic service. The Stromberg-Carlson Interrupter recognizes the many known uses in telephony: harmonic, superimposed or code ringing, busy signal, alarm, conversation timing, warning tone, automatic cut-off and lock-out. It is adapted for timing sequences in many other industries: laundries, foundries, plastic centers, bakeries. A growing use is with intermittent electric displays.

Construction Features

The unusual feature of the Stromberg-Carlson Interrupter which multiplies its value, is the complete interchangeability of all the working parts.

THE MOTOR, a standard purchased item with specially built-in reduction gearing, can be removed and replaced in 30 seconds. This can be supplied for D.C., or for 50 or 60 cycle, 115 Volt A.C. The two precision-cut couplings mesh securely without adding to motor load.



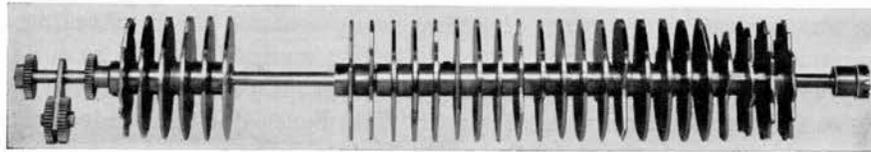
Interchangeable Motor Unit, furnished in DC, and 50 or 60 cycle AC, showing coupling to shaft.



Removable Snap-Action Switch, showing jack-in feature and mounting screws which also control adjustment.

STROMBERG-CARLSON

INTERRUPTER MACHINE (Cont.)



View of two-speed shaft. High speed on right, low speed actuated by planetary gears on left.

THE SNAP-ACTION SWITCHES require no relays to open or close them; the spring accomplishes immediate contact or break. Any switch can be unmounted and moved to a new position in a matter of seconds without stopping the unit, using only a screw driver. These switch mounting screws control the adjustment of switch rollers on the cams. Jack-in contacts make for simple yet positive contact without the use of solder. The nylon rollers turn on a case-hardened polished steel bearing, held by a small steel screw. The transfer springs of beryllium copper have performed more than one billion mechanical operations without any sign of failure. Large size self-cleaning transfer contacts with built-in wiping action are made of a special alloy and have excellent heat dissipation. Contact make or break can be timed within 50 milliseconds.

TWO SPEEDS. The high speed side, with capacity for 22 circuits operating at either 6- or 8-second cycle is used for busy signal, ringing and alarm, the shaft connected through the couplings directly to the motor. Torque is so low that motor load is close to zero. The low speed side, with 6 circuits, is a concentric shaft whose speed has been reduced by planetary gears to a 2-minute cycle — as simple as the Model T transmission. The cams are usually cut to regulate conversation timing, automatic cut-off after warning tone, and the like. If desired the low-speed shaft can be eliminated; in special circumstances

an extension of the high speed shaft with additional cams may be ordered.

THE CAMS are of polished case-hardened steel, chromium plated. All cams are precision cut on the same standard milling cutters. The hub is copper brazed to the cam, and fastens to the shaft with a set screw. In a matter of minutes, one set of cams can be slipped off the shaft and a new set, precision cut to different time intervals, can be secured and the switches re-set for the new timing sequence.

Installation and Maintenance

While the Stromberg-Carlson Interrupter was originally designed to fit into the XY System of dial telephone exchange, it can be adapted for use in manual exchanges or with other types of dial central office equipment. Like all other parts of the XY System, it jacks into place ready for immediate use, and can be removed for examination, re-setting or moved to a new location with minimum of time and effort. The complete unit is light and very compact, occupying only 150 square inches of rack space. The sides form a rigid protecting flange, so that the unit can be set down in any position for adjustment. Three finger holes in each side plate make easy hand grips for carrying. Base-mounted plugs accommodate the switch jacks; these are wired to the main jack out in the open on the back, for easy checking.

ORDERING INFORMATION

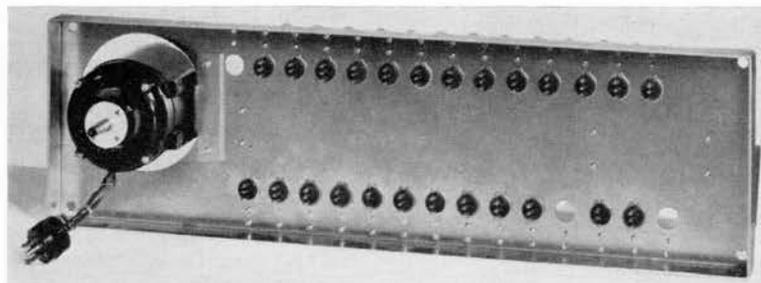
Because of the complete interchangeability of motor, cams, and switches, the Stromberg-Carlson Interrupter Machines are assembled to specific requirements. Order these machines by specifying the circuits that are to be interrupted, and details as to timing and sequence of interruptions.

The motor unit usually supplied with the Interrupter is 60 cycle AC or DC. However, 50 cycle AC motors can be supplied for any circuit.

The following list contains only a few applications in which an Interrupter Machine can be used:

1. For Harmonic 1 and 2 ring, 6 second cycle, interrupted ground.
2. For 10 and 20 Code, 8 second cycle, interrupted generator.
3. For 5 Frequency, 1 and 2 ring, 6 second cycle, interrupted generator.
4. For Superimposed 1 and 2 ring, 6 second cycle, interrupted generator.

Information regarding new or replacement parts will be furnished by your nearest Stromberg-Carlson branch office.



Rear View of Interrupter Machine

STROMBERG-CARLSON

TESTING EQUIPMENT

Stromberg-Carlson has devised many types of testing equipment for use in checking and maintaining inside and outside plant facilities. Seven major types of testing equipment have been developed to assist the wire chief and plant man in maintaining a trouble-free operating company. These types are: (1) Type "A" Test meter—a volt-ohm-milliammeter, (2) Type "B" Test Boxes—for unattended offices, (3) Type "C" Test Turret—for the smaller central offices, (4) Type "D" Test Desk—for the larger central offices (local testing only), (5) Type "E" Test Panels—for the largest offices (local and toll testing), (6) Portable Maintenance Test Sets—for individual pieces of equipment, and (7) Circuit Plate Test Apparatus—circuit plate style.

Type "A" Test Meter

This meter is a Weston 697 volt-ohm-milliammeter, used to test resistances, amperes, and voltages. This model combines a selection of AC and DC voltage, direct current and resistance ranges in a light weight, pocket size case. The meter is furnished complete with a leather carrying case.

Type "B" Test Boxes

The "B-1" Test Box is a testing position used primarily in unattended dial offices to check the operation of the equipment. All testing circuits are contained in a gray box which can be mounted on a main distributing frame or near-by wall or column.

The box itself measures 14 $\frac{5}{16}$ " x 11 $\frac{15}{16}$ " x 6 $\frac{1}{2}$ ", and when mounted on a main distributing frame, it protrudes 3 $\frac{1}{4}$ " in front of the frame.

All equipment is mounted on the hinged front panel which makes servicing easier and faster.

The following is a list of tests that can be accomplished with this set:

1. Foreign potential tests—for battery on Tip and Ring.



Wire Chief's Test Set
Type "B-1" Test Box

2. Loop leakage tests—high and low leakage.
3. Tip and Ring leakage tests—high and low leakage.
4. Capacitance tests—for Tip, Ring and Loop capacitance.
5. Selector tests—access is provided to a local test selector.
6. Remote testing—provision for testing distant offices.
7. Ringing tests—frequency, code or superimposed ringing.
8. Heat Coil test—access to line equipment if heat coil is closed.
9. Reverse tests—reverses test leads.
10. Howler—may be applied through test selector or MDF shoe.

Aside from the test mentioned above, this test set is arranged for an office line for communication purposes.

Nos. B-3 & B-4 Wire Chief's Test Sets

The Nos. B-3 & B-4 Wire Chief's Test Sets are used in manual central office exchanges to make the wide range of tests demanded in present day telephone practice. These units are compact in their cabinets and can be mounted either on the equipment frames (their normal position) or on walls or posts.

The No. B-3 test set operates on 24 volts while the No. B-4 operates on 48 volts DC. Both sets have the same testing circuits and same method of operation. With these sets, the wire chief can accomplish the following tests and operations:

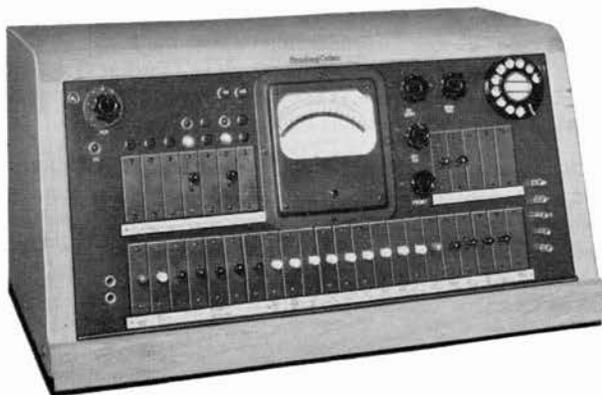
1. Test for foreign potential on Tip and Ring leads.
2. Test for high resistance on Tip and Ring leads.
3. Test for low resistance on Tip and Ring leads.
4. Test for high and low Loop resistance.
5. Test for Tip, Ring, and Loop capacitance.
6. Test for ringing on any line.
7. Test for heat coil operation.
8. Test for inside plant equipment.
9. Manual stepping Howler control.
10. Test for idle line condition.

There are three types of ringing that can be applied with this unit. These are:

1. Five frequency—ten party ringing.
2. Single frequency—with code key.
3. Superimposed ringing—four party.

The size of these sets is approximately 12" wide, 14 $\frac{1}{2}$ " high, and 6 $\frac{1}{2}$ " deep. The cabinets are gray to match the frames and circuit plates in the equipment room.

TESTING EQUIPMENT (Cont.)



The Type "C" Test Turret

Containing all of the essential features for testing inside and outside plant facilities, this turret is admirably suited for testing local equipment in a small central office. All of the basic circuits used in the turret will also be found in the larger pieces of test equipment, permitting the smaller offices to have the same versatile and accurate test facilities that are found in the large offices.

The circuits are neatly arranged in a No. 121 Cordless Switchboard cabinet to promote efficient operation of the turret. This apparatus will fit conveniently on any desk or table (usually in the equipment room itself).

Test Provisions

TRUNKING CIRCUITS—Circuits that establish connection between the turret and a switchboard, the turret and another test position, and the turret and the MDF are available in numbers required up to a total of two each. These types of circuits are called trunking circuits and are established in one of two ways: (1) Trunk two-way between positions key, for turret to turret or turret to switchboard operation, which necessitates operation of a similar key at the other end; (2) Trunk two-way-to-line circuit which provides a means of access to and from a turret and a dial line circuit or a magneto extension telephone.

METER CIRCUITS—This turret is wired and equipped with a meter that can be used as a volt meter, a milliammeter and an ohm meter. The scale is marked so that volts, amperes, or ohms can be read easily and distinctly. It has a full scale deflection of .00075 amperes and is accurate within 1% of full scale. The meter's edged pointer, mirrored scale and distinct lettering makes reading of the scale possible, even at a distance of four feet.

TESTING CIRCUITS—All testing circuits are wired into this turret. Optional circuits and those listed as furnished in quantity as desired are only wired into the standard turret. All other circuits are wired and equipped. See the tables at the end of the test equipment portion of this catalog for ordering information.

ACCESSORIES—Provision is made for connecting a standard 1543 Telephone to the turret. If desired, an operator's head set may be used in addition to or in place of the telephone. Jacks are provided for this purpose. Provision is also made for attaching a portable Wheatstone Bridge to this test turret.



The Type "D" Test Desks

The Type "D" Test Desks are used in larger central offices that require more local testing facilities than the Type "C" Test Turret can offer. However, most of the circuit features and provisions that were found in the Type "C" Test Turret have been incorporated into the test desks along with additional features for more complete local testing.

All equipment is mounted in a No. 204 PBX Switchboard cabinet and may be multiplied to other testing positions if desired.

Test Provisions

In a manner of speaking, the test desk is built up from the test turret in the manner of building blocks, for circuits necessary for testing more complicated local equipment are added to those circuits used in the test turret.

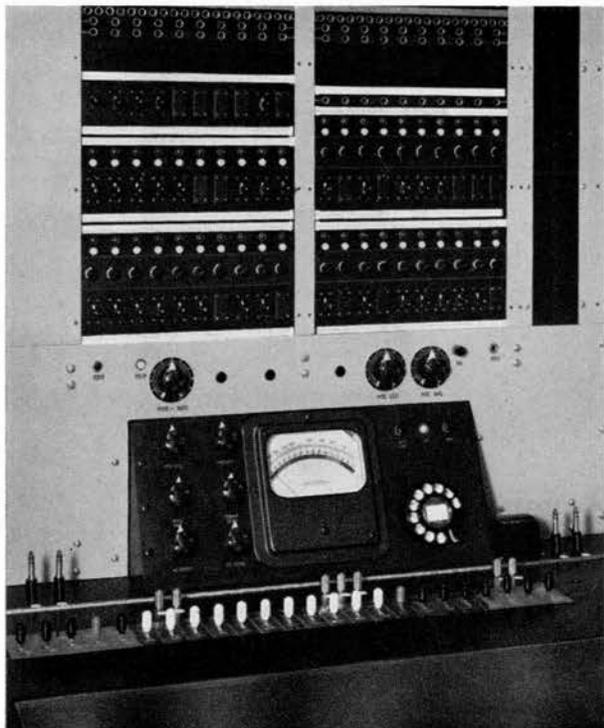
TRUNKING CIRCUITS—The same provisions that are found in the test turret for connecting the test desk to a switchboard, another test position or a main distributing frame are also contained in the Type "D" Test Desk. There is a major factor which makes this test desk particularly useful and that is the existence of auxiliary testing paths that can be used along with the primary paths. This permits the wire chief to conduct a test on one path and still have access to another test train.

METER CIRCUIT—The test desk has the same meter and meter adjustment controls as the test turret. Its use is as a volt meter, an ohm meter or a milliammeter depending upon the type of tests being conducted.

TESTING CIRCUITS—Only the standard testing circuits are wired and equipped in the test desk. Due to the large numbers of optional circuits existing, none are wired or equipped unless specifically requested. Refer to the ordering information tables at the end of the test equipment portion of this section for circuits available. These circuits can also be used with the auxiliary testing paths.

STROMBERG-CARLSON

TESTING EQUIPMENT (Cont.)



Close-up of Type "E" Test Panel

Type "E" Test Panels

The Type "E" Test Panel contains even more testing facilities than either the Type "C" or Type "D" test positions, for the panel has circuits which test toll as well as local facilities. Adequate space is provided for the toll test jackfield. All equipment is mounted on a steel frame work made of channel uprights. Provision is made to mount jacks, lamps and keys in the face of the section with ample space allowed for future growth. If more than one testing position is required, they can be easily added and circuits may be multiplied or paralleled as desired.

This panel has an added feature, due to its toll test facilities, which neither the turret nor the desk has. That is, two sets of cords and plugs are equipped with each test panel. A set consists of one cord and plug used for the primary circuit paths, and another cord and plug used for the auxiliary circuit paths.

Test Provisions

As the Type "D" Test Desk was built up from the Type "C" Test Turret, so is the Type "E" Test Panel built up from the Type "D" Test Desk. The major difference other than size is that the test panel has provisions for testing combined local and toll facilities.

TRUNKING CIRCUITS—Like the Type "D" Test Desk, the test panel also makes use of auxiliary circuits to make tests when primary paths are busy. Six separate means are provided to connect the testing circuits to equipment or lines; they are: (1) The Test Train, (2) MDF trunks and test shoe, (3) inspector's trunks, (4) test jack circuits, (5) binding posts, and (6) test cords at manual switchboards.

METER CIRCUIT—The test panel has the same meter and meter adjustment controls as the test turret and the test desk. The meter can be used as a volt meter, a milliammeter, or an ohm meter, depending upon the type of test being performed.

TESTING CIRCUITS—Only the standard testing circuits are wired and equipped in the test panel. Other testing circuits should be ordered as per the chart on the following page.

Due to the capability of this type of test panel to test toll facilities, there are additional optional circuits available such as the following:

1. Test Circuit for No. 3 Toll Switchboard trunks—tests for the trunk relay equipment for proper operation.
2. Polar Duplex and E and M Dial Leg—provides for pulsing tests on polar duplex dial legs. Both line and drop tests can be accomplished.
3. Positive-Negative Dial Leg—provides for pulsing tests and both line and drop tests on positive-negative dial legs.
4. Differential Duplex Dial Leg—provides for the same type of tests mentioned previously on a differential duplex dial leg.
5. High and Low Dial Leg—again provides for the same type of tests on a high and low dial leg.

The above items should be ordered only as they apply to specific circuits in your exchange.

The chart, referred to previously, shows a howler circuit for each type of testing position. The howler circuit is automatically graduated in intensity on both the Type D and E boards but is manually graduated in the Type C Test Turret. The automatic howler may be applied to both primary and auxiliary test pairs.

ORDERING INFORMATION

For Wire Chief's Test Sets, Types "A" & "B"

Stock No.	Code	Description
679-000	(A)	Weston volt-ohm meter with carrying case
486830-000	(B-1)	Wire Chief's Test Set, Dial Systems
486831-000	(B-1)	Wire Chief's Test Set (with Test Pair), Dial Systems
487437-000	(B-3)	Wire Chief's Test Set (24 volts), Manual Systems
487438-000	(B-4)	Wire Chief's Test Set (48 volts), Manual Systems

TEST DESK ORDERING INFORMATION

This information is provided in order to furnish a means of arriving at detailed ordering information for standard test positions and to list all available test desk features. Certain circuits associated with the test position may be multiplied to other positions, such as selector level trunks, inspector's trunks, etc. In such cases, only key and lamp equipment is required at the annex position.

The Type "C" Test Turret should be ordered where only local testing is required. Type "D" Test Desks are normally provided where local testing only is required and the number of testing circuits exceeds the capacity of the Type "C" Test Turret. Due to the limited jackfield space, it is not suitable for toll testing. Type "E" Test Panels are used for combined local and toll test-

ing with certain features omitted if it is used for local testing only. Neither Type "D" nor Type "E" is available for toll testing only.

In the tables below, chart 1 shows the features of the main testing circuit while chart 2 shows the features of additional testing circuits. If a circuit is listed as not furnished (H) on a test position, it is due to insufficient space or, in the case of the Type "D" and "E" positions, because a circuit with more features, using more space, is required in these positions. Thus the "not furnished" symbol should be strictly adhered. Quantity limitations are also due to lack of additional space and must be strictly adhered.

TYPE "C"	TYPE "D"	TYPE "E"	TESTING POSITION CIRCUIT FEATURES	CODE
X	X	X	Voltage, Resistance, Capacitance measurements, Ring, Reverse, Dial and Talk battery keys. Operator's circuit, monitor circuit, Nite and Fuse Alarm, Audible Alarm cutoff.	
N	X	X	Constant voltage AC rectified test battery	
X	N	N	Exchange battery test battery	
N	X	X	Exchange battery as standby test battery	
N	O	O	Dry cell battery as standby test battery	a
X	N	N	Position terminals for operator's set	
X	N	N	Single jacks for operator's set	
N	X	X	Double jacks for operator's set	
N	N	N	Order wire key	b
N	X	X	Separate monitoring circuit	c
X	X	X	Cutoff control and Test connector release key	
N	X	X	Auxiliary test keys	
E	X	X	Meter shunt resistor	
N	N	E	Leg dial key	d
X	X	X	Ring keys, Generator 2 to 5	
N	X	X	Toll Generator ring key	
N	X	X	135/1000 cycle ring key	
N	N	X	Sleeve testing key	

TYPE "C"	TYPE "D"	TYPE "E"	AUXILIARY TESTING CIRCUITS	CODE
Q2	Q	Q	MDF Trunk	
N	Q	Q	Testing jacks double cutoff type	
N	N	O	Testing jacks twin type	e
N	X	X	Plug termination of test leads	
N	E	E	Coin control	
N	X	X	Transmission Test	
N	N	X	Current on test leads	
N	N	X	Hi-Lo incoming AC	
X	X	X	Pulse speed and ratio	
X	N	N	Howler, manually graduated	
N	X	X	Howler, automatically graduated	
N	E	E	No. 3 Toll type test circuit	
N	O	O	Sounder circuit	
N	O	O	Telegraph key	
X	X	X	Wheatstone bridge control circuit	g
N	X	O	High voltage breakdown test circuit	h
N	N	X	Polar duplex and E and M dial leg	
N	N	E	Pos. Neg. dial leg	
N	N	E	Diff. Duplex dial leg	
N	N	E	High low dial leg	
Q2	Q	Q	Trunk to test selector	
Q2	Q	Q	Inspector's trunk (Selector level trunk)	
Q2	Q	Q	Trunk, 2 way between positions (Desk trunk, Order wire)	c
N	Q	Q	Trunk 2 way CB	
Q1	Q	Q	Trunk 2 way to line circuit	
N	Q	Q	Trunk intercept answering	
N	Q	Q	Intertoll Test Trunk "101", key termination for	
N	X	X	PBX Line seizure and prepay paystation adapter test	

Explanation of Symbols

- E—This circuit is furnished even though not ordered if the features it supplies are required in the office.
- N—Not furnished.
- O—Optional circuit, furnished only if ordered.

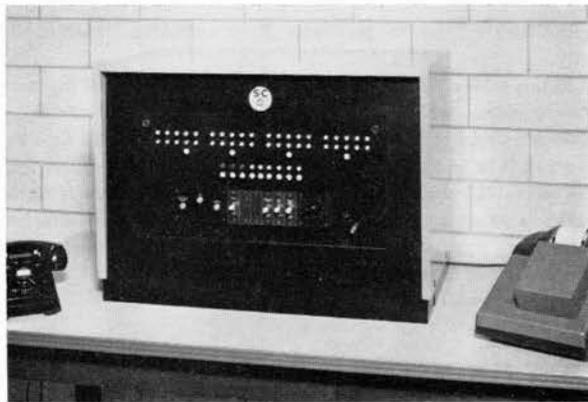
- Q—Optional circuit, furnished only if ordered and in quantity ordered.
- Q1, Q2—As above, figure indicates maximum quantity.
- X—Standard equipment, furnished even though not ordered.

NOTES

- a—Dry cell battery as stand-by voltage source is furnished instead of exchange battery stand-by battery.
- b—As the No. 3 toll operator's circuit does not provide direct order wire access, specify trunks and two-way between positions in required quantity.
- c—The operator's circuit induction coil is used for monitoring when this circuit is not provided.
- d—Used in conjunction with dial leg testing circuits.
- e—The equipment is not arranged for twin jacks.
- f—This circuit works into toll board appearance of No. 3

- toll type trunk circuits. It is normally cabled to a test cord to the trunk jacks as required. If a multiple appearance of the toll board jack is provided on the test board jackfield, single or twin patch cords are furnished.
- g—This circuit does not include the Wheatstone bridge. If required, a portable Wheatstone bridge must be ordered separately.
- h—This circuit is not recommended and is not deemed desirable.

AUTOMATIC LINE ROUTINER



The Line Router is the newest type of testing equipment developed by Stromberg-Carlson. Its primary function is that of automatically testing inside and outside plant facilities. The outstanding features incorporated in the new Router are:

1. Fully automatic, including remote start.
2. Usable in any step type office, providing there is a separate test train installed.
3. High speed.
4. Accurate and self checking.

The new Line Router follows the present day trend toward automation in that the unit, once started, needs no further attention. It provides a permanent printed record of all line faults found in testing out an office. The unit may be started remotely. It is arranged to test any number of remote offices regardless of the type of step-by-step switching equipment, providing there is a separate test train available. The Router provides a means of automatically stepping a test train consisting of a test selector and a test connector, successively to each connector terminal in

the office, and from there to test the outside cable for:

1. Leakage resistance between the tip and ring connectors.
2. Leakage from tip or ring to ground.
3. The presence of a "foreign" potential.

To provide flexibility of use, the router may be arranged on a per office basis as selected by one of the six office keys to provide varying features. This furnishes access to:

1. Four digit test train.
2. Three digit test train, or
3. Test train in a mixed terminal-per-line and terminal-per-station office requiring cancellation of the hundreds digits in certain thousands group only.

When encountering a line fault, the printer control circuit scans: first, the office selection circuit to determine which office is being tested; then the sequence relays in the line testing unit to determine the type of fault found; and thirdly, scans the position of the line number registering deca switches to obtain the connector terminal number on which the fault is found. At this time a six digit entry is automatically made on the printer tape. The first digit is an arbitrarily-chosen digit corresponding to the office being routined. The second digit designates the type of fault found and the remaining four digits record the line number.

The router circuit and printer control circuit are contained in an attractively styled cabinet, available in gray, mahogany or limed oak with a black laminated front panel. The over-all cabinet dimensions are approximately 30" long x 20" high x 18" deep.

The printer itself, in size and appearance, resembles a conventional adding machining.

The DC power supply, required for the printer, and the AC control circuit are generally mounted on the powerboard. Test selector trunks, giving the router access to the test trains, are mounted external to the router. This makes the router completely independent of the test desk, permitting its placement to any desired location.

CIRCUIT PLATE TESTING EQUIPMENT

Connector Routine Test Circuit Plate

This unit tests connectors for proper operation of the Answering Bridge (AB) relay, the Ring Trip (RT) relay, the Busy Test (BT) relay, trunk hunting and Tip and Ring transmission continuity.

The test man or wire chief can gain access to this unit by either using a hand test set jacked into a connector plate or by using a station telephone, and dialing a pre-selected number. Various tones are emitted as the test progresses. This set may be arranged to send two or three ring back tones to indicate proper operation of the RT relay. The unit will also emit three dial tones to denote progress of the Tip and Ring transmission continuity tests and will also send back reverse battery flashes providing the AB relay pulses properly. Other tests for the AB relay, BT relay and trunk hunting are accomplished through the use of twist type keys in the make busy and test unit on the corner of this circuit plate.

Stock No.	Description
487017-000	Connector Routine Test Circuit Plate (Super-imposed ringing)
487018-000	Connector Routine Test Circuit Plate (Harmonic, Decimonic, Synchronic or Single Frequency ringing)

Dial Speed Test Circuit Plate

This unit tests a subscriber's dial for speed. The test man, on the subscriber's telephone, dials a pre-determined number to gain access to the test unit. Spurts of dial tone will be given off during testing. One spurt indicates that the dial is too slow, two spurts indicate proper speed of the dial (8 to 12 pulses per second), three spurts indicate that the dial is too fast.

Stock No.	Description
484062-000	Dial Speed Test Circuit Plate (Unit to be wired to terminal block)
485199-000	Dial Speed Test Circuit Plate (Unit is jacked in to position)

Line Testing Circuit Plate

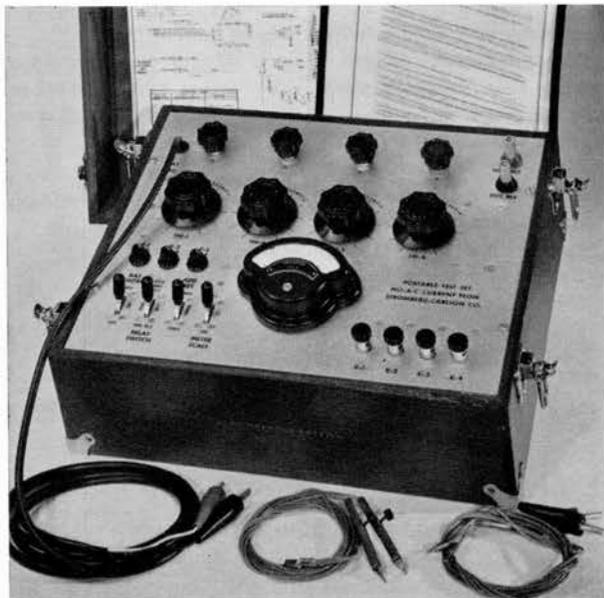
The line testing circuit plate checks a subscriber's line for battery, leakage, and ground faults. Such faults are indicated by splashes of tone given off by this set. Like the Dial Speed Test Circuit Plate, access to this test unit is gained by dialing a pre-selected number from the subscriber's telephone.

Stock No.	Description
488054-000	Line Testing Circuit Plate

PORTABLE TEST EQUIPMENT

No. 6C Test Set

Proper adjustment of relays used in telephone circuits, both mechanical and electrical, are necessary to insure the best operating results.



Mechanical adjustments for separation of contacts and springs are made with thickness gauges. Pressure values are established by means of a gram gauge. After these adjustments have been made the electrical adjustments can be undertaken. The proper tension is placed on the relay springs to meet the requirements indicated on the Relay Adjustment Value Sheets, available for each Stromberg-Carlson central office circuit.

It is seldom that relays are required to meet more than four electrical test qualifications. They are:

1. Operate
2. Non-Operate
3. Hold
4. Release

The No. 6C Test Set is designed to aid in establishing the proper current flow adjustments and to check circuits previously adjusted. For this purpose a Weston Milliammeter with three scales 0-15, 0-75, and 0-750 is provided. By its proper use the various current measurements and requirements can be accurately determined.

This Test Set is so arranged that four different values of current can be set up at the same time for testing. Individual to each of the four testing circuits are a rheostat, a tap switch and a push button key, used for selecting the resistance path desired. The rheostat has a variable resistance from 0-1500 ohms. The tap switch has eleven steps, the first has 0 resistance, the second permits cutting in, by means of a cam key, 10,000 or 30,000 ohms, and the remaining nine steps cuts in 1200 ohms on each successive step. Thus it is possible to cut in a total of 42,300 ohms resistance in each of the four testing paths.

Common equipment consists of two binding posts for the operating battery, three fuse holders provided to carry 1/2 amp. fuses, four cam keys for Battery Cut-off, Release, Reverse, and Resistance Switching.

Stock No.	Code	Description
485826-000	(6-C)	Test Set for Current Flow Adjusting

No. 10B Portable XY Universal Switch Test Set

The Portable XY Universal Switch Test Unit provides the maintenance man with a convenient means for simulating actual line conditions at his desk in the routine checking and adjusting of the XY Universal Switch. Automatic recycling permits continuous operation in either X or Y direction, with the switch operating either by applied pulsing or in automatic stepping. Either X or Y magnet may be held operated with 24-volt battery. Signal lamps are provided to indicate stepping speed and proper operation of the internal contacts of the XY Universal Switch. Sections of wire bank permit checking wiper adjustment for positive, noise-free operation in the cell. This self-contained unit is attractively housed in an instrument-type wood cabinet with snap-on cover and carrying strap.



No. 11 Circuit Plate Test Unit

This testing device, built into a handy wood carrying case, provides the means for routine checking of all types of circuit plates. It is used in checking speed and per cent make of pulses, checking conditions of HS lead for toll marking, and complete operation of connectors both local and toll. The worst line conditions of either shunt or loop resistance are simulated. The equipment is arranged to automatically preset the meter for the approximate throw of the needle.



Circuit Plate Test Unit



Per Cent Make Test Unit

No. 12B Speed and Per Cent Make Test Unit

This test unit is similar in size and general design to the Circuit Plate Test Set. It is used to test per cent make of pulses and for pulse speed up to 20 pulses per second. The meter can be checked for full scale deflection, and may be preset manually for approximate expected throw of needle.

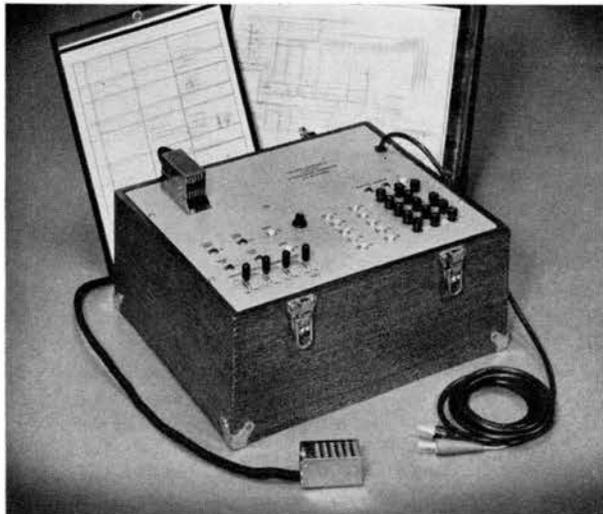
No. 13 Pulsing Limits Test Unit



A small, convenient pulsing device which fits easily into the palm of the hand. A push button is provided for changing a normal loop resistance to a shunt resistance bridge, for simulating extreme line variations while dialing. When the other button is depressed, the equipment returns to its normal condition.

PORTABLE TEST EQUIPMENT (Cont.)

No. 16 Portable Keysender Test Unit



The No. 16 Keysender Test Unit is used to test keysenders on toll switchboards. This unit is patched to the sender shelf by means of a cord equipped with two jacks that are similar to XY Universal Switch jacks.

There are two adjustable arms on the test box which enables this set to be suspended on a ladder for the purpose of bringing the unit closer to the sender shelf.

The following functions are tested with this unit:

1. Test for sender seizure
2. Test for pick-up and hold of dial cut-in relay and cord
3. Test for digit registration
4. Test for number of pulses and supervision
5. Test for all registers busy supervision
6. Test for error (ER) key operation
7. Test for first stop dial operation
8. Test for removal of first stop dial signal
9. Test for drop-off on second stop dial signal
10. Test for blocking digit registration after operation of the Stop Registration Key
11. Test for sender release with ringing key (Auto-ring sender)
12. Test for sender release without ringing key (Auto-ring sender)
13. Test for sender release with ringing key (Key controlled ringing sender)
14. Test for sender release without ringing key (Key controlled ringing sender)
15. Test for pulsing Stop Dial without sender release

No. 17 Portable Frequency Indicator

This test unit is encased in a wood cabinet, complete with a carrying strap, and is used to check ringing frequencies. The test clips connect the frequency sender test to the frequency indicator and voltmeter in the test unit. This set operates from a 27½ volt "B" battery.

No. 19 Portable Pulse Generator

This equipment contains a ready, accurate and handy source for generating and measuring pulses. Pulses ranging from 6 to 25 PPS may be generated and measured as to speed and percent make with extremely high degree of accuracy.

It may be desired to feed pulses to other pieces of test apparatus such as the No. 20 Portable Equipment Routiner listed below. There are many other uses as implied from the following functions:

- Generate pulses from 6-25 PPS
- Control percent make of such pulses—from 10%-90% make
- Synchronize pulses to insure full break measurement
- Generate and measure out pulses
- Receive and measure inward pulses
- Measure speed of dials

Dimensions of the generator are approximately 14½" long by 12" wide by 8" high. Its weight is approximately 25 lbs.

Stock No.	Code	Description
217636-000	(19)	Portable Pulse Generator

No. 20 Portable Equipment Routiner

This apparatus will routine and locate faulty switching equipment by calling a pre-determined number in a Connector group from a pre-selected line in a Finder group. The Connector under Test may be wired either for terminal-per-line or for terminal-per-station, with or without trunk hunting.

Pulses fed into this routiner must come from the No. 19 Portable Pulse Generator described above. This routiner can be operated either on a semi-automatic basis (manual) or on a fully automatic basis.

Originally designed for use in XY Dial Systems, this routiner may be used in any step-by-step dial office.

Approximate dimensions are: 16" long by 13¾" wide by 7¾" high. Its weight is approximately 35 lbs.

Stock No.	Code	Description
419000-058	(20)	Portable Equipment Routiner

Hand Test Set

The hand test set, commonly referred to as a "Buttinsky," can be used to test or monitor Linefinders, Allotters, Selectors and Connectors in XY Dial Systems. This set is equipped with a cord and plug assembly (Stock No. 202452-000) and a wall mounting bracket (Stock No. 203684-000) for suspending this set on either equipment frames or walls.

Stock No. 203685-000.



Hand Test Set

PROTECTORS—CENTRAL OFFICE

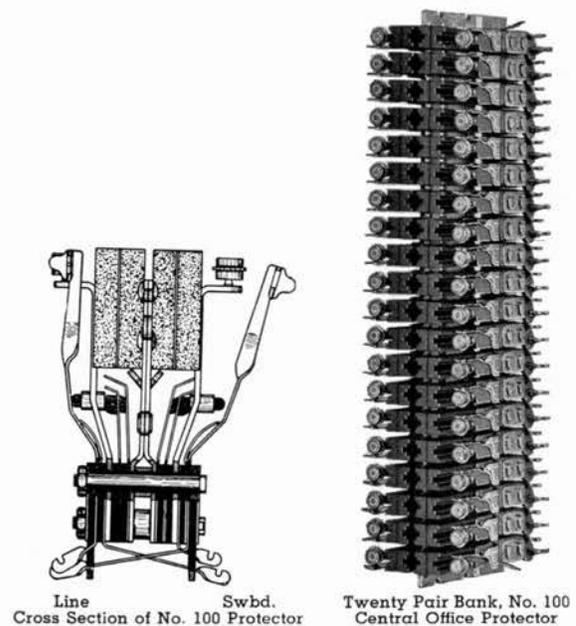
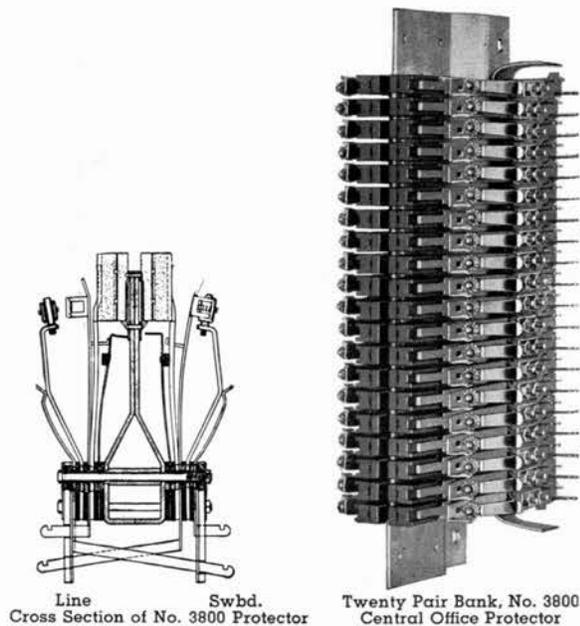
Cook Type

Telephone lines require protection against high potentials and sneak currents. Central office protectors are mounted on main distributing frames in the terminal room of the exchange to afford convenience in testing and maintenance.

When operated, the modern protector opens the circuit, grounds the line and operates an alarm signal. To reset, the operating spring is relatched over the heat coil ratchet. No coil to change, turn or resolder.

Line connections are provided on one side of the protectors, and switchboard connections are provided on the other side. Current carrying parts are insulated with hard rubber and terminals are held in place rigidly by bakelite.

Low resistance heat coils, approximately 3½ ohms, will carry .35 amperes for three hours, and will operate within 210 seconds on .5 ampere in an ambient temperature of 68° F.



No. 3800 Protector

The protector pairs mount on 3/8" centers. The mounting plate is cadmium plated steel and arranged to fasten directly to the main frame shelf channels. Springs are nickel silver of ample strength to give positive operation and permanent pressure between lightning arrester and ground plate. Unit dischargers are standard in these lightning arresters. They are made of two carbons separated by an acetate dielectric and cemented together—air gap .003". They will permanently ground under continuous discharge and can be easily installed or removed.

Temporary disconnects can be made by opening the circuit with a thin insulator inserted between the outside spring and the spring holding the heat coil. The No. 3800 Test Plug is used for testing outside lines, heat coils and switchboard circuits.

No. 3800 Type Cook Protector		Dimensions (Inches)		
Cat. No.	Description	Length	Width	Depth
380-1310	10 Pair bank complete	4 1/4	3	4 3/4
380-1320	20 Pair bank complete	8 5/8	3	4 3/4
380-1321	21 Pair bank complete	9	3	4 3/4
380-1351	51 Pair bank complete	20 1/4	3	4 3/4
380-1361	101 Pair bank complete	39	3	4 3/4
380-60	No. 3800 Test Plug			
380-30	No. 3800 Heat Coil			
380-130	Unit Discharger with .005" Dielectrics.			

Net weight per 100 pairs—23 pounds.

No. 100 Protector

This protector mounts on 1/2" centers per pair. Heavy carbon and heat coil holding springs insure a positive permanent pressure between the lightning arrester carbons and ground. Lightning arresters consist of two grooved carbons separated by an acetate dielectric .005" thick and will permanently ground under continuous discharge.

Temporary disconnects can be made by inserting a tooth-pick through the slot of the carbon to keep the ground and alarm spring from making contact before releasing the operating spring.

The No. 100 Test Plug is used for testing the outside lines, the heat coils and the switchboard circuit.

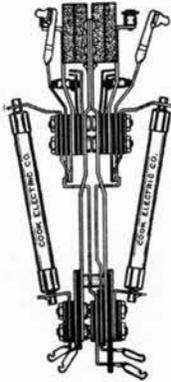
No. 100 Type Cook Protector		Dimensions (Inches)		
Cat. No.	Description	Length	Width	Depth
360-1210	10 Pair bank complete	5 1/2	2	3 1/2
360-1220	20 Pair bank complete	10 1/2	2	3 1/2
360-70	No. 100 Heat Coil			
370-10	No. 100 Test Plug			
41-11	Acetate Dielectric .005"			
41-1282	Carbons			
41-2612	Unit Dischargers			

Net Weight per 100 pairs—17 pounds.

Revised 9-1-58

PROTECTORS—CENTRAL OFFICE (Cont.)

No. 105 Protector



Line Swbd.
Cross Section of No. 105 Protector

This is a combination of the No. 100 Protector with line fuses. Fuses are composition type, 4¾" long and blow at 3 amperes. This type of protector is frequently used on toll and long distance lines.

No. 105 Type Cook Protector Cat. No.	Description	Dimensions (Inches)		
		Length	Width	Depth
392-1510	10 Pair bank complete	5½	3	7
392-1520	20 Pair bank complete	10½	3	7
360-70	No. 105 Heat Coil			
370-10	No. 105 Test Plug			
41-1282	Carbon			
41-11	Acetate Dielectric .005"			
41-2612	Unit Discharger			
214-2203	Fuse, A-22 Type, 3 Ampere			

Net weight per 100 pairs—41 pounds.

H-36 Type Protector

This protector is built in 10 and 20 pair banks, mounted on metal plates which may be installed on distributing frames. Chiefly used in rural communities where the distribution of light and power circuits does not warrant the use of heat coil type protectors.

Fuses are of the enclosed A-45 composition or A-46 Wood Type which blow at 1 ampere. They are held in place under positive tension by nickel silver springs, but may be easily removed and replaced.

Standard carbon block lightning arresters are provided, which use "U" shaped dielectrics .005 inches thick.

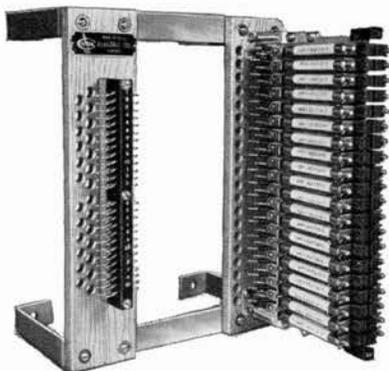
No. H-36 Type Cook Protector Cat. No.	Description	Dimensions (Inches)		
		Length	Width	Depth
296-3610	10 Pair bank complete	5½	1½	5½
296-3620	20 Pair bank complete	10½	1½	5½
306-4501	A-45 Composition Fuse — 1 ampere			
307-4601	A-46 Wood Fuse	1 ampere		
41-2002	Grooved Carbon			
41-3002	Plain Carbon			
41-11	Acetate Dielectric .005"			
41-1907	Tru Gap Discharger			

Net weight per 100 pairs—21 pounds.

WALL TYPE DISTRIBUTING FRAMES

Cook Type L-9

The Type L9 Wall Distributing Frame is intended for economical distribution and protection of limited capacity cable and especially for installation in small exchanges.



Type L-9 Wall Distributing Frame

The L-9 Wall Distributing Frame, made in 20, 40, 60, 80, and 100 pair sizes is designed to carry any Cook central office protector. The frame of the L-9 consists of two pieces of hard kiln-dried maple, one drilled and arranged for, and equipped with line terminals: the other drilled and milled for mounting the protectors and two heavy mounting brackets of bar iron finished in durable paint.

Standard Sizes of L-9 Frames

Cable Side	Protector Side
26 Pairs	20 Pairs
52 Pairs	40 Pairs
78 Pairs	60 Pairs
102 Pairs	80 Pairs
130 Pairs	100 Pairs

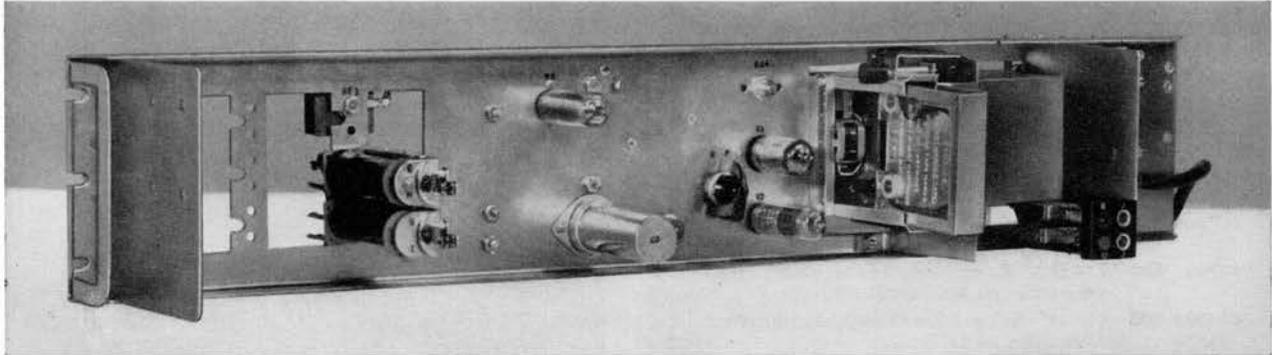
Equipment

Cat. No.	Line Terminals	Protectors	Height	Net Wgt. Pounds
361-1050	20 Pairs	None	1' 1"	10
361-1052	40 Pairs	None	1' 11½"	18
361-1054	60 Pairs	None	2' 10"	32
361-1056	80 Pairs	None	3' 8½"	46
361-1058	100 Pairs	None	4' 7"	60

Other sizes obtainable upon request.

STROMBERG-CARLSON TAPE ANNOUNCER

The Stromberg-Carlson Tape Announcer provides an effective and economical method for handling intercepted calls on dial exchanges. A verbal message that has been clearly announced as a recording so that the subscriber will recognize it as such, is substituted for both the costly method of operator intercept and the method of employing special tone which often are misunderstood. The Tape Announcer provides "operator" assistance to dial subscribers, in a manner which builds good public relations, at low cost.



Stromberg-Carlson Tape Announcer for 27½" rack

The Tape Announcer is designed for use in telephone offices, operating over regular Telephone lines on 105v to 120v, 60 cycle AC. Control relays operate on regular exchange battery. Messages recorded on one Tape Announcer may be played on another, thereby making it possible to produce all recordings on a master tape and transfer the cartridge to other announcers which are used for playback only.

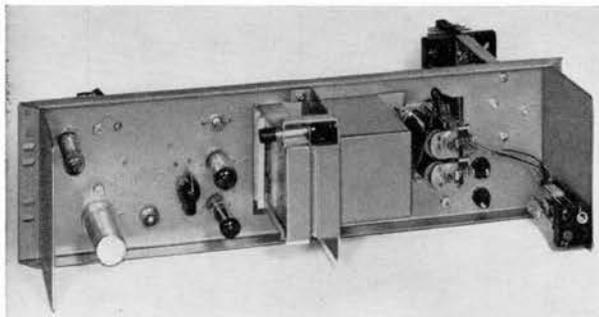
Tape Cartridge

Messages are recorded on a magnetic tape that is contained in a handy snap-in cartridge. The cartridge may be removed and replaced without using any tools or disturbing any part of the apparatus.

The tape cartridge is a simple metal and plastic container that holds an endless magnetic tape. This tape is normally supplied in a length long enough to carry three 30 second messages or six 15 second messages.

Messages

A 90 second tape is available with the following message al-



Tape Announcer for 19" rack

ready recorded six times, twice between stops. "This is a recorded message. The number you have just dialed has been changed or discontinued. For correct information please consult your telephone directory or call the operator. Thank you."

Normal intercept messages may be varied to suit individual requirements. Special announcements may be recorded and placed in operation quickly for emergency use. The Tape Announcer may also serve a variety of other purposes, such as weather reports and similar recorded announcements.

Special Features

MOUNTINGS—The Tape Announcer is available in two sizes. One will fit a 27½" rack or shelf and the other will fit a 19" rack.

RECORDING—Accessory equipment is available for recording your own messages on the tape.

PLAY BACK AND ERASE—It is possible to play back messages when desired and to erase the tape if a new message is to replace an existing one or to erase a message no longer needed.

DRIVE MECHANISM—The mechanism that drives the Tape Announcer is a small single pole hysteresis motor with a large rubber drive wheel and a small rubber capstan. The tape is driven at a speed of 3¾ inches per second.

REMOVAL OF CARTRIDGE—A push button attached to a coil spring will, when depressed, eject the tape cartridge halfway from the *in* position to the full *outward* position. It is then a simple matter to remove the cartridge the rest of the way by hand.

MAGNETIC TAPE—is of "Mylar" polyester film base, making this stronger than previous acetate tapes.

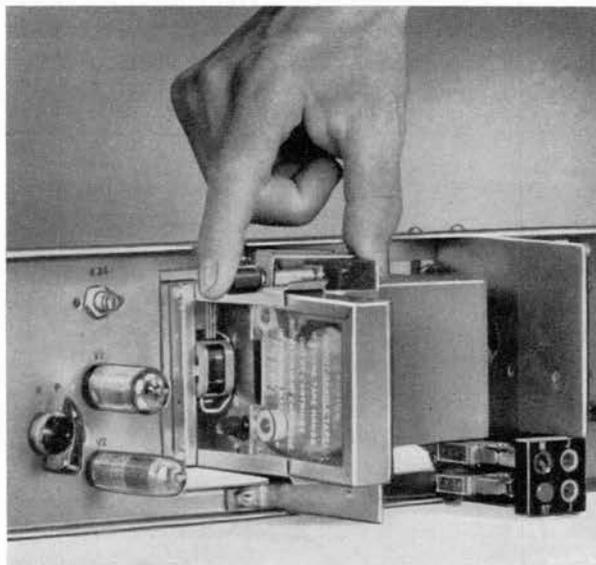
NEON LAMP—Assists adjustment of volume control during recording. If lamp is steady, volume is too high. If lamp does not light, volume is too low. Lamp should flash on during volume peaks.

Revised 9-1-58

STROMBERG-CARLSON TAPE ANNOUNCER (Cont.)

ORDERING INFORMATION

Stock No.	Description
487055-000	For Shelf-type XY (jacked-in), used with external control circuit.
487056-000	For Shelf-type XY (jacked-in), for direct access from connectors.
487057-000	For Shelf-type XY (jacked-in), for direct access from connectors and selectors.
487451-000	For Shelf-type XY (jacked-in), for direct access from selectors.
487457-000	For Bay Type XY (jacked-in), otherwise similar to No. 487055-000.
487458-000	For 27½" Relay Rack (unit-terminal), otherwise same as above.
487459-000	For Bay Type (jacked-in), otherwise same as No. 487056-000.
487460-000	For 27½" Relay Rack (unit terminal), otherwise same as above.
487461-000	For 27½" Relay Rack (unit terminal), otherwise same as No. 487057-000.
488288-000	For 19" Relay Rack (unit terminal), otherwise same as 487055-000.
211414-000	90 second Tape and Cartridge with intercept message (see "Messages" on preceding page) recorded six times.
212014-000	90 second Tape and Cartridge with no message recorded, is arranged for 30 second messages.
213698-000	90 second Tape and Cartridge with no message recorded, arranged for 15 second messages.
211392-000	Microphone and cable for recording messages.
162153-000	50C5 Vacuum Tube.
162070-000	12AX7 Vacuum Tube.
211391-000	Neon Lamp.
212009-000	1 Amp. Fuse.



The illustration shows the ease of ejecting the tape cartridge. Push button; cartridge springs out half way.

Prices - Equipment Sections

For Your Information

WHEN ORDERING—Give billing name and address and destination to which goods are to be shipped. Take care to specify our Code or Stock Number as well as the name of each article ordered. Unless you specify what is wanted by Number, your order may be subject to delay.

PRICES are subject to change without notice. All merchandise will be billed at prices in effect at time of shipment which may be either higher or lower than those listed. Prices shown herein do not include any sales, excise, freight, use or similar taxes. All such taxes will be shown as additional charge on invoices where applicable.

TERMS are net 10 days E.O.M. (End of Month) billing.

ALL AGREEMENTS are made contingent upon strikes, fires, accidents or causes beyond our control.

SHIPMENTS on Telephone and Switchboard Equipment will be made from Rochester, New York; Chicago, Illinois; Kansas City, Missouri; or San Francisco, California.

Unless otherwise agreed upon all goods are sold f. o. b. Rochester, New York; Branch Office Warehouses; or, in the case of some accessories, manufacturer's shipping point. Transportation charges will therefore be collected by the carriers upon arrival of goods at destination, unless special arrangements for prepaid shipment have been made.

Price pages are arranged with all items grouped into alphabetical sequence according to the accepted names of the equipment.



Issue Date: 11-1-55

PRICE INFORMATION

Binding Posts			Blanks, Jack (con't.)		
Stock No.	Code	Price	Stock No.	Code	Price
800014	7	\$.90	800071	78	\$ 1.65
800016	21	.95	49899	79	1.40
			49900	80	1.40
			201188	81	1.40
			201189	82	1.50
			201190	83	1.50
			204622	84	3.60
			205114	84A	3.60
Blanks, Drop			Blanks, Key		
8308	33	\$.35	3222	7	\$.20
8400	34	1.00	12986	68	1.75
27322	41	.10	12987	69	1.40
37194	42	.85	12989	71	1.30
40728	43	.15	12990	72	1.50
			13234	77	1.60
			13235	78	1.35
			13236	79	1.40
			800082	80	1.00
			13439	83	1.60
			27255	84	1.75
			32132	87	.35
			33992	88	.35
			206770	94	2.25
			205685	95	1.25
			205451	96	2.00
			208657	97	1.50
			208658	98	1.50
Blanks, Jack			Blanks, Plug Hole		
1041	5	\$ 1.00	1294	1	\$.10
1042	6	1.00	1323	2	.15
800029	35	.50	1513	3	.05
800030	36	1.20	4415	5	.05
800031	37	1.20	7637	6	.10
800032	38	1.20	12713	7	.20
800033	39	1.05	13940	8	.10
800034	40	1.20	15323	11	.25
800035	41	1.20	21672	12	.20
800036	42	1.35	32142	13A	.05
800037	43	1.05	32143	13B	.05
800038	44	1.20	209398	13C	.05
800039	45	1.05	32144	14A	.05
800040	46	1.50	205515	14C	.10
800042	48	1.65			
800043	49	1.45			
800044	50	1.55			
800045	51	1.55			
800046	52	1.50			
800047	53	1.50			
800048	54	1.60			
800049	55	2.30			
800050	56	2.65			
800051	57	1.65			
800052	58	1.75			
800053	59	2.10			
800054	60	2.50			
800055	62	1.20			
800056	63	1.40			
800057	64	1.65			
800058	65	1.65			
800059	66	1.85			
800060	67	1.05			
800061	68	1.20			
800062	69	1.20			
800063	70	1.20			
800064	71	1.50			
800065	72	1.35			
800066	73	5.00			
205115	73A	7.00			
800067	74	2.00			
800068	75	2.00			
35418	76	2.50			
800070	77	1.65			
Cable—Convenience Systems					
Stock No.	Code	Less Than 2000' Per C Ft.	2000' & Over Per C Ft.		
213110	90P	\$ 65.00	Less 5%		
203155	102P	23.00	Less 5%		
203154	103P	24.75	Less 5%		
212823	115P	26.00	Less 5%		

STROMBERG-CARLSON

PRICE INFORMATION

Cable—Switchboard

Stock No.	Code	Less Than 100' Per C Ft.	100' to 500' Per C Ft.	500' and Over Per C Ft.
800155	65B	\$ 57.20	\$ 48.60	\$ 43.75
800157	66B	43.15	36.70	33.00
800161	68B	74.00	62.90	56.60
800163	69B	77.00	65.45	58.90
800164	71B	23.30	19.80	17.85
800166	72B	32.15	27.30	24.60
800168	76B	59.45	50.50	45.45
800176	84B	48.70	41.40	37.25
800178	85B	60.00	51.00	46.00
800179	86B	34.20	29.10	26.20
800180	87B	10.70	9.10	8.20
800183	88B	14.90	12.65	11.40
800185	90B	92.00	72.25	70.45
800189	91B	192.40	163.55	147.20
201109	104B	20.45	17.35	15.60
203554	—	18.50	15.70	14.15
203726	105B	9.65	8.20	7.40
203728	106B	12.00	10.25	9.20
203732	107B	31.25	26.55	23.60
203734	108B	60.60	51.50	46.35
203736	109B	74.15	63.00	56.70
203730	110B	138.20	117.50	105.70
203738	111B	21.40	18.15	16.35
203740	112B	43.20	36.70	34.05
203785	113B	56.90	48.35	43.50
204802	114B	57.00	48.45	43.60

NOTE: Lead covered switchboard cable prices on application.

Capacitors

(Also See Condensers)

Stock No.	Price
210720	\$.60
210721	.50
210722	.46
210723	1.05

Circuit Plates

Stock No.	Code	Price
800219	1AL	\$ 51.00
800220	2BL	62.25
800225	5AL	142.60
800227	6AL	83.00
800249	16L	51.00
800250	17L	62.25
800251	18L	54.00
800252	19L	54.00
201763	20	75.00
201764	21	85.00
201021	25	73.00
201022	26	83.00

Coils—Induction

Stock No.	Code	Price
800424	44A	\$ 2.50
800425	44B	3.00
800427	44D	3.40
800428	44E	3.00
23124	45A	3.60
25677	45B	3.45
32943	46A	3.75
800432	46B	3.75
800434	47B	5.50
207866	48A	7.50
208105	49A	3.00
208106	49B	3.00
212463	50A	3.60

Induction Coil Capacitor Assem.

Stock No.	Price
200595	\$ 7.00
208359	6.50
210558	6.00
210640	7.50
211155	6.00

Issue Date: 11-1-55

PRICE INFORMATION

Coils—Impedance—Coded

Stock No.	Code	Price
800265	10A	\$ 2.75
800266	10B	2.95
800268	13A	3.75
800280	20AL	6.30
204218	24	12.20
207068	24S	12.20
800288	201	2.75
800289	202	2.75
800290	203	2.75
800291	204	2.75
800292	205	2.95
800293	206	3.00
800294	207	3.40
40715	208	3.40
800295	209	4.00
800296	213	3.00
800297	214	4.20
800299	221	4.00
800300	222	4.05
800301	223	4.25
800302	224	4.50
800303	225	4.75
40716	226	4.05
800304	228	4.00
800306	243	2.25
201126	245	2.45
800307	249	2.75
800309	303	3.00
800310	304	3.25
800311	306	3.50
800313	321	3.90
800314	322	4.10
800315	323	4.25
800316	325	4.50
800317	326	4.00
800318	352L	4.00

Coils—Impedance
"A" Relay Type Not Coded

Stock No.	Price
36291	\$ 3.00
36292	2.75
36293	2.75
36295	3.00
36296	3.00
36297	2.75
36298	2.35
36299	2.25
36300	2.15
36301	3.05
36302	2.50
36303	3.10
36304	2.35
36305	3.00

Coils—Impedance
"A" Relay Type not Coded

(Continued)

Stock No.	Price
36306	\$ 3.00
36308	3.10
36309	3.00
36310	2.00
205350	2.00
205351	3.25
205352	3.30
205353	1.95
205354	2.00
205355	2.10
205356	2.75
205357	3.00
205358	2.10
205359	3.50
205360	3.50
205361	1.85
205362	3.00
205363	4.00
205364	1.80
205365	3.50
205366	2.25
205367	2.10
205368	1.95
205369	2.35
205370	1.80

Coils—Repeating

Stock No.	Code	Price
800436	11AL	\$ 9.00
800438	12BL	20.00
800440	13AL	9.00
800443	14AL	9.90
800447	15BL	25.00
800448	15BXL	27.00
800449	15BYL	45.00
800450	16AL	25.00
800452	17AL	9.00
800453	18A	25.00
800454	18B	25.00
800455	18C	25.00
200934	18F	23.00
203925	21A	12.00
203926	21B	12.00
203927	21C	12.00
207065	21AS	12.00
207066	21BS	12.00
207067	21CS	12.00
207649	22A	12.00
207650	22B	12.00
207651	22C	12.00
207632	22AS	12.00
207648	22BS	12.00
207633	22CS	12.00

STROMBERG-CARLSON

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PRICE INFORMATION

Coils—Resistance (Also See Resistors)

Stock No.	Code	Price
15710	10A.....	\$ 2.00
15711	10B.....	2.75
15714	10C.....	1.75
15715	10D.....	1.85
15712	10E.....	1.75
15713	10F.....	2.50
49994	10G.....	2.00
49993	10H.....	2.10
49995	10I.....	1.85
41172	10J.....	2.75
40719	10K.....	2.10
202252	11A.....	3.75
202253	11B.....	2.75
202254	11C.....	2.75
202255	11D.....	2.75
15716	11E.....	3.75
202256	11F.....	2.75
202257	11G.....	2.95
15717	11H.....	2.60
202258	11I.....	3.00
202259	11J.....	3.00
202260	11K.....	2.75
202261	11L.....	2.50
202262	11M.....	2.75
202263	11N.....	2.75
15718	11O.....	2.50
202264	11P.....	2.60
202265	11R.....	2.75
201116	11S.....	2.75
33756	11T.....	2.50
35035	11U.....	4.00
41652	11W.....	2.50
40718	11X.....	2.50
41173	11Y.....	3.00
41817	11Z.....	2.50
41818	11AA.....	3.75
41819	11AB.....	3.75
42529	11AC.....	3.50
42530	11AD.....	4.00
49972	11AE.....	4.00
205898	11AF.....	4.00
800493	12A.....	5.00
800494	12B.....	5.00
800495	12C.....	5.00
800496	12D.....	5.00
800497	12E.....	5.10
800498	12F.....	5.10
800499	12G.....	5.20
800500	12H.....	5.00
800501	12I.....	4.75
800502	12J.....	4.60
800503	12K.....	4.60
42827	12L.....	5.25
203387	12M.....	5.10
800504	13A.....	5.85
800505	13B.....	6.00
800506	13C.....	6.00

Coils—Resistance (Also See Resistors) (Cont'd)

Stock No.	Code	Price
800507	13D.....	\$ 6.00
800508	13E.....	6.10
800509	13F.....	6.10
800510	13G.....	6.75
800511	13H.....	6.80
800512	13I.....	6.90
800513	13J.....	6.90
800514	13K.....	6.90
800515	13L.....	6.95
800516	13M.....	6.00
200010	13N.....	7.10
202095	13O.....	6.95
203565	13P.....	6.50
800517	14A.....	7.00
200402	14B.....	7.50

Condensers (Also See Capacitors)

Stock No.	Code	Price
800518	18L.....	\$ 2.50
803076	19L.....	2.70
800520	20.....	.75
800521	21L.....	1.70
800522	22L.....	1.90
800524	24L.....	1.50
800525	25L.....	1.50
800526	26T.....	1.95
800527	27L.....	2.30
800533	36.....	2.10
800534	37.....	2.40
33970	48.....	3.00
34524	49.....	2.80
34917	50.....	2.00
800547	51.....	3.00
42370	55.....	2.40
42371	56.....	2.50
48346	57.....	2.90
42372	58.....	3.10
42373	59.....	3.10
42374	60.....	3.25
42375	61.....	3.40
42376	62.....	3.30
49955	63.....	3.30
200765	64.....	2.40
202466	65.....	2.90
202463	66.....	2.90
202464	67.....	3.00
203850	68.....	3.50
203863	69.....	3.70
204410	70.....	3.70
204710	71.....	3.75
205524	72.....	3.95
205562	73.....	3.75
207248	74.....	3.50
209322	75.....	2.90
209323	76.....	3.50
211307	77.....	3.50
213447	78.....	3.75

STROMBERG-CARLSON

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PRICE INFORMATION

Condenser Mountings

Stock No.	Code	Price
800553	6.....	\$ 3.20
800554	7.....	3.60
800555	8.....	2.50
800556	9.....	.75
800557	10.....	.50
800558	11.....	3.00

Convenience Systems—See PBX Section

Cords—Desk Stand

NOTE: All cord prices shown are net. No quantity discounts apply.

Stock No.	Code	Price
800545	D-2.....	\$.60
800606	D-2.....	.65
800608	D-2.....	.60
800546	D-3.....	.90
800607	D-3.....	.65
800601	D-3.....	.90
208244	D-3.....	.90
800602	D-4.....	1.00
201374	D-4.....	1.00
202236	D-4.....	1.00
208664	D-4.....	1.35
208665	D-4.....	1.35
800594	D-5.....	1.20
800610	D-6.....	1.30
208718	D-6.....	1.60
23811	D-12.....	3.00
202325	D-14.....	3.60
202326	D-18.....	4.00
28629	D-18.....	4.20
213914	WDA-3J.....	1.15
213462	WDB-3J.....	.80
213915	WDC-3J.....	1.15
213916	WDD-3J.....	1.15
213917	WDE-3J.....	1.15
213918	WDF-3J.....	1.15
212867	WDG-3J.....	.80
213919	WDH-3J.....	1.15
211237	WDN-5A.....	1.50
213249	WDN-5B.....	1.50
209952	WDN-6G.....	1.60
212936	WDN-6H.....	1.60
212938	WDN-6J.....	1.60
211211	WDN-36A.....	7.00
211304	WDR-3J.....	.67
211746	WDR-4J.....	.80
211747	WDR-4K.....	.80
212890	WDR-6H.....	1.00

Cords—Hand Set

Stock No.	Code	Price
800613	H-2.....	\$.75
800615	H-3.....	.70
800624	H-3.....	.90
800625	H-3.....	.90

Cords—Hand Set (Cont'd)

Stock No.	Code	Price
208243	H-3.....	\$.85
800619	H-4.....	.95
201497	H-4.....	1.00
800622	H-4.....	1.00
208663	H-4.....	.95
212869	WCG-3J.....	.65
211300	WCK-3J.....	.90
211375	WCK-3KR.....	.95
213928	WCK-3KA.....	1.30
213429	WCK-3KB.....	1.30
213929	WCK-3KC.....	1.30
213930	WCK-3KD.....	1.30
213931	WCK-3KE.....	1.30
213932	WCK-3KF.....	1.30
213119	WCK-3KG.....	1.30
213933	WCK-3KH.....	1.30
212498	WCK-4J.....	1.35
213377	WCN-2A.....	.50
211170	WCN-3K.....	.85
211171	WCN-4K.....	.95
211305	WCR-3J.....	.58
211373	WCR-3K.....	.65
211745	WCR-4J.....	.65
211884	WCR-4K.....	.80
212593	WCR-4L.....	.75

NOTE: Standard Coiled Cord has length of 6' when extended. Special Coiled Cords (black only) having extra length are available as follows:

Ext. Lgth.	Price
8'.....	\$ 3.30
10'.....	3.90
12'.....	4.60
15'.....	5.55

Cords—Miscellaneous

Stock No.	Code	Price
800627	2-I.....	\$.90

Cords—Operator's

Stock No.	Code	Price
800632	O-1.....	\$.50
202926	O-2.....	.90
800645	O-4.....	2.00
201829	O-4.....	2.00

Cords—Patching

Stock No.	Code	Price
203806	P-3.....	\$ 1.50
203829	P-3.....	2.50
205682	P-3.....	1.75
207990	P-3.....	1.85

Cords—Receiver

Stock No.	Code	Price
800651	R-2.....	\$.75
800652	R-2.....	.60
800654	R-2.....	.70

STROMBERG-CARLSON

PRICE INFORMATION

Cords--Switchboard

Prices shown are for white, red or green cords with nylon outer braid. **FOR BLACK CORDS ADD 15% TO PRICES LISTED.** Lengths shown are standard and should be ordered whenever possible as other lengths are made only to order. When cords and plugs are ordered, plugs will be attached to cords, if specified, at no additional charge.

Number of Conductors	Length	Price
2	3'	\$ 1.25
2	4'	1.35
2	5'	1.40
2	6'	1.45
3	3'	1.40
3	4'	1.50
3	5'	1.60
3	6'	1.70
3	7'	1.80

Cords--Switchboard with Plugs Attached

The following cords with plugs attached are carried in stock for prompt shipment:

Stock No.	Price
42623	\$ 3.15
42462	3.15
42463	3.20
42935	4.00
42936	3.90
44096	4.00
44098	4.00
44100	4.00

Cords--Terminal

All terminal cords listed T-1-A through T-1-L each \$.05.

Cordage

Stock No.	No. of Cond.	Price Per C Ft.
20237	1	\$ 4.50
20727	2	8.50
20758	3	12.65
20809	3	5.25
20587	4	16.50
20824	4	7.25

Sleeving

Stock No.	Price Per C Ft.
20031	\$.60
20032	1.20
20033	1.50

Cord Adjusters

Stock No.	Code	Price
12018	6	\$.06

Cord Weights

800707	6	\$ 1.00
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Cord Fasteners

Stock No.	Code	Price
800667	4	\$.10
800668	5	.10
800669	6	.10

Cord Hooks

7921	2	\$.05
16008	4A	.10
16357	4B	.10
16358	4C	.10

Cord Tips

4877	9	\$.02
5171	14	.02
6916	17	.04
8312	18	.03
8446	20	.02
8898	24	.01
8899	25	.01
28856	34	.15
11870	35	.02
15642	37	.02
33198	39	.02
38336	40	.02
38337	41	.02
38338	42	.02
38334	43	.02
200947	44	.02
200948	45	.02

Discount on Cord Tips

Quantity	Net
Less than 100	
100 to 500	10%
500 to 1000	20%
1000 to 2500	25%
2500 to 5000	35%
5000 and over	Discount on request

Distributing Bars

Stock No.	Code	Price
800751	1A	\$.70
800741	3	.75
800743	5	1.00
800745	7	1.25
800746	8	1.50
800749	11	2.00
800750	12	2.40

Dial Mountings

211205	3	\$ 5.00
200820	143A	4.00

Issue Date: 11-1-55

PRICE INFORMATION

Foot Rails			Holly Strips		
Stock No.	Code	Price	Stock No.	Code	Price
13565	11	\$ 10.00	6984	3	\$.05
13566	Cap	2.00	13116	15	.10
800763	12	13.50	13444	16	.10
Includes 2 brackets					
Fuses			Hook Switches		
801560	1	\$.10	801956	41B	\$ 2.45
801562	4	.15	801957	41G	2.75
38789	35B-1½ Amp.	.18			
208524	35B-2 Amp.	.18			
208439	35C	.18			
39277	35G	.18			
202826	35H	.18			
Fuse Wire			Interrupter Machines		
211731	1½ Amp.—½ Lb. Spool	\$ 3.50	Prices on application		
211733	3 Amp.—½ Lb. Spool	4.65			
Generators—Hand			Jacks—Individual		
201678	64	\$ 19.50	801082	93	\$ 2.15
208829	—	21.00	801083	93B	2.50
208830	—	21.00	49907	140	2.75
208833	Pkg.	2.00	200707	140 MTD	22.50
208834	Pkg.	2.50	801177	140 MTD	19.00
802047	963	34.60	801179	144	1.00
			802815	144A	1.00
Generator Crank Shafts			801180	144A-87 MTG.	3.00
465	—	\$.25	801181	145	1.25
13287	—	1.25	801182	145A	1.25
203555	—	1.00	801183	147	1.85
800774	2	2.25	801184	148	2.25
800775	3	2.25	801185	151	1.35
			801186	152	3.50
Handsets			801188	154	1.75
206354	15G	\$ 11.00	801189	154A	1.75
801011	19C	21.00	801190	155	3.00
801013	19D	22.50	800069	155A	3.00
801012	19L	21.00	800072	156	2.30
801014	20	9.00	802597	157	2.30
42906	20A	9.00	802598	158	2.40
42907	21A	9.00	802599	159	2.40
208247	23	9.00	802600	160	1.75
208666	24	9.00	802601	161	2.25
210281	26A	8.40	201562	165	1.50
210282	26B	8.40	202488	166	1.80
211361	26C	8.40	203015	167	1.40
211362	26D	9.00	204251	167A	1.50
211748	26E	8.40	203016	168	1.50
212117	26F	9.00	204052	168A	1.50
212714	26G	9.00	204308	170	3.50
213240	26H	9.75	204309	171	3.50
211396	27C	8.75	209147	172	4.00
211397	27D	9.35	209212	173	1.80
211864	27E	8.75			
212550	28A	10.00	Jacks—Wall Outlet Type		
212551	28B	10.00	25856		\$ 2.65
212552	28C	10.60	25960		1.85

STROMBERG-CARLSON

PRICE INFORMATION

Jacks--Strip Type			Jack Fasteners		
Stock No.	Code Mtg.	Price	Stock No.	Code	Price
801089	109-60	\$ 15.30	8867	15	\$.25
801090	109-61	19.15	801197	17	.20
801091	109-62	18.50	801198	18	.10
801092	109-63	19.15	801199	19	.10
801097	113-60	19.80	801200	20	.25
44464	114-60	18.00	801201	21	.20
801100	114-61	27.00	801202	22	.10
801101	114-62	28.75			
801102	114-63	29.75			
801137	127-89	13.25			
42996	127-90	24.50			
801139	127-90A	25.00	204963	170B	\$ 4.90
801140	127-90B	25.80	802626	170C	2.80
801141	127-90C	26.50	802628	170D	3.10
801138	127-91	14.75	206792	170E	4.00
48368	130-99	14.20	49759	170F	3.10
48371	130-100	21.00	802632	170G	4.00
200721	130-100A	21.50	802638	170H	3.40
200730	130-100B	22.30	206793	170J	4.00
48372	132-100	25.00	802664	170K	4.90
200722	132-100A	25.50	802675	170L	3.10
200731	132-100B	26.30	802682	170M	4.00
48373	133-100	27.20	206929	170N	3.70
2723	133-100A	27.70	208366	170P	5.35
200732	133-100B	28.50	212465	170Q	4.00
48367	134-99	19.70	205012	171B	4.00
48366	135-99	17.50	205684	171C	5.20
48374	135-100	25.00	802627	171D	3.10
200724	135-100A	25.50	204986	171DZ	3.10
200733	135-100B	26.30	802640	171E	2.65
48364	137-99	19.70	802645	171F	3.40
48376	137-100	27.20	802681	171G	3.40
200726	137-100A	27.70	204956	172B	5.20
200735	137-100B	28.50	204957	172BZ	5.20
48363	138-99	19.70	204964	172C	5.80
48377	138-100	27.20	204965	172D	4.30
200727	138-100A	27.70	802619	172E	4.00
200736	138-100B	28.50	802622	172F	3.70
48360	162-99	17.50	207621	172FZ	3.70
48378	162-100	28.00	802623	172G	4.00
200728	162-100A	25.50	802625	172H	4.30
200737	162-100B	28.30	802629	172J	4.00
48361	163-99	17.50	201055	172K	4.30
48379	163-100	25.00	802630	172L	4.45
200729	163-100A	25.50	42665	172M	4.60
200738	163-100B	26.30	802633	172N	4.30
48362	164-99	20.00	802637	172P	4.60
203851	169-99	19.70	209816	172PZ	4.60
203852	169-100	27.20	802642	172Q	4.90
			802643	172R	4.90
			206794	172S	5.05
			207164	172T	4.30
			802994	172U	4.00
			803021	172V	4.90
			206930	172W	3.10
			209815	172X	4.30
			204966	173B	5.50
			204967	173C	7.60

NOTE: Add \$.05 per Jack for numbering of above strip type jacks.

Jack Mountings

Stock No.	Code	Price
200966	93	\$ 18.60
204271	93A	18.60
200967	94	14.80
204272	94A	14.80

PRICE INFORMATION

Keys—Individual Plunger Type (Cont'd)

Stock No.	Code	Price	Stock No.	Code	Price
49526	337C	\$ 2.10	49538	339C	\$ 2.10
49527	337D	2.10	49539	339D	2.10
49528	337E	2.10	49540	339E	2.10
49529	337H	2.25	49541	339H	2.25
211082	337J	2.50	209018	339J	2.50
211083	337K	2.50	211740	339L	2.75
211132	337L	2.75	212699	339M	2.75
49530	338A	2.00	211760	339N	2.85
49531	338B	2.00	211947	339P	2.75
49532	338C	2.10	213104	339Q	2.75
49533	338D	2.10	NOTE: Add 30c per Key for engraving if specified		
49534	338E	2.10	212745	352	\$ 19.50
201122	338G	2.25	212746	352A	25.00
49535	338H	2.25	212747	352B	25.00
49536	339A	2.00	212569	361A	3.85
49537	339B	2.00			

Keys, Party Line—Indicating Type

Codes 200 thru 209	each \$ 14.00
Codes 210 thru 219	each 14.00 plus 1 Cam Key —priced below
Codes 220 thru 229	each 14.00 plus 1 Cam Key —priced below
Codes 230 thru 239	each 14.00 plus 2 Cam Keys—priced below
Code 252	each 15.00
Codes 260 thru 269	each 14.50
Codes 270 thru 274	each 14.00 plus 2 Cam Keys—priced below
Codes 275 thru 279	each 15.00 plus 2 Cam Keys—priced below
Code 280	each 14.00 plus 1 Cam Key —priced below
Code 283	each 14.00 plus 2 Cam Keys—priced below
Code 291	each 14.00 plus 1 Cam Key —priced below
Code 292	each 16.00 plus 2 Cam Keys—priced below
Code 293	each 16.00 plus 2 Cam Keys—priced below

In pricing above keys, add cam keys as follows:

Combination A	each \$3.10	Combination P	each 3.70
Combination B	each 2.80	Combination Q	each 4.00
Combination C	each 3.70	Combination R	each 4.60
Combination D	each 3.10	Combination S	each 4.00
Combination H	each 3.10	Combination T	each 3.70
Combination I	each 3.10	Combination U	each 4.30
Combination J	each 3.25	Combination V	each 4.30
Combination K	each 3.10	Combination W	each 4.30
Combination L	each 4.00	Combination X	each 4.30
Combination M	each 3.40	Combination Y	each 4.30
Combination N	each 4.30	Combination Z	each 4.00
Combination O	each 3.70		

Key Boxes

Stock No.	Code	Price	Stock No.	Code	Price
34575	—	\$ 6.00	801229	13C	\$ 9.10
47384	SK3350A	14.20	801230	13D	10.00
53350	SK3350	13.00	801231	13E	10.00
212870	—	7.50	801232	13F	10.50
801226	13	10.00	800091	13FA	10.50
801227	13A	9.40	800094	13G	10.25
801228	13B	9.10	205686	14A	11.00

PRICE INFORMATION

Keys—Strip Mounted, Plunger Type

Stock No.	Code	Price
42491	62-122 Mtg.	\$ 25.00
42979	62-123 Mtg.	25.00
42980	69-122 Mtg.	25.00
42981	69-123 Mtg.	25.00

Key Mountings

801264	55	\$.80
801270	66	.80
801285	82	1.80
801286	83	2.25
801287	84	2.25
207331	88	1.10
207332	89	1.55
207333	90	1.95
801294	91	8.00
801295	92	1.50
801296	93	1.95
801297	94	2.50
801298	95	1.80
801304	104	7.50
801311	111	1.80
801312	112	2.25
801313	113	2.50
801314	114	1.80
801315	115	2.25
801316	116	2.50
801319	119	2.50
801320	120	8.00
801321	121	1.55
801325	125	2.00
801326	126	2.25
801327	127	2.50
801328	128	2.00
801329	129	2.25
801330	130	2.50
801331	131	2.50
801332	132	1.10
801333	133	1.10
801334	138	2.00
205650	139	2.25
203773	150	2.25
203774	151	2.25
203775	152	2.00
203776	153	2.50
206771	154	2.00
206772	155	2.25
206773	156	2.50
206774	157	2.25
205651	158	2.00
205652	159	2.00
205653	160	2.25
205654	161	2.50
204950	162	8.00
205047	163	10.00

Lamps

Stock No.	Code	Price
801363	4-A-2	See Below
801364	6-A-2	See Below
801365	8-A-2	See Below
801366	12-A-2	See Below
801367	16-A-2	See Below
801368	18-A-2	See Below
801369	24-B-2	See Below
801370	24-C-2	See Below
209569	24-H-2	See Below
801371	30-B-2	See Below
801372	44-A-2	See Below
801374	48-B-2	See Below
42201	48-C-2	See Below
201737	48-D-2	See Below
801375	55-C-2	See Below
45271	60-A-2	See Below

Switchboard Lamp Prices are as follows:

Less than 100	each \$.43
100- 499	each .39
500- 999	each .36
1000-4999	each .33
5000 and over	each .30

Lamp Caps

801388	23A	\$.65
801389	23B	.65
801390	23C	.65
801391	23D	.65
207824	23E	.65
207825	23F	.65
207826	23G	.65
207827	23H	.65
209428	23J	.65
801392	27A	.20
801393	27B	.20
801394	27C	.20
801395	27D	.20
801396	27E	.25
801400	29A	.20
801401	29B	.20
801402	29C	.20
801403	29D	.20
801404	29E	.25
801405	29F	.25
801406	29G	.25
801407	30A	.25
801408	30D	.25
801409	30J	.25
801410	30K	.25
801411	30L	.25
801412	31A	.25
801413	31B	.25
801414	31C	.25
207177	31D	.25

PRICE INFORMATION

Lamp Sockets			Number Plates		
Stock No.	Code	Price	Stock No.	Code	Price
801417	9	\$.85	7005	13	\$.20
801418	10	10.00	9573	17	.20
801419	11	12.00	15373	17A	.20
801420	12	.55	15374	17B	.20
801421	13	.55	15375	17C	.20
801422	14	14.00	15376	17D	.20
801431	121-60 Mtg.	9.00	13062	19A	.45
801432	121-61 Mtg.	16.20	13063	19B	.45
801424	121-80 Mtg.	8.00			
801425	121-81 Mtg.	12.00			
801426	121-82 Mtg.	8.00			
801427	121-83 Mtg.	12.00			
801429	121-89 Mtg.	8.00			
801440	121-91 Mtg.	8.00			
801439	121-92 Mtg.	12.00			

Operators Telephone Sets		
Stock No.	Code	Price
801453	4	\$20.00

P.B.X. and Convenience Systems

Stock No.	Code	Description	Rochester & Chicago	Atlanta & Kansas City	San Francisco
801714	2-6 or 1-7	Relay Cabinet	\$210.00	\$212.00	\$213.50
801715	2-M-6	Relay Cabinet	240.00	242.00	243.50
801716	3-5	Relay Cabinet	274.00	276.00	277.50
801717	7-6	Relay Cabinet	315.00	317.00	318.50
801718	2-10 or 1-11	Relay Cabinet	350.00	352.50	354.00
49700	3-9	Relay Cabinet	415.00	417.75	419.75
801719	2-M10 or 1-M11	Relay Cabinet	437.00	440.00	441.50
488069	6K	Relay Cabinet	161.79	164.73	168.25
486137	6K	Trunk Relay Strip	40.65	40.90	41.15
486872	6K	Transformer	7.25	7.30	7.35
487746	F-40-A	XY PBX	Prices on application		
	F-80	XY PBX	Prices on application		
484862	2-10	RELAYDIAL PX	675.00	680.00	690.00
485794	2-10	Mounting Stand and Cabinet	Included in above		
893721	Rectifier	(2-10 System)	177.00	179.00	180.50
485650	4-20	RELAYDIAL PX	1355.00	1362.50	1370.00
485832	4-20	Mounting Stand and Cabinet	Included in above		
485833	Rectifier	(4-20 System)	288.00	289.80	292.00
24726	1	Relay Cabinet	225.00	227.00	228.50
63006	D-3006	Relay Cabinet	252.00	254.00	255.50
801450	1A	Key Turret	85.40	86.20	86.95
801451	1B	Key Turret	118.40	119.50	120.90
801452	1C	Key Turret	151.40	152.80	154.15
24807		Top	4.40	4.50	4.65
24808		Key Section	33.00	33.30	33.60
24809		Base	48.00	48.40	48.70
26004		Top	15.00	15.15	15.35
54576		*Top with 10 buttons and buzzer	19.40	19.60	19.70
		Additional Line Equipment for relay cabinet	17.05	17.35	17.40
		Intercepting Service—per line	5.60	5.70	5.80

*NOTE: When above tops are equipped with cord and terminal blocks, add \$2.20 to above prices.

MANUAL P.B.X. SWITCHBOARDS..... Prices on application

PRICE INFORMATION

Plugs

Stock No.	Code	Price
801465	10.....	\$ 2.25
801476	35A.....	3.00
801481	42.....	1.75
206517	56G.....	1.75
206515	56R.....	1.75
206516	56XR.....	1.75
801498	57.....	1.75
801500	59.....	2.30
801502	61.....	1.75
200516	61A.....	1.75
801503	62.....	6.15
801504	63.....	2.30
801505	63N.....	2.30
205544	64R.....	2.30
205547	64DR.....	2.30
205550	64ER.....	2.30
205553	64FR.....	2.30
205557	64GR.....	2.30
205559	64NR.....	2.30
205532	65R.....	2.30
205535	65NR.....	2.30
205541	65XR.....	2.30
205538	65NXR.....	2.30
201839	66.....	2.30

Plug and Jack Gauges

Stock No.	Price
13070.....	\$ 4.25
13071.....	3.70
13113.....	4.25
13114.....	4.25
13118.....	3.70
13119.....	3.70

Plug Seats

Stock No.	Code	Price
4637	5.....	\$.10
4638	6.....	.10
12170	12.....	.10
203957	13.....	.15

PLUG, TROUBLE

Stock No.	Code	Less Than	
		1000 Per C	1000 & Over Per C
16582	1.....	\$13.50	\$10.80
16583	2.....	13.50	10.80
16584	3.....	13.50	10.80

Receivers

Stock No.	Code	Price
801592	29.....	\$ 9.50
801593	30 less cord.....	4.75
801594	30A with cord.....	5.20
801595	30B with cord.....	5.70
34230	31.....	3.70
210278	32.....	3.70
210285	—.....	3.40

A, B & C Type Relays

"A" Type Relays

To figure price on "A" type relays, add to the price of frame and armature assembly, spring combinations and coils listed below:

	Price
"A" Type Frame and Armature Assembly.....	\$ 2.50
"A" Spring Combination.....	.40
"B" Spring Combination.....	.40
"C" Spring Combination.....	.50
"D" Spring Combination.....	.60
"F" Spring Combination.....	1.20
"G" Spring Combination.....	.80
"J" Spring Combination.....	1.00
"K" Spring Combination.....	.60
"Z" Spring Combination.....	1.00
"IC" Spring Combination.....	.60
"XA" Spring Combination.....	.40
"XB" Spring Combination.....	.40
"XC" Spring Combination.....	.60

"B" Type Relays

Prices on Application

"C" Type Relays

To figure price on "C" Type Relays, add to price of frame and armature assembly spring combinations listed under "A" Type, and 2 coils listed below:

"C" Type—Frame and Armature Assembly..... \$ 3.00

Relay Coils

A, B, C Type Relays

Stock No.	Price
36200.....	\$ 2.45
36201.....	2.55
36202.....	2.45
36203.....	2.30
36204.....	2.40
36205.....	2.45
36206.....	2.45
36207.....	2.40
36208.....	2.40
36209.....	2.45
36218.....	2.45
36219.....	2.45
36220.....	2.75
36221.....	2.40
36222.....	2.50
36223.....	2.40
36224.....	2.50
36225.....	2.65

PRICE INFORMATION**Relay Coils—A, B, C Type Relays (Cont'd)**

Stock No.	Price	Stock No.	Price
36226	\$ 2.50	36831	\$ 2.40
36227	2.55	36832	2.40
36228	2.60	36833	2.40
36229	2.70	36834	2.40
36230	2.70	36835	2.40
36231	2.55	36836	2.45
36232	2.80	36837	2.45
36233	2.80	36838	2.50
36234	2.50	36839	2.55
36235	2.75	36840	2.65
36236	2.75	36841	2.30
36237	2.40	36842	2.20
36238	2.40	36843	2.45
36239	2.60	36844	2.20
36470	1.55	36845	2.20
36471	1.25	36846	2.55
36473	1.20	36851	2.55
36474	1.25	36852	2.45
36475	1.25	36853	2.30
36476	1.25	36857	2.80
36477	1.25	36858	2.80
36478	1.25	36859	2.80
36479	2.00	36860	2.80
36480	1.60	36861	2.25
36801	1.95	36862	2.40
36802	1.95	36863	2.25
36803	1.95	36864	2.20
36804	1.95	36865	2.20
36805	1.95	36870	2.00
36806	1.95	36871	2.00
36807	1.95	36872	2.10
36808	1.95	36873	2.00
36809	1.95	36874	2.00
36810	1.95	36875	2.10
36811	2.00	36876	2.00
36812	2.00	36877	2.00
36813	2.00	36878	2.10
36814	2.00	36879	2.35
36815	2.00	36880	2.20
36816	2.00	36881	2.70
36817	2.10	36882	2.80
36818	2.10	36883	2.50
36819	2.15	36884	2.70
36820	2.25	36885	2.50
36821	2.30	36886	2.50
36822	2.10	36887	2.65
36823	1.95	36888	2.65
36824	2.30	36889	2.30
36825	2.30	36890	2.30
36826	2.30	36891	2.50
36827	2.30	36892	2.55
36828	2.30	36893	2.70
36829	2.30	36894	2.75
36830	2.30	36895	2.55

STROMBERG-CARLSON

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PRICE INFORMATION

Relay Coils—A, B, C Type Relays (Cont'd)

Stock No.	Price	Stock No.	Price
36896	\$ 2.65	36937	\$ 3.00
36897	2.45	36938	3.00
36898	2.50	36941	3.00
36899	2.30	36942	3.00
36900	2.40	36943	3.00
36901	2.40	36944	3.00
36902	2.40	36945	3.00
36903	2.70	36946	3.00
36904	2.80	36949	2.80
36905	2.50	36950	2.85
36906	2.40	36951	2.30
36907	2.40	36952	2.40
36908	2.30	36953	2.30
36909	2.80	36954	2.90
36910	2.40	36955	2.30
36911	2.65	36956	2.45
36912	2.55	36957	2.30
36913	2.45	36959	2.40
36914	2.75	36961	2.40
36915	2.80	36963	2.40
36916	2.45	36965	2.40
36917	2.50	36967	2.40
36918	2.65	36969	2.55
36919	2.65	36971	3.15
36920	2.65	36972	3.15
36921	2.40	36973	3.15
36922	2.60	36974	2.80
36923	2.45	36975	2.80
36925	3.00	36976	3.25
36926	3.00	36977	3.25
36927	3.00	36978	3.00
36929	3.10	36979	2.80
36930	3.00	36980	3.25
36931	3.00	36986	2.10
36932	3.00	36987	2.10
36933	3.00	36988	2.10
36934	3.00	36989	2.20
36935	3.00	36990	2.30
36936	3.00	211428	1.25

190 Type Relays

Relays Only

Coils Only

Stock No.	Code	Price	Stock No.	Price
802772	192A	\$ 3.75	19075	\$ 1.50
802773	193A	3.50	12234	1.50
802774	193BB	3.80	12234	1.50
802775	194A	3.50	12235	1.50
802776	194C	3.60	12235	1.50
803052	194-1-BB	3.65	12235	1.50
802777	195A	3.75	12265	2.05
200580	197BB	3.25	19075	1.50
802950	198A	3.60	21587	1.95
802778	199BB	3.70	12234	1.50

STROMBERG-CARLSON

PRICE INFORMATION

200 Type Relays

The prices specified for the 200 type relays cover relay less springs and to arrive at the price of complete relay, add for each spring combination as follows:

Stock No.	Code	Price
12504	A	\$.47
12505	B	.47
12506	C	.58
12507	D	.64
12510	G	.76
12895	H	.76
208011	J	.76
12749	K	.76
12900	L	.76
13953	M	.87
13954	N	.87
13796	O	.87
28794	Q	.87
30214	R	.87
49149	U	.81
13624	AY	.47
13409	BY	.47
14042	CY	.58
12508	EY	.64
12509	FY	.76
29381	HY	.76
28873	NY	.87
19359	PY	.93
35270	QY	.87
202345	SY	.76
31082	TY	.87

NOTE: These prices on Spring Combinations apply only when assembled with complete relays. When sold separately, add 50% to above prices.
 When relays are mounted in factory, add \$.30 per relay.
 When used as a restoring relay in combination with 300-X type relays, the letter X should be added to code number. Regular armature is then replaced with special armature (Stk. No. 12901). Add \$.35 per relay.

Code No.	Price Relay less Springs	Stock No.	Coil Only Price
201	\$ 3.15	12276	\$ 1.95
202	3.15	12277	1.95
203	3.20	12278	2.00
204	3.20	15491	2.00
205	3.25	12280	2.05
206	3.30	12266	2.10
207	3.50	12267	2.30
208	3.30	12281	2.10
209	3.50	12282	2.30
210	3.85	12283	2.65
212	3.85	30005	2.65
213	3.30	15435	2.10
214	3.50	15436	2.30
215	3.85	32846	2.65
218	4.05	201054	2.85
219	3.85	34947	2.65
221	3.95	12286	2.75
222	4.05	12287	2.85

Code No.	Price Relay less Springs	Stock No.	Coil Only Price
223	\$ 4.10	12288	\$ 2.90
224	4.15	12289	2.95
225	4.40	12290	3.20
226	4.05	12291	2.85
227	4.10	12292	2.90
228	4.05	12293	2.85
229	4.40	12294	3.20
231	4.40	12295	3.20
232	4.15	12296	2.95
241	4.15	12297	2.95
241-1	4.15	33956	2.95
242	4.30	12298	3.10
242-1	4.30	33857	3.10
243	4.15	15197	2.95
243-1	4.30	37012	3.10
244	4.30	15198	3.10
245	4.40	15199	3.20
246	4.15	15200	2.95
247	4.15	15201	2.95
248	4.15	15202	2.95
249	4.40	29743	3.20
251	4.20	15203	3.00
251-1	4.20	39351	3.00
251-2	4.00	211883	3.00
252	4.10	15204	2.90
252-1	5.35	42782	4.15
253	4.00	15205	2.80
254	4.05	17809	2.85
254-1	4.25	202006	3.05
255	5.20	15207	4.00
255-1	4.20	203192	3.00
256	4.20	15208	3.00
257	4.30	15209	3.10
258	4.20	15210	3.00
259	4.20	15211	3.00
261	3.30	15429	2.10
262	3.30	15430	2.10
263	3.50	15431	2.30
264	3.60	15432	2.40
265	3.30	15433	2.10
266	3.30	202167	2.10
267	3.85	202453	2.65
274	4.30	15217	3.10
275	4.35	16480	3.15
276	4.20	202007	3.00
277	4.40	202008	3.20
278	5.20	202009	4.00
279	4.35	201174	3.15
281	4.20	15218	3.00
291	4.05	15219	2.85
292	4.20	33757	3.00
293	4.40	33855	3.20
295	4.20	28366	3.00
296	4.25	28365	3.05
297	4.30	28367	3.10
298	4.35	32845	3.15
299	4.30	38507	3.10

PRICE INFORMATION

300 Type Relays

The prices specified for the 300 type relays cover relay less springs and to arrive at the price of complete relay, add for each spring combination as follows:

Stock No.	Code	Price
13253	A.....	\$.85
13258	B.....	.85
13260	C.....	1.00
13265	X.....	1.00

Code No.	Price Relay less Springs	Stock No.	Coil Only Price
306.....	\$ 4.65	15220.....	\$ 2.65
307.....	4.90	15221.....	2.80
313.....	5.35	15222.....	2.80

340 Type Relays

Code No.	Price Complete Relay
343CC.....	\$ 17.00
344C.....	17.00
345C.....	17.00
346C.....	17.00
347CC.....	17.00
348CC.....	17.00
349C.....	17.00

360 Type Relays

Code No.	Price Complete Relay
366A.....	\$ 2.50
367A.....	2.65

370 Type Relays

Code No.	Price Complete Relay
372.....	\$ 17.00

375 Type Relays

Prices on Application

380 Type Relays

Stock No.	Code	Price Complete Relay
803603	381A.....	\$ 5.20
208075	382A.....	5.40
211907	383C.....	5.75
211909	384C.....	5.40

390 Type Relays

Prices on Application

Relay Casings or Covers

Stock No.	Code	Price
801597	16L.....	\$ 2.00
801598	17L.....	2.00
801600	18L.....	2.20
801603	20L.....	4.50
801605	21L.....	4.00
27056	23L.....	3.00
801609	24L.....	3.00
801610	25.....	1.85
801611	26.....	2.50
205108	27.....	1.85
447611	—.....	3.00
447612	—.....	3.25
447613	—.....	3.50
447614	—.....	3.75
447615	—.....	4.00
447616	—.....	4.25
447617	—.....	4.50
448701	—.....	3.25
448704	—.....	3.25
480507	—.....	3.00
482887	—.....	3.50
484505	—.....	3.00
484518	—.....	4.50

Relay Mountings

447501	—.....	\$ 2.00
447502	—.....	4.00
447511	—.....	3.00
447512	—.....	4.50
447521	—.....	3.60
447522	—.....	5.00
447541	—.....	4.00
448501	—.....	2.00
448504	—.....	2.75
448505	—.....	2.75
480590	—.....	3.25
480594	—.....	3.50
484504	—.....	3.00
801652	83L.....	6.65
801653	84L.....	7.00
801654	85L.....	7.10
200473	86L.....	6.50
801657	87L.....	2.90
801659	88L.....	6.50
801661	89L.....	3.00
44361	90L.....	3.00
801663	91L.....	6.00
45492	92L.....	3.00
801665	93L.....	1.00
801666	94L.....	1.00
801667	95L.....	2.00
801668	96L.....	3.00
801671	98L.....	4.50
801673	100L.....	2.00
801675	101L.....	3.25

PRICE INFORMATION

Relay Mountings (Cont'd)

Stock No.	Code	Price
801677	102L	\$ 4.00
801679	103L	3.00
801681	104L	4.50
801683	105L	3.75
801685	106L	2.75
801688	109L	3.00
801690	110L	3.00
801692	111L	3.00
801693	112L	3.60
801694	113L	4.25
801695	114L	4.45
801696	115L	4.75
801697	116L	6.50
801698	117L	4.00
801699	118L	6.50
801700	119L	3.00
801701	120L	2.50
801702	121L	7.50
39829	122L	7.50

Resistors (Cont'd)

Stock No.	Price
36581	\$ 2.50
36582	2.40
36583	2.25
36584	1.90
36586	1.80
36587	2.00
36588	2.00
36589	1.55
36593	1.50
36594	1.75
36596	1.50
36610	1.50
36611	1.60
205412	1.50
205483	1.75
206800	2.25
207280	1.50
209796	1.50
210226	1.50

Resistors

Stock No.	Price
36271	\$.20
36272	.30
36273	.30
36274	.30
36275	.20
36276	.30
36277	.30
36278	.30
36279	.20
36280	.30
36281	1.50
36282	1.50
36283	1.50
36284	1.50
36285	1.50
36311	.30
36312	.30
36313	.30
36314	.25
36315	.20
36316	.30
36565	2.00
36566	1.75
36567	1.50
36568	1.50
36569	1.50
36570	1.50
36571	1.75
36572	1.50
36573	1.50
36574	1.50
36577	1.50
36578	1.50
36579	1.50
36580	1.50

Ringers

Stock No.	Code	Price
801820	28A	\$ 4.25
801821	28C	4.75
801822	28H	4.00
801825	35A	7.70
801826	35B	8.00
200577	35D	7.25
801827	35E	8.00
801830	46A	4.65
801832	46C	4.65
801834	46E	4.75
801835	46F	5.05
801856	49A	5.00
801857	49C	5.00
801858	49F	5.00
801861	50LL	5.50
801864	52F	5.40
801891	59E	5.20
801892	59F	5.20
801893	59G	5.20
801894	59H	5.20
801913	59I	5.20
45389	59J	5.20
801895	59K	5.20
801896	59L	5.20
801897	59M	5.20
801898	59N	5.20
801899	59P	5.20
801900	59R	5.20
801911	61A	4.00
801912	61S	4.20
803475	62E	4.55
803476	62F	4.55
803477	62G	4.55
803479	62H	4.55
803474	62I	4.55

PRICE INFORMATION

Ringers (Cont'd)

Stock No.	Code	Price	Stock No.	Code	Price
803478	62J	\$ 4.55	207730	72F	\$ 4.55
803481	62K	4.55	207731	72G	4.55
803482	62L	4.55	207732	72H	4.55
803483	62M	4.55	207738	72I	4.55
803480	62N	4.55	207740	72J	4.55
803484	62P	4.55	207734	72K	4.55
205984	62Q	4.55	207735	72L	4.55
803485	62R	4.55	207736	72M	4.55
206726	62MF	4.55	207729	72N	4.55
206727	62MG	4.55	207737	72P	4.55
206728	62MH	4.55	207739	72Q	4.55
206729	62MJ	4.55	207733	72R	4.55
206730	62MK	4.55	210671	73E	4.55
206731	62ML	4.55	210673	73F	4.55
206732	62MM	4.55	210674	73G	4.55
206733	62MP	4.55	210675	73H	4.55
206734	62MQ	4.55	210681	73I	4.55
47417	64E	5.20	210683	73J	4.55
47416	64F	5.20	210677	73K	4.55
47415	64G	5.20	210678	73L	4.55
47413	64H	5.20	210679	73M	4.55
47418	64I	5.20	210672	73N	4.55
47414	64J	5.20	210680	73P	4.55
47423	64K	5.20	210682	73Q	4.55
47422	64L	5.20	210676	73R	4.55
47421	64M	5.20	210684	74A	4.00
47412	64N	5.20	210718	74B	4.00
47420	64P	5.20			
209429	64Q	5.20			
47419	64R	5.20			
201753	65A	5.20			
202880	65B	5.40			
201754	65C	5.20			
201755	65F	5.40			
207690	71A	4.00			
208722	71B	4.00			
207728	72E	4.55			

Telephones, Ironclad

Stock No.	Code	F.O.B. Rochester	
		1-4	5 & Over
802017	890I	\$90.00	\$81.00
802018	890L	90.00	81.00
207657	950C	75.00	67.50

NOTE: On above telephones plunger lock is standard. For No. 8468 Key Lock, add \$3.25.

Telephones, Magneto

Stock No.	Code	Rochester and Chicago	F.O.B.	
			Kansas City and Atlanta	San Francisco
203071	1248-WA	\$ 36.30	\$ 36.75	\$ 37.20
206738	1248-WB	35.75	36.20	36.65
201804	1248-WI	35.75	36.20	36.65
201806	1248-WIP	37.00	37.45	37.90
201805	1248-WL	35.75	36.20	36.65
201807	1248-WLP	37.00	37.45	37.90
203069	1248-WS	36.30	36.75	37.20
209279	1258-WA	36.30	36.75	37.20
209280	1258-WB	35.75	36.20	36.65
201808	1258-WI	35.75	36.20	36.65
201810	1258-WIP	37.00	37.45	37.90
201809	1258-WL	35.75	36.20	36.65
201811	1258-WLP	37.00	37.45	37.90
209281	1258-WS	36.30	36.75	37.20

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PRICE INFORMATION**Telephones, Magneto (Cont'd)**

Stock No.	Code	Rochester and Chicago	F.O.B.	
			Kansas City and Atlanta	San Francisco
201812	1268-WI.....	\$ 23.75	\$ 24.05	\$ 24.35
201814	1268-WIP.....	25.00	25.30	25.60
201813	1268-WL.....	23.75	24.05	24.35
201815	1268-WLP.....	25.00	25.30	25.60

Telephones, Convenience Systems

202298	1270.....	\$ 30.00	\$ 30.50	\$ 30.90
202299	1271.....	38.00	38.50	38.90
202300	1272.....	39.50	40.00	40.40

Telephones, Common Battery

210957	1532.....	\$ 19.25	\$ 19.50	\$ 19.75
210958	1532-M.....	17.75	18.00	18.25
210959	1533.....	21.00	21.25	21.50
210960	1533-M.....	19.50	19.75	20.00
210952	1533-MK.....	25.00	25.25	25.50
210961	1534.....	16.00	16.25	16.50
210962	1534-M.....	15.00	15.25	15.50
211452	1543 Less Ringer.....	18.00	18.30	18.60
211466	1543-A.....	20.85	21.15	21.45
211468	1543-B.....	20.85	21.15	21.45
211985	1543-BT3.....	24.10	24.40	24.70
211454	1543-E.....	21.40	21.70	22.00
211455	1543-F.....	21.40	21.70	22.00
211456	1543-G.....	21.40	21.70	22.00
211458	1543-H.....	21.40	21.70	22.00
211453	1543-I.....	21.40	21.70	22.00
211457	1543-J.....	21.40	21.70	22.00
211460	1543-K.....	21.40	21.70	22.00
211461	1543-L.....	21.40	21.70	22.00
211462	1543-M.....	21.40	21.70	22.00
211459	1543-N.....	21.40	21.70	22.00
211463	1543-P.....	21.40	21.70	22.00
211465	1543-Q.....	21.40	21.70	22.00
211464	1543-R.....	21.40	21.70	22.00
211749	1544.....	15.50	15.80	16.10
211750	1544-B.....	17.00	17.30	17.60
211758	1544-C.....	24.00	24.30	24.60
211759	1544-K.....	20.25	20.55	20.85
211751	1544-P.....	14.00	14.30	14.60
210883	1560 Less Ringer.....	7.50	7.70	7.90
210897	1560-A.....	10.50	10.70	10.90
212063	1560-BT3.....	13.75	13.95	14.15
210885	1560-E.....	11.05	11.25	11.45
210886	1560-F.....	11.05	11.25	11.45
210887	1560-G.....	11.05	11.25	11.45
210889	1560-H.....	11.05	11.25	11.45
210884	1560-I.....	11.05	11.25	11.45
210888	1560-J.....	11.05	11.25	11.45
210891	1560-K.....	11.05	11.25	11.45
210892	1560-L.....	11.05	11.25	11.45
210893	1560-M.....	11.05	11.25	11.45
210890	1560-N.....	11.05	11.25	11.45
210894	1560-P.....	11.05	11.25	11.45
210896	1560-Q.....	11.05	11.25	11.45

If above dial types are equipped with dial, add \$6.25 to above prices.

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PRICE INFORMATION**Telephones, Common Battery (Cont'd)**

Stock No.	Code	Rochester and Chicago	F.O.B. Kansas City and Atlanta	San Francisco
210895	1560-R.....	\$ 11.05	\$ 11.25	\$ 11.45
209959	1561 Less Ringer.....	4.30	4.50	4.70
209973	1561-A.....	7.45	7.65	7.85
210900	1561-AH.....	7.45	7.65	7.85
210901	1561-AL.....	7.45	7.65	7.85
212064	1561-BT3.....	10.25	10.45	10.65
210923	1561-C.....	6.45	6.65	6.85
209961	1561-E.....	8.00	8.20	8.40
209962	1561-F.....	8.00	8.20	8.40
209963	1561-G.....	8.00	8.20	8.40
209965	1561-H.....	8.00	8.20	8.40
209960	1561-I.....	8.00	8.20	8.40
209964	1561-J.....	8.00	8.20	8.40
209967	1561-K.....	8.00	8.20	8.40
209968	1561-L.....	8.00	8.20	8.40
209969	1561-M.....	8.00	8.20	8.40
209966	1561-N.....	8.00	8.20	8.40
209970	1561-P.....	8.00	8.20	8.40
209972	1561-Q.....	8.00	8.20	8.40
209971	1561-R.....	8.00	8.20	8.40
210902	1573.....	55.25	55.55	55.80
211117	1575-A.....	61.10	61.75	62.40
211143	1575-B.....	63.10	63.75	64.40

If 1573 and 1575 types are equipped with dial, add \$6.25 to above prices.

Above prices cover standard black telephones less dial. Make following additions to these prices:

If "all gray" add \$3.65

If dial is equipped, add \$6.25 to black types—\$7.00 to gray types

If "Coiled Kord" is furnished, add \$.60

If two step feature is furnished, add \$1.00

"W" Type Telephones

211564	1543-W Less Ringer.....	\$ 20.40	\$ 20.70	\$ 21.00
211578	1543-WA.....	23.25	23.55	23.85
211580	1543-WB.....	23.25	23.55	23.85
213781	1543-WBT3.....	27.75	28.05	28.35
211566	1543-WE.....	23.80	24.10	24.40
211567	1543-WF.....	23.80	24.10	24.40
211568	1543-WG.....	23.80	24.10	24.40
211570	1543-WH.....	23.80	24.10	24.40
211565	1543-WI.....	23.80	24.10	24.40
211569	1543-WJ.....	23.80	24.10	24.40
211572	1543-WK.....	23.80	24.10	24.40
211573	1543-WL.....	23.80	24.10	24.40
211574	1543-WM.....	23.80	24.10	24.40
211571	1543-WN.....	23.80	24.10	24.40
211575	1543-WP.....	23.80	24.10	24.40
211577	1543-WQ.....	23.80	24.10	24.40
211576	1543-WR.....	23.80	24.10	24.40

The above prices of "W" type telephones cover standard black telephones less dial. Make following additions to these prices:

If equipped with dial..... \$6.25

If "Coiled Kord" is furnished, add60

If two step feature is furnished, add..... 1.00

STROMBERG-CARLSON

PRICE INFORMATION**Colored Telephones**

In addition to the Standard All Gray Telephone mentioned above, all "W" types only can be furnished in the following colors. Desert Beige, French Blue, Chestnut Brown, Dove Gray, Olive Green, Antique Ivory, Chinese Red and Canary Yellow. To price these colored telephones, add \$3.70 to above prices of "W" type black telephones. This price will cover "Coiled Kords" which are standard on these telephones. When equipped with dial, add \$7.00 to cover colored dial.

Terminal Blocks

Stock No.		Price
205106	Less than 25.....	each \$.35
	25 and over.....	each .30

Terminal Boxes

Stock No.	Code	Price
802440	89B.....	\$ 10.00
201983	90A.....	7.50
210730	96A.....	7.50
211156	96B.....	10.00
212769	97.....	6.75
212765	98.....	8.25
212766	99.....	11.90

Terminal Strips

802400	44.....	\$ 5.50
802401	45.....	6.50
802402	46.....	7.90
802405	49.....	6.00
802418	68.....	3.60
802419	69.....	3.75
802420	70.....	3.95
802421	71.....	4.20
802422	72.....	2.00
802423	73.....	2.50
802424	74.....	3.25
802425	75.....	3.90
802426	76.....	4.40
802427	77.....	3.90
802428	78.....	4.95
802429	79.....	5.60
802430	80.....	6.00
802431	81.....	7.25
802432	82.....	8.75
802438	88.....	9.50
207089	92.....	4.75
207090	93.....	6.00
207091	94.....	7.25
207092	95.....	8.50
203311	101.....	3.15
203312	102.....	3.30
203313	103.....	3.45
203314	104.....	3.60
203315	105.....	3.75
203316	106.....	3.90
203317	107.....	4.05

Terminal Strips (Cont'd)

Stock No.	Code	Price
203318	108.....	\$ 4.20
203319	109.....	4.35
203310	110.....	4.50
203361	111.....	5.00
203362	112.....	5.20
203363	113.....	5.40
203364	114.....	5.60
203365	115.....	5.80
203366	116.....	6.00
203367	117.....	6.20
203368	118.....	6.40
203369	119.....	6.60
203360	120.....	6.80
203321	121.....	5.50
203322	122.....	5.75
203323	123.....	6.00
203324	124.....	6.25
203325	125.....	6.50
203326	126.....	6.75
203327	127.....	7.00
203328	128.....	7.25
203329	129.....	7.50
203320	130.....	7.75
203371	131.....	6.00
203372	132.....	6.30
203373	133.....	6.60
203374	134.....	6.90
203375	135.....	7.20
203376	136.....	7.50
203377	137.....	7.80
203378	138.....	8.10
203379	139.....	8.40
203370	140.....	8.70
203331	141.....	6.50
203332	142.....	6.85
203333	143.....	7.20
203334	144.....	7.55
203335	145.....	7.90
203336	146.....	8.25
203337	147.....	8.60
203338	148.....	8.95
203339	149.....	9.30
203330	150.....	9.65
203341	151.....	7.50
203342	152.....	8.10
203343	153.....	8.70
203344	154.....	9.30
203345	155.....	9.90
203346	156.....	10.50
203347	157.....	11.10
203348	158.....	11.70
203349	159.....	12.30
203340	160.....	12.80
203351	161.....	8.50
203352	162.....	9.25
203353	163.....	10.00

Prices – Equipment Sections

For Your Information

WHEN ORDERING—Give billing name and address and destination to which goods are to be shipped. Take care to specify our Code or Stock Number as well as the name of each article ordered. Unless you specify what is wanted by Number, your order may be subject to delay.

PRICES are subject to change without notice. All merchandise will be billed at prices in effect at time of shipment which may be either higher or lower than those listed. Prices shown herein do not include any sales, excise, freight, use or similar taxes. All such taxes will be shown as additional charge on invoices where applicable.

TERMS are net 10 days E.O.M. (End of Month) billing.

ALL AGREEMENTS are made contingent upon strikes, fires, accidents or causes beyond our control.

SHIPMENTS on Telephone and Switchboard Equipment will be made from Rochester, New York; Chicago, Illinois; Kansas City, Missouri; Burlingame, California; or Atlanta, Georgia.

Unless otherwise agreed upon all goods are sold f. o. b. Rochester, New York; Branch Office Warehouses; or, in the case of some accessories, manufacturer's shipping point. Transportation charges will therefore be collected by the carriers upon arrival of goods at destination, unless special arrangements for prepaid shipment have been made.

Price pages are arranged with all items grouped into alphabetical sequence according to the accepted names of the equipment.



CHANGES AND REPLACEMENTS

OLD		Description	NEW		Issue Date
Stock No.	Code No.		Stock No.	Code No.	
465-000	—	Generator Crank Shaft	Transferred to Piece Parts		8-1-56
1294-000	1	Blank, Plug Hole	OBSOLETE	—	2-1-57
2723-000	133-100A	Jack—Strip Type	200723-000	133-100-A	2-1-57
11528-000	39	Tool	VOID	—	7-1-57
19075-000	—	Coil only	12233-000	—	7-1-57
13287-000	—	Generator Crank Shaft	Transferred to Piece Parts		8-1-56
33198-000	—	Cord Tip	217687-000	47	1-1-57
33764-000	39	Designation Strip	REMOVED	—	10-1-56
34575-000	—	Key Box	216780-000	13I-1	8-1-56
34746-000	67	Tool	12077-000	42	2-1-56
38231-000	553-A	Tool	38281-000	553-A	5-1-56
38281-000	553-A	Tool	218169-000	107	1-1-58
42906-000	20-A	Handset	216942-000	20-R	8-1-56
42907-000	21-A	Handset	216943-000	21-R	8-1-56
44098-000	—	Cord—Switchboard with plugs attached	REMOVED	—	7-1-57
47384-000	SK-3350-A	Key Box	216779-000	13H-1	8-1-56
53350-000	SK-3350	Key Box	216779-000	13H-1	8-1-56
200435-000	—	Drop Mounting	REMOVED	—	10-1-56
200947-000	44	Cord Tip	217687-000	47	1-1-57
201374-000	D-4	Cord—Desk Stand	211747-000	WDR-4K	8-1-56
201497-000	H-4	Cord—Hand Set	216941-000	WCR-4F	8-1-56
202238-000	D-4	Cord—Desk Stand	211746-000	WDR-4J	8-1-56
202834-000	170-A	Key—Cam Type	802619-000	172-E	2-1-57
203554-000	—	Cable—Switchboard	203554-000	116-B	8-1-56
203555-000	—	Generator Crank Shaft	Transferred to Piece Parts		8-1-56
204052-000	168-A	Jack—Individual	204252-000	168-A	8-1-56
205115-000	73-A	Jack Blank	VOID	—	2-1-57
205686-000	14-A	Key Box	216779-000	13H-1	8-1-56
206424-000	28	Transmitter	VOID	—	8-1-56
206950-000	CE207	Dial	213075-000	DE207	10-1-56
206951-000	CE208	Dial	213081-000	DE208	10-1-56
206952-000	CE209	Dial	213084-000	DE209	10-1-56
206953-000	CEX207	Dial	213076-000	DEX207	10-1-56
206954-000	CEX209	Dial	213085-000	DEX209	10-1-56
206957-000	CCX207	Dial	213078-000	DCX207	10-1-56
206958-000	CCX209	Dial	213086-000	DCX209	10-1-56
206959-000	FCE207	Dial	213079-000	FDE207	10-1-56
207068-000	24-S	Cofl—Impedance—Coded	204218-000	24	2-1-57
207760-000	CE210	Dial	213090-000	DE210	10-1-56
207761-000	CE211	Dial	OBSOLETE	—	5-1-56
207762-000	CE212	Dial	213092-000	DE212	10-1-56
208023-000	CL207	Dial	213080-000	DL207	10-1-56
208024-000	CL208	Dial	213083-000	DL208	10-1-56
208025-000	CL209	Dial	213087-000	DL209	10-1-56
208243-000	H-3	Cord—Hand Set	211305-000	WCR-3J	8-1-56
208244-000	D-3	Cord—Desk Stand	VOID	—	8-1-56
208244-000	WDN-3J	Cord—Desk Stand	211304-000	WDR-3J	8-1-56
208247-000	23	Handset	216945-000	23-R	8-1-56
208663-000	H-4	Cord—Hand Set	211745-000	WCR-4J	8-1-56
208664-000	WDN-4J	Cord—Desk Stand	211746-000	WDR-4J	1-1-57
208665-000	WDN-4K	Cord—Desk Stand	211747-000	WDR-4K	1-1-57
208666-000	24	Handset	216946-000	24-R	8-1-56
208716-000	WDN-6F	Cord—Desk Stand	217115-000	WDN-6K	1-1-57
208829-000	—	Generator—Hand	REMOVED	—	8-1-56

STROMBERG-CARLSON

CHANGES AND REPLACEMENTS (CONTINUED)

OLD		Description	NEW		
Stock No.	Code No.		Stock No.	Code No.	Issue Date
208833-000	Pkg.	Generator—Hand	REMOVED	_____	8-1-56
209388-000	_____	Key Mounting	REMOVED	_____	2-1-57
210092-000	70	Tool	201092-000	70	5-1-56
210281-000	26-A	Handset	211361-000	26-C	8-1-56
210282-000	26-B	Handset	211748-000	26-E	8-1-56
210285-000	_____	Designation Strip	211881-000	33	5-1-56
210287-000	30	Transmitter	211969-000	30	5-1-56
210571-000	CC209	Dial	213088-000	DC209	10-1-56
211170-000	WCN-3K	Cord—Hand Set	211373-000	WCR-3K	8-1-56
211171-000	WCN-4K	Cord—Hand Set	211884-000	WCR-4K	8-1-56
211731-000	_____	Fuse Wire, 1 1/2 amp.	Transferred to Piece Parts	_____	8-1-56
211732-000	_____	Fuse Wire, 2 amp.	Transferred to Piece Parts	_____	8-1-56
211733-000	_____	Fuse Wire, 3 amp.	Transferred to Piece Parts	_____	8-1-56
211907-000	383-C	380 Type Relay	38308-000	383-C	8-1-56
212117-000	26-F	Handset	213693-000	26-I	8-1-56
212788-000	FCCX209	Dial	213089-000	FDCX209	10-1-56
212789-000	FCE212	Dial	213093-000	FDE212	10-1-56
212862-000	CE315	Dial	213094-000	DE315	10-1-56
212869-000	WCG-3J	Cord—Hand Set	VOID	_____	8-1-56
212890-000	WDR-6H	Cord—Desk Stand	212936-000	WDN-6H	5-1-56
213141-000	CE316	Dial	213095-000	DE316	10-1-56
213142-000	CE317	Dial	213096-000	DE317	10-1-56
213143-000	CE318	Dial	213097-000	DE318	10-1-56
213144-000	CE319	Dial	213098-000	DE319	10-1-56
213145-000	CE320	Dial	213099-000	DE320	10-1-56
213146-000	CE321	Dial	213100-000	DE321	10-1-56
213147-000	CE322	Dial	213101-000	DE322	10-1-56
216780-000	13I-1	Key Box	REMOVED	_____	7-1-57
216925-000	46	Cord Tip	216975-000	46	1-1-58
2810-213-000	82	Tool	207628-000	82	2-1-57
4070-806-000	80	Tool	VOID	_____	2-1-57
447501-000	_____	Relay Mounting	Transferred to Piece Parts	_____	8-1-56
447502-000	_____	Relay Mounting	Transferred to Piece Parts	_____	8-1-56
447511-000	_____	Relay Mounting	Transferred to Piece Parts	_____	8-1-56
447521-000	_____	Relay Mounting	Transferred to Piece Parts	_____	8-1-56
447522-000	_____	Relay Mounting	Transferred to Piece Parts	_____	8-1-56
447541-000	_____	Relay Mounting	Transferred to Piece Parts	_____	8-1-56
447611-000	_____	Relay Casings or Covers	Transferred to Piece Parts	_____	8-1-56
447612-000	_____	Relay Casings or Covers	Transferred to Piece Parts	_____	8-1-56
447613-000	_____	Relay Casings or Covers	Transferred to Piece Parts	_____	8-1-56
447614-000	_____	Relay Casings or Covers	Transferred to Piece Parts	_____	8-1-56
447615-000	_____	Relay Casings or Covers	Transferred to Piece Parts	_____	8-1-56
447616-000	_____	Relay Casings or Covers	Transferred to Piece Parts	_____	8-1-56
447617-000	_____	Relay Casings or Covers	Transferred to Piece Parts	_____	8-1-56
448501-000	_____	Relay Mounting	Transferred to Piece Parts	_____	8-1-56
448504-000	_____	Relay Mounting	Transferred to Piece Parts	_____	8-1-56
448505-000	_____	Relay Mounting	Transferred to Piece Parts	_____	8-1-56
448701-000	_____	Relay Casings or Covers	Transferred to Piece Parts	_____	8-1-56
448704-000	_____	Relay Casings or Covers	Transferred to Piece Parts	_____	8-1-56
480507-000	_____	Relay Casings or Covers	Transferred to Piece Parts	_____	8-1-56
480590-000	_____	Relay Mounting	Transferred to Piece Parts	_____	8-1-56
480594-000	_____	Relay Mounting	Transferred to Piece Parts	_____	8-1-56
482486-000	_____	Cord—Patching	482886-000	_____	2-1-57
482887-000	_____	Relay Casings or Covers	Transferred to Piece Parts	_____	8-1-56
484504-000	_____	Relay Mounting	Transferred to Piece Parts	_____	8-1-56
484505-000	_____	Relay Casings or Covers	Transferred to Piece Parts	_____	8-1-56
484518-000	_____	Relay Casings or Covers	Transferred to Piece Parts	_____	8-1-56

STROMBERG-CARLSON

CHANGES AND REPLACEMENTS (CONTINUED)

OLD			NEW		
Stock No.	Code No.	Description	Stock No.	Code No.	Issue Date
800014-000	7	Binding Post	OBSOLETE	—	2-1-57
800016-000	21	Binding Post	REMOVED	—	2-1-57
800091-000	13FA	Key Box	216777-000	13FA-1	8-1-56
800094-000	13G	Key Box	216778-000	13G-1	8-1-56
800183-000	88B	Cable—Switchboard	800183-000	88	1-1-58
800225-000	5AL	Circuit Plate	REMOVED	—	8-1-56
800434-000	46-B	Induction Coil	OBSOLETE	—	8-1-56
800545-000	D-2	Cord—Desk Stand	OBSOLETE	—	5-1-56
800546-000	D-3	Cord—Desk Stand	VOID	—	5-1-56
800553-000	6	Condenser Mounting	OBSOLETE	—	7-1-57
800554-000	7	Condenser Mounting	OBSOLETE	—	7-1-57
800555-000	8	Condenser Mounting	OBSOLETE	—	7-1-57
800556-000	9	Condenser Mounting	OBSOLETE	—	7-1-57
800557-000	10	Condenser Mounting	OBSOLETE	—	7-1-57
800558-000	11	Condenser Mounting	OBSOLETE	—	7-1-57
800594-000	D-5	Cord—Desk Stand	217116-000	WDR-5C	1-1-57
800601-000	D-3	Cord—Desk Stand	217118-000	WDR-3K	5-1-56
800602-000	D-4	Cord—Desk Stand	VOID	—	5-1-56
800606-000	D-2	Cord—Desk Stand	217117-000	WDR-2G	5-1-56
800607-000	D-3	Cord—Desk Stand	217119-000	WDR-3L	5-1-56
800608-000	D-2	Cord—Desk Stand	217117-000	WDR-2G	5-1-56
800610-000	D-6	Cord—Desk Stand	217115-000	WDR-6K	1-1-57
800613-000	H-2	Cord—Hand Set	216939-000	WCR-2F	8-1-56
800615-000	H-3	Cord—Hand Set	VOID	—	8-1-56
800622-000	H-4	Cord—Hand Set	216941-000	WCR-4F	8-1-56
800624-000	H-3	Cord—Hand Set	216940-000	WCR-3F	8-1-56
800625-000	H-3	Cord—Hand Set	216940-000	WCR-3F	8-1-56
800645-000	O-4	Cord—Operators	OBSOLETE	—	2-1-57
801014-000	20	Handset	216942-000	20-R	8-1-56
801226-000	13	Key Box	216770-000	13-1	8-1-56
801227-000	13A	Key Box	216771-000	13A-1	8-1-56
801228-000	13B	Key Box	216772-000	13B-1	8-1-56
801229-000	13C	Key Box	216773-000	13C-1	8-1-56
801230-000	13D	Key Box	216774-000	13D-1	8-1-56
801231-000	13E	Key Box	216775-000	13E-1	8-1-56
801232-000	13F	Key Box	216776-000	13F-1	8-1-56
801334-000	138	Key Mounting	801334-000	134	7-1-57
801426-000	121-82 Mtg.	Lamp Socket	REMOVED	—	8-1-56
801465-000	10	Plug	OBSOLETE	—	2-1-57
801476-000	35-A	Plug	OBSOLETE	—	2-1-57
801594-000	30A	Receiver	VOID	—	1-1-58
801717-000	7-6	Relay Cabinet	VOID	—	10-1-58
801781-000	14-A	Drop Signal	OBSOLETE	—	10-1-56
801821-000	28-C	Ringer	OBSOLETE	—	10-1-56
802047-000	963	Generator—Hand	VOID	—	8-1-56
802419-000	69	Terminal Strip	OBSOLETE	—	2-1-57
802440-000	89-B	Terminal Box	OBSOLETE	—	2-1-57
802481-000	52	Tool	802485-000	56	2-1-57
802487-000	59	Tool	VOID	—	2-1-57
802527-000	15	Transmitter Arm	VOID	—	1-1-58
802815-000	144A	Jack—Individual	202815-000	144-A	2-1-56
803603-000	381A	No. 380 Type Relay	803103-000	381-A	2-1-56

STROMBERG-CARLSON

PRICE INFORMATION

Blanks, Drop

Stock No.	Code	Price
8308-000	33.....	\$.10
8400-000	34.....	.95
27322-000	41.....	.10
37194-000	42.....	.90
40728-000	43.....	.15

Blanks, Jack

1041-000	5.....	\$ 1.80
1042-000	6.....	1.60
800029-000	35.....	.55
800030-000	36.....	1.55
800031-000	37.....	1.25
800032-000	38.....	2.10
800033-000	39.....	2.10
800034-000	40.....	1.35
800035-000	41.....	1.55
800036-000	42.....	1.55
800037-000	43.....	1.35
800038-000	44.....	1.40
800039-000	45.....	1.25
800040-000	46.....	2.70
800042-000	48.....	2.50
800043-000	49.....	1.70
800044-000	50.....	1.75
800045-000	51.....	2.15
800046-000	52.....	1.70
800047-000	53.....	1.60
800048-000	54.....	1.95
800049-000	55.....	2.65
800050-000	56.....	4.00
800051-000	57.....	1.85
800052-000	58.....	2.20
800053-000	59.....	2.60
800054-000	60.....	2.80
800055-000	62.....	2.75
800056-000	63.....	2.40
800057-000	64.....	2.30
800058-000	65.....	5.30
800059-000	66.....	2.95
800060-000	67.....	1.70

Blanks, Jack (Cont'd.)

Stock No.	Code	Price
800061-000	68.....	\$ 1.10
800062-000	69.....	1.35
800063-000	70.....	1.10
800064-000	71.....	3.10
800065-000	72.....	1.55
800066-000	73.....	5.60
800067-000	74.....	4.85
800068-000	75.....	2.80
35418-000	76.....	4.70
800070-000	77.....	2.05
800071-000	78.....	1.90
49899-000	79.....	1.10
49900-000	80.....	1.90
201188-000	81.....	1.60
201189-000	82.....	1.70
201190-000	83.....	1.70
204622-000	84.....	4.75
205114-000	84A.....	4.75
213903-000	85.....	1.90

Blanks, Key

3222-000	7.....	\$.10
12986-000	68.....	2.00
12987-000	69.....	1.70
12989-000	71.....	1.35
12990-000	72.....	1.55
13234-000	77.....	1.75
13235-000	78.....	1.40
13236-000	79.....	1.40
800082-000	80.....	1.15
206768-000	81.....	.85
13439-000	83.....	1.75
27255-000	84.....	1.75
207335-000	85.....	2.00
32132-000	87.....	.35
33992-000	88.....	.35
206770-000	94.....	2.55
205655-000	95.....	1.05
205451-000	96.....	2.30
208657-000	97.....	1.70
208658-000	98.....	1.70

Issue Date: 7-13-59

PRICE INFORMATION

Blanks, Plug Hole

Stock No.	Code	Price
1323-000	2.....	\$.35
1513-000	3.....	.05
4415-000	5.....	.05
7637-000	6.....	.10
12713-000	7.....	.20
13940-000	8.....	.10
15323-000	11.....	.40
21672-000	12.....	.20
32142-000	13A.....	.09
32143-000	13B.....	.05
209398-000	13C.....	.10
32144-000	14A.....	.10
205515-000	14C.....	.05

Buzzers

801756-000	1B.....	\$ 2.60
801757-000	1D.....	2.60
801759-000	OB.....	2.55
801760-000	OC.....	2.75
212096-000	OD.....	2.55
212709-000	OE.....	4.30
45304-000	2A.....	5.00
211417-000	2B.....	5.35
211418-000	2C.....	4.30
211419-000	2D.....	3.00

Button and Buzzer Assemblies

Stock No.	Code	Price
211041-000	6B1.....	\$ 7.05
211193-000	6B2.....	7.75
211194-000	6B3.....	8.30
211420-000	24C1.....	9.40
211421-000	24C2.....	9.95
211422-000	24C3.....	10.00
211423-000	48D1.....	9.30
211424-000	48D2.....	10.00
211425-000	48D3.....	10.50
216867-000	G6B1.....	7.60
216868-000	G6B2.....	8.15
216869-000	G6B3.....	8.80
216870-000	G24C1.....	9.90
216871-000	G24C2.....	10.45
216872-000	G24C3.....	10.50
216873-000	G48D1.....	9.80
216874-000	G48D2.....	10.50
216875-000	G48D3.....	11.00

Cable—Convenience Systems

Stock No.	Code	Less Than 2000' Per C Ft.	2000' & Over Per C Ft.
213110-000	90P.....	\$ 61.50	Less 5%
203155-000	102P.....	22.00	Less 5%
203154-000	103P.....	22.95	Less 5%
212823-000	115P.....	24.45	Less 5%

PRICE INFORMATION

Cable—Switchboard

Stock No.	Code	Less Than 100' Per C Ft.	100' to 500' Per C Ft.	500' and Over Per C Ft.
800155-000	65B	\$ 61.70	\$ 52.45	\$ 46.70
800157-000	66B	43.30	36.75	33.05
800161-000	68B	79.10	67.25	60.55
800163-000	69B	77.50	65.85	59.30
800164-000	71B	25.65	22.80	19.65
800166-000	72B	35.30	30.05	27.00
800168-000	76B	66.00	56.15	50.60
800176-000	84B	54.80	46.60	41.85
800179-000	86B	45.30	38.50	34.65
800180-000	87B	11.10	9.45	8.50
800183-000	88	14.70	12.50	11.30
800185-000	90B	98.50	84.05	75.45
800189-000	91B	199.90	169.90	153.00
201109-000	104B	26.95	22.90	20.60
203726-000	105B	10.10	8.55	7.70
203728-000	106B	14.45	12.30	11.05
203732-000	107B	33.15	28.20	25.35
203734-000	108B	65.40	55.60	50.10
203736-000	109B	82.40	70.35	63.10
203730-000	110B	154.30	131.15	118.10
203738-000	111B	20.55	17.50	15.75
203740-000	112B	41.40	35.30	31.65
203785-000	113B	63.05	53.60	48.25
204802-000	114B	69.65	69.20	53.30
203554-000	116B	11.70	9.95	8.95

NOTE: Lead covered switchboard cable prices on application

Capacitors

(Also See Condensers)

Stock No.	Price
210720-000	\$.60
210721-000	.55
210722-000	.50
210723-000	1.20

Circuit Plates

Stock No.	Code	Price
800219-000	1AL	\$ 74.10
800220-000	2BL	67.50
800227-000	6AL	91.15
800249-000	16L	66.05
800250-000	17L	68.40
800251-000	18L	48.80
800252-000	19L	62.00
201763-000	20	82.80
201764-000	21	108.80
201021-000	25	79.15
201022-000	26	91.15

Coils—Induction

Stock No.	Code	Price
800424-000	44A	\$ 3.40
800425-000	44B	4.40
800427-000	44D	5.35
800428-000	44E	4.05
23124-000	45A	3.70
25677-000	45B	3.80
32943-000	46A	3.35
800432-000	46B	3.40
207866-000	48A	9.70
208105-000	49A	3.45
208106-000	49B	3.45
212463-000	50A	3.40

Induction Coil Capacitor Assem.

Stock No.	Price
200595-000	\$ 7.70
208359-000	7.70
210558-000	7.70
210640-000	8.20
211155-000	7.30

PRICE INFORMATION

Coils—Impedance—Coded

Stock No.	Code	Price
800265-000	10A.....	\$ 2.90
800266-000	10B.....	3.20
800268-000	13A.....	4.60
800280-000	20AL.....	6.75
204218-000	24.....	13.65
800288-000	201.....	3.70
800289-000	202.....	3.70
800290-000	203.....	3.70
800291-000	204.....	3.80
800292-000	205.....	3.80
800293-000	206.....	3.80
800294-000	207.....	3.90
40715-000	208.....	3.90
800295-000	209.....	4.00
800296-000	213.....	3.80
800297-000	214.....	4.10
800299-000	221.....	4.80
800300-000	222.....	4.80
800301-000	223.....	4.90
800302-000	224.....	5.00
800303-000	225.....	5.20
40716-000	226.....	4.80
800304-000	228.....	4.80
800306-000	243.....	4.90
201126-000	245.....	5.30
800307-000	249.....	5.30
800309-000	303.....	4.20
800310-000	304.....	4.20
800311-000	306.....	4.30
800313-000	321.....	5.15
800314-000	322.....	5.15
800315-000	323.....	5.15
800316-000	325.....	5.30
800317-000	326.....	5.15
800318-000	352L.....	5.15
800789-000	51-H.....	2.85

Coils—Impedance

"A" Relay Type Not Coded

Stock No.	Price
36291-000.....	\$ 2.95
36292-000.....	2.95
36293-000.....	2.95
36295-000.....	3.10
36296-000.....	3.30
36297-000.....	3.10
36298-000.....	2.50
36299-000.....	2.60
36300-000.....	2.70
36301-000.....	3.90
36302-000.....	2.90
36303-000.....	3.80
36304-000.....	2.40
36305-000.....	3.30
36306-000.....	3.20

Coils—Impedance

"A" Relay Type Not Coded

(Continued)

Stock No.	Price
36307-000.....	\$ 2.60
36308-000.....	3.80
36309-000.....	2.90
36310-000.....	2.60
205350-000.....	2.40
205351-000.....	2.80
205352-000.....	3.30
205353-000.....	2.50
205354-000.....	2.40
205355-000.....	2.80
205356-000.....	3.30
205357-000.....	3.00
205358-000.....	2.60
205359-000.....	3.30
205360-000.....	3.15
205361-000.....	2.60
205362-000.....	3.70
205363-000.....	3.20
205364-000.....	2.70
205365-000.....	3.50
205366-000.....	2.70
205367-000.....	2.40
205368-000.....	3.60
205369-000.....	2.50
205370-000.....	2.40

Coils—Repeating

Stock No.	Code	Price
800436-000	11AL.....	\$ 9.85
800438-000	12BL.....	24.65
800440-000	13AL.....	9.85
800443-000	14AL.....	9.85
800447-000	15BL.....	24.65
800448-000	15BXL.....	58.75
800449-000	15BYL.....	30.00
800450-000	16AL.....	34.80
800452-000	17AL.....	10.00
800453-000	18A.....	27.30
800454-000	18B.....	27.30
800455-000	18C.....	27.30
200934-000	18F.....	25.10
203925-000	21A.....	13.10
203926-000	21B.....	13.10
203927-000	21C.....	13.10
207065-000	21AS.....	13.10
207066-000	21BS.....	13.10
207067-000	21CS.....	13.10
207649-000	22A.....	13.10
207650-000	22B.....	13.10
207651-000	22C.....	13.10
207632-000	22AS.....	13.10
207648-000	22BS.....	13.10
207633-000	22CS.....	13.10
204770-000	26.....	14.45

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PRICE INFORMATION

Coils—Resistance (Also See Resistors)

Stock No.	Code	Price
15710-000	10A	\$ 1.80
15711-000	10B	2.00
15714-000	10C	1.50
15715-000	10D	1.60
15712-000	10E	1.50
15713-000	10F	1.90
49994-000	10G	1.70
49993-000	10H	1.70
49995-000	10I	1.60
41172-000	10J	2.10
40719-000	10K	1.70
202252-000	11A	3.25
202253-000	11B	2.50
202254-000	11C	2.20
202255-000	11D	2.30
15716-000	11E	3.25
202256-000	11F	2.30
202257-000	11G	2.40
15717-000	11H	2.20
202258-000	11I	2.40
202259-000	11J	2.40
202260-000	11K	2.30
202261-000	11L	2.40
202262-000	11M	2.40
202263-000	11N	2.40
15718-000	11O	2.50
202264-000	11P	2.50
202265-000	11R	2.30
201116-000	11S	2.30
33756-000	11T	2.30
35035-000	11U	2.40
41652-000	11W	3.30
40718-000	11X	2.30
41173-000	11Y	2.60
41817-000	11Z	2.30
41818-000	11AA	3.50
41819-000	11AB	3.50
42529-000	11AC	3.50
42530-000	11AD	3.70
49972-000	11AE	3.70
205898-000	11AF	3.70
800493-000	12A	5.15
800494-000	12B	5.15
800495-000	12C	5.15
800496-000	12D	5.30
800497-000	12E	5.30
800498-000	12F	5.40
800499-000	12G	5.40
800500-000	12H	5.15
800501-000	12I	5.15
800502-000	12J	5.15
800503-000	12K	5.15
42827-000	12L	5.50
203387-000	12M	5.30
800504-000	13A	6.25
800505-000	13B	6.45
800506-000	13C	6.45

Coils—Resistance (Also See Resistors) (Cont'd)

Stock No.	Code	Price
800507-000	13D	\$ 6.45
800508-000	13E	6.45
800509-000	13F	6.45
800510-000	13G	6.65
800511-000	13H	6.65
800512-000	13I	7.05
800513-000	13J	7.05
800514-000	13K	7.05
800515-000	13L	7.05
800516-000	13M	6.25
200010-000	13N	7.55
202095-000	13O	7.55
203565-000	13P	6.65
800517-000	14A	7.65
200402-000	14B	7.65

Condensers (Also See Capacitors)

Stock No.	Code	Price
800518-000	18L	\$ 2.65
803076-000	19L	3.00
800520-000	20	1.15
800521-000	21L	1.90
800522-000	22L	2.20
800524-000	24L	1.65
800525-000	25L	2.30
800526-000	26T	1.85
800527-000	27L	3.85
800533-000	36	2.40
800534-000	37	2.85
33970-000	48	3.75
34524-000	49	3.60
34917-000	50	2.45
800547-000	51	3.60
42370-000	55	2.00
42371-000	56	2.25
48346-000	57	2.50
42372-000	58	2.75
42373-000	59	2.25
42374-000	60	2.50
42375-000	61	2.75
42376-000	62	2.25
49955-000	63	2.25
200765-000	64	2.00
202466-000	65	2.10
202463-000	66	2.10
202464-000	67	2.50
203850-000	68	2.25
203863-000	69	2.50
204410-000	70	2.50
204710-000	71	2.50
205524-000	72	2.75
205562-000	73	2.25
207248-000	74	2.25
209322-000	75	2.25
209323-000	76	2.50
211307-000	77	2.50
213447-000	78	2.50

STROMBERG-CARLSON

6 EQUIPMENT SECTIONS

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PRICE INFORMATION

Condensers (Cont'd.) (Also See Capacitors)

Stock No.	Code	Price
214242-000	79	\$2.50
214282-000	80	2.25
216858-000	81	2.65
212717-000	82	2.65
211849-000	83	2.65
216953-000	84	3.55

Convenience Systems—See PX Section

Cords—Desk Stand

NOTE: All cord prices shown are net. No quantity discounts apply.

Stock No.	Code	Price
23811-000	D-12	\$ 2.90
202325-000	D-14	3.70
202326-000	D-18	4.00
28629-000	D-18	4.30
213914-000	WDA-3J	1.10
213462-000	WDB-3J	1.10
213915-000	WDC-3J	1.10
213916-000	WDD-3J	1.10
213917-000	WDE-3J	1.10
213918-000	WDF-3J	1.10
214285-000	WDG-4J	1.75
212867-000	WDG-3J	1.10
217878-000	WDG-4H	1.75
213919-000	WDH-3J	1.10
218925-000	WDI-3J	1.10
218926-000	WDI-3J	1.10
218927-000	WDK-3J	1.10
211237-000	WDN-5A	1.50
213249-000	WDN-5B	1.40
217116-000	WDN-5C	1.35
209952-000	WDN-6G	1.75
213921-000	WDN-6GG	1.70
212936-000	WDN-6H	1.70
216866-000	WDN-6HG	1.80
212938-000	WDN-6J	1.80
217115-000	WDN-6K	1.75
217813-000	WDN-24A	6.45
211211-000	WDN-36A	6.45
213920-000	WDN-36AG	6.80
217117-000	WDR-2G	.60
211304-000	WDR-3J	.70
217118-000	WDR-3K	.70
217119-000	WDR-3L	.70
211746-000	WDR-4J	.85
211747-000	WDR-4K	.85

Cords—Hand Set

Stock No.	Code	Price
211300-000	WCK-3J	\$.70
213117-000	WCK-3JG	1.25
211375-000	WCK-3K	.75
213928-000	WCK-3KA	.80
213429-000	WCK-3KB	.80
213929-000	WCK-3KC	.80
213930-000	WCK-3KD	.80
213931-000	WCK-3KE	.80
213932-000	WCK-3KF	.80
213119-000	WCK-3KG	.80
213933-000	WCK-3KH	.80
218914-000	WCK-3KI	.80
218915-000	WCK-3KJ	.80
218916-000	WCK-3KK	.80
212498-000	WCK-4J	1.30
218819-000	WCK-4JG	1.30
213377-000	WCR-2A	.40
216939-000	WCR-2F	.65
216940-000	WCR-3F	.75
211305-000	WCR-3J	.70
211373-000	WCR-3K	.75
216941-000	WCR-4F	1.15
211745-000	WCR-4J	.90
211884-000	WCR-4K	1.05
212593-000	WCR-4L	.95
200305-101	PCK-3K	.80
200305-102	PCK-3K	.80
200305-103	PCK-3K	.80
200305-104	PCK-3K	.80
200305-105	PCK-3K	.80
200305-106	PCK-3K	.80
200305-107	PCK-3K	.80
200305-108	PCK-3K	.80
200305-309	PCK-3K	.80
200305-310	PCK-3K	.80
200305-311	PCK-3K	.80
200305-312	PCK-3K	.80

Cords—Coiled

Standard Handset		
Stock No.	Ext. Length	Price
218571-000	9'	\$1.40
218573-000	13'	1.65
218574-000	15'	1.80
"W" Handset		
218575-000	9'	1.40
218577-000	13'	1.65
218578-000	15'	1.80
	9' colored	1.45
	15' "	1.80

Cords—Miscellaneous

Stock No.	Code	Price
800627-000	2-I	\$.75

PRICE INFORMATION

Cords—Operator's

Stock No.	Code	Price
800632-000	O-1.....	\$.50
202926-000	O-2.....	.70
201829-000	O-4.....	2.00

Cords—Patching (Includes Plugs)

482886-000		\$ 9.60
203806-000	P-3.....	5.75
203829-000	P-3.....	12.80
205682-000	P-3.....	5.30
207990-000	P-3.....	7.25

Cords—Receiver

800651-000	R-2.....	\$.75
800652-000	R-2.....	.50
800654-000	R-2.....	.60

Cords—Switchboard

Prices shown are for white, red or green cords with nylon outer braid. **FOR BLACK CORDS ADD 15% TO PRICES LISTED.** Lengths shown are standard and should be ordered whenever possible as other lengths are made only to order. When cords and plugs are ordered, plugs will be attached to cords, if specified, at no additional charge.

Number of Conductors	Length	Price
2.....	5'	\$ 1.35
2.....	6'	1.50
3.....	3'	1.55
3.....	5'	1.75
3.....	6'	1.85
3.....	7'	1.90

Cords—Switchboard with Plugs Attached

The following cords with plugs attached are carried in stock for prompt shipment:

Stock No.	Price
42623-000.....	\$ 3.30
42462-000.....	3.30
42463-000.....	3.40
42935-000.....	4.35
42936-000.....	4.25
44096-000.....	4.35
44100-000.....	4.35

Cords—Terminal

All terminal cords listed \$.05 each.

Cordage

Prices on Application

Sleeving

Stock No.	Price Per C Ft.
20031-000.....	\$.60
20032-000.....	1.40
20033-000.....	1.75

Cord Adjusters

Stock No.	Code	Price
12018-000	6.....	\$.05

Cord Weights

800707-000	6.....	\$ 1.50
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Cord Fasteners

800667-000	4.....	\$.10
800668-000	5.....	.10
800669-000	6.....	.10

Cord Hooks

7921-000	2.....	\$.05
16008-000	4A.....	.10
16357-000	4B.....	.15
16358-000	4C.....	.15

Cord Tips

4877-000	9.....	\$.02
5171-000	14.....	.02
6916-000	17.....	.04
8312-000	18.....	.02
8446-000	20.....	.02
8898-000	24.....	.01
8899-000	25.....	.01
28856-000	34.....	.28
11870-000	35.....	.02
15642-000	37.....	.03
38336-000	40.....	.02
38337-000	41.....	.01
38338-000	42.....	.01
38334-000	43.....	.01
200948-000	45.....	.01
216975-000	46.....	.02
217687-000	47.....	.01
211301-000	49.....	.01

Discount on Cord Tips

Quantity	Discount
Less than 100	
100 to 500.....	10%
500 to 1000.....	20%
1000 to 2500.....	25%
2500 to 5000.....	35%
5000 and over.....	Discount on request

Distributing Bars

Stock No.	Code	Price
800751-000	1A.....	\$ 1.00
800741-000	3.....	.90
800743-000	5.....	1.00
800745-000	7.....	1.30
800746-000	8.....	1.35
800749-000	11.....	2.20
800750-000	12.....	2.40

Dial Mountings

211205-000	3.....	\$ 5.95
200820-000	143A.....	4.10

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PRICE INFORMATION

Dials

Stock No.	Code	Price
213078-000	DCX207	\$ 6.15
213075-000	DE207	6.15
213076-000	DEX207	6.15
213080-000	DL207	6.15
213079-000	FDE207	6.15
213082-000	DC208	6.15
213081-000	DE208	6.15
213083-000	DL208	6.15
213088-000	DC209	6.15
213086-000	DCX209	6.15
213084-000	DE209	6.15
213085-000	DEX209	6.15
213087-000	DL209	6.15
213089-000	FDCX209	6.15
213090-000	DE210	6.15
213092-000	DE212	6.15
213093-000	FDE212	6.15
213094-000	DE315	6.25
213095-000	DE316	6.25
213096-000	DE317	6.25
213097-000	DE318	6.25
213098-000	DE319	6.25
213099-000	DE320	6.25
213100-000	DE321	6.25
213101-000	DE322	6.25
218739-000	DE-323	6.25
218740-000	DE-324	6.25
218741-000	DE-325	6.25

Designation Strips

800708-000	2	\$ 2.35
800710-000	5	Note "A"
800715-000	14	1.30
800716-000	15	2.00
800717-000	16	1.30
800718-000	17	2.10
800719-000	19	2.45
800720-000	19A	2.45
800721-000	19B	2.45
800722-000	19C	2.45
800723-000	19D	2.45
800724-000	20	2.45
800725-000	20A	2.45
800726-000	20B	2.45
800727-000	20C	2.45
800728-000	22	2.10
800729-000	23	2.20
800730-000	24	Note "B"
800731-000	25	2.10
800732-000	26	2.05
800733-000	27	2.55
800734-000	28	2.65
800735-000	29	2.50
800736-000	30A	2.45
800737-000	30B	2.45

Designation Strips (Cont'd)

Stock No.	Code	Price
800738-000	31A	\$ 2.55
47268-000	32	2.55
47269-000	32A	2.55
47270-000	32B	2.55
47271-000	32C	2.55
47272-000	32D	2.55
201011-000	33	2.55
481367-000	34	4.35
205059-000	35	2.55
207253-000	36	2.55

NOTE "A"

Less than 12"	\$.60
12" and over—add per in.	.10

NOTE "B"

Less than 12"	\$ 1.60
12" and over—add per in.	.15

Drop Signals

801771-000	11A	\$10.65
801773-000	11F	10.65
801775-000	12A	10.65
801777-000	12F	10.65
801782-000	16A	10.65
801784-000	16F	10.65
801785-000	17A	10.65
801787-000	17F	10.65
801788-000	18A	8.60
801789-000	18B	8.60
801790-000	18C	8.60
49608-000	18D	8.60
801793-000	21A	6.25
801794-000	21B	6.25
801795-000	21C	6.25
49609-000	21D	6.25
801798-000	23B	9.80
204819-000	23D	10.40
202063-000	25B	10.40
206392-000	26B	10.20

Drops Mounted

40134-000	\$ 86.25
49612-000	86.25
40133-000	97.75
200434-000	48.40

Drop Mountings

801802-000	140	\$ 3.95
801805-000	143	3.65
801808-000	146A	12.00
801809-000	146B	10.90
37197-000	147	7.05
37198-000	148	1.20
39860-000	149	10.60
204818-000	150	12.05

STROMBERG-CARLSON

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PRICE INFORMATION

Foot Rails		
Stock No.	Code	Price
13565-000	11.....	\$10.25
13566-000	Cap.....	2.30
800763-000	12.....	16.90

Includes 2 brackets

Fuses		
Stock No.	Code	Price
801560-000	1.....	\$.10
801562-000	4.....	.20
38789-000	35B-1½ Amp.....	.30
208524-000	35B-2 Amp.....	.30
208439-000	35C-2 Amp.....	.30
39277-000	35G-3 Amp.....	.30
202826-000	35H-5 Amp.....	.30
205159-000	35K-1 ½ Amp.....	.30
204244-000	35P-¾ Amp.....	.30

Generators—Hand		
Stock No.	Code	Price
201678-000	64.....	\$24.30
208830-000	Assem.....	26.10
208834-000	Pkg.....	3.25

Generator Crank Shafts		
Stock No.	Code	Price
800774-000	2.....	\$ 2.55
800775-000	3.....	2.55

Handsets		
Stock No.	Code	Price
206354-000	15Q.....	\$14.05
801010-000	18.....	11.15
801011-000	19C.....	22.45
801013-000	19D.....	20.30
801012-000	19L.....	23.45
216942-000	20R.....	10.50
216943-000	21R.....	10.50
216944-000	22R.....	10.50
216945-000	23R.....	10.50
216946-000	24R.....	10.50
211361-000	26C.....	9.50
211362-000	26D.....	9.75
211748-000	26E.....	9.50
212714-000	26G.....	9.50
213240-000	26H.....	9.75
213693-000	26I.....	9.75
216747-000	26J.....	9.75
211396-000	27C.....	11.00
211397-000	27D (Note).....	11.25
211864-000	27E.....	11.00
212550-000	28A.....	11.15
212551-000	28B.....	11.15
212552-000	28C.....	11.45
200730-109	31 (Note).....	11.30

Holly Strips		
Stock No.	Code	Price
6984-000	3.....	\$.15
13116-000	15.....	.15
13444-000	16.....	.15

Hook Switches		
Stock No.	Code	Price
801956-000	41B.....	\$ 2.65
801957-000	41G.....	2.80

Interrupter Machines

Prices on application

Jacks—Individual		
Stock No.	Code	Price
801082-000	93.....	\$ 2.45
801083-000	93B.....	3.10
49907-000	140.....	2.25
200707-000	140 MTD.....	21.10
801177-000	140 MTD.....	14.45
801179-000	144.....	1.15
202815-000	144A.....	1.15
801180-000	144A-87 MTG.....	3.45
801181-000	145.....	1.30
801182-000	145A.....	1.30
801183-000	147.....	1.95
801184-000	148.....	2.55
801185-000	151.....	1.50
801186-000	152.....	3.10
801188-000	154.....	1.90
801189-000	154A.....	1.90
801190-000	155.....	3.85
800069-000	155A.....	3.55
800072-000	156.....	2.00
802597-000	157.....	2.10
802598-000	158.....	2.55
802599-000	159.....	2.70
802600-000	160.....	1.90
802601-000	161.....	2.50
201562-000	165.....	1.60
202488-000	166.....	2.25
203015-000	167.....	1.50
204251-000	167A.....	1.65
203016-000	168.....	1.35
204252-000	168A.....	1.35
204308-000	170.....	2.30
204309-000	171.....	2.30
209147-000	172.....	3.45
209212-000	173.....	1.55
†213971-000	174.....	1.60

Jacks—Wall Outlet Type		
Stock No.	Code	Price
25856-000	\$ 3.35
25960-000	2.20

NOTE: When ordering 27-D or No. 31 type in color add .60

STROMBERG-CARLSON

Issue Date: 7-13-59

PRICE INFORMATION

Jacks—Strip Type

Stock No.	Code Mfg.	Price
801089-000	109-60	\$17.05
801090-000	109-61	29.95
801091-000	109-62	19.35
801092-000	109-63	32.05
801097-000	113-60	23.25
44464-000	114-60	21.55
801100-000	114-61	34.15
801101-000	114-62	32.95
801102-000	114-63	34.10
801137-000	127-89	16.70
42996-000	127-90	29.95
801139-000	127-90A	30.55
801140-000	127-90B	32.05
801141-000	127-90C	30.55
801138-000	127-91	18.80
48368-000	130-99	15.55
48371-000	130-100	22.95
200721-000	130-100A	23.45
200730-000	130-100B	25.55
48372-000	132-100	27.30
200722-000	132-100A	27.85
200731-000	132-100B	29.95
48373-000	133-100	27.30
200723-000	133-100A	27.85
200732-000	133-100B	29.95
48367-000	134-99	19.10
48366-000	135-99	17.20
48374-000	135-100	27.30
200724-000	135-100A	27.85
200733-000	135-100B	29.95
48364-000	137-99	20.00
48376-000	137-100	31.50
200726-000	137-100A	32.05
200735-000	137-100B	34.15
48363-000	138-99	20.00
48377-000	138-100	31.50
200727-000	138-100A	32.05
200736-000	138-100B	34.15
48360-000	162-99	17.95
48378-000	162-100	27.30
200728-000	162-100A	27.85
200737-000	162-100B	29.95
48361-000	163-99	17.95
48379-000	163-100	27.30
200729-000	163-100A	27.85
200738-000	163-100B	29.95
48362-000	164-99	20.05
203851-000	169-99	20.05
203852-000	169-100	31.50

NOTE: Add \$.10 per Jack for numbering of above strip type jacks.

Jack Mountings

Stock No.	Code	Price
18930-000	86	\$ 3.55
200966-000	93	22.50
204271-000	93A	25.90
200967-000	94	17.95
204272-000	94A	22.15

Jack Fasteners

Stock No.	Code	Price
8867-000	15	\$.45
801197-000	17	.20
801198-000	18	.05
801199-000	19	.15
801200-000	20	.25
801201-000	21	.20
801202-000	22	.40

Keys, Cam Type

Stock No.	Code	Price
204963-000	170B	\$ 5.15
802626-000	170C	2.90
802628-000	170D	3.30
206792-000	170E	4.20
49759-000	170F	3.30
802632-000	170G	4.20
802638-000	170H	3.60
206793-000	170J	4.20
802664-000	170K	5.15
802675-000	170L	3.30
802682-000	170M	4.20
206929-000	170N	3.90
208366-000	170P	5.75
212465-000	170Q	4.20
205012-000	171B	4.20
205684-000	171C	5.50
802627-000	171D	3.30
204986-000	171DZ	3.35
802640-000	171E	2.75
802645-000	171F	3.80
802681-000	171G	3.60
204956-000	172B	5.50
204957-000	172BZ	5.60
204964-000	172C	6.10
204965-000	172D	4.50
802619-000	172E	4.20
802622-000	172F	3.90
207621-000	172FZ	4.00
802623-000	172G	4.20
802625-000	172H	4.50
802629-000	172J	4.20
210338-000	172JZ	4.30
201055-000	172K	4.50
802630-000	172L	4.65
42665-000	172M	4.80
802633-000	172N	4.50
802637-000	172P	4.80
209816-000	172PZ	4.90
802642-000	172Q	5.15
802643-000	172R	5.15
206794-000	172S	5.35
207164-000	172T	4.50
802994-000	172U	4.20
803021-000	172V	5.15
206930-000	172W	3.25
209815-000	172X	4.50
204966-000	173B	5.80
204967-000	173C	8.00

PRICE INFORMATION

Keys—Individual Plunger Type (Cont'd)

Stock No.	Code	Price	Stock No.	Code	Price
49526-000	337C	\$ 2.40	49538-000	339C	\$ 2.40
49527-000	337D	2.55	49539-000	339D	2.55
49528-000	337E	2.55	49540-000	339E	2.55
49529-000	337H	2.55	49541-000	339H	2.55
211082-000	337J	3.00	209018-000	339J	3.00
211083-000	337K	3.00	211740-000	339L	3.40
211132-000	337L	3.40	212699-000	339M	3.40
49530-000	338A	2.10	211760-000	339N	3.55
49531-000	338B	2.10	211947-000	339P	3.55
49532-000	338C	2.40	213104-000	339Q	3.70
49533-000	338D	2.55	NOTE: Add 30c per Key for engraving if specified		
49534-000	338E	2.55	212745-000	352	\$31.20
201122-000	338G	2.55	212746-000	352A	38.70
49535-000	338H	2.55	212747-000	352B	38.70
49536-000	339A	2.10	212569-000	361A	4.65
49537-000	339B	2.10			

Keys, Party Line—Indicating Type

Codes 200 thru 209	each \$ 16.05
Codes 210 thru 219	each 16.05 plus 1 Cam Key —priced below
Codes 220 thru 229	each 16.05 plus 1 Cam Key —priced below
Codes 230 thru 239	each 16.05 plus 2 Cam Keys—priced below
Code 252	each 17.15
Codes 260 thru 269	each 16.45
Codes 270 thru 274	each 16.05 plus 2 Cam Keys—priced below
Codes 275 thru 279	each 17.15 plus 2 Cam Keys—priced below
Code 280	each 16.05 plus 1 Cam Key —priced below
Code 283	each 16.05 plus 2 Cam Keys—priced below
Code 291	each 16.05 plus 1 Cam Key —priced below
Code 292	each 18.35 plus 2 Cam Keys—priced below
Code 293	each 18.35 plus 2 Cam Keys—priced below

In pricing above keys, add cam keys as follows:

Combination A	each \$3.55	Combination P	each \$4.20
Combination B	each 3.20	Combination Q	each 4.55
Combination C	each 4.20	Combination R	each 5.30
Combination D	each 3.55	Combination S	each 4.55
Combination H	each 3.55	Combination T	each 4.20
Combination I	each 3.55	Combination U	each 4.85
Combination J	each 3.55	Combination V	each 4.85
Combination K	each 3.55	Combination W	each 4.85
Combination L	each 4.55	Combination X	each 4.85
Combination M	each 3.90	Combination Y	each 4.85
Combination N	each 4.85	Combination Z	each 4.55
Combination O	each 4.20		

Key Boxes

Stock No.	Code	Price	Stock No.	Code	Price
216770-000	13-1	\$10.50	216775-000	13E-1	\$10.50
216771-000	13A-1	10.05	216776-000	13F-1	11.60
216772-000	13B-1	9.50	216777-000	13FA-1	11.60
216773-000	13C-1	9.50	216778-000	13G-1	10.50
216774-000	13D-1	10.50	216779-000	13H-1	12.85

PRICE INFORMATION

Keys—Strip Mounted, Plunger Type

Stock No.	Code	Price
42491-000	62-122 Mtg.	\$29.95
42979-000	62-123 Mtg.	29.95
42980-000	69-122 Mtg.	29.95
42981-000	69-123 Mtg.	29.95

Key Mountings

801264-000	55	\$.70
801270-000	66	.70
801285-000	82	2.00
801286-000	83	2.25
801287-000	84	2.50
207331-000	88	2.00
207332-000	89	2.25
207333-000	90	2.50
801294-000	91	12.55
801295-000	92	2.00
801296-000	93	2.25
801297-000	94	2.50
801298-000	95	1.05
801304-000	104	9.40
801311-000	111	2.00
801312-000	112	2.25
801313-000	113	2.50
801314-000	114	2.00
801315-000	115	2.25
801316-000	116	2.50
801319-000	119	2.50
801320-000	120	13.60
801321-000	121	1.05
801325-000	125	2.00
801326-000	126	2.25
801327-000	127	2.50
801328-000	128	2.00
801329-000	129	2.35
801330-000	130	2.60
801331-000	131	2.60
801332-000	132	.75
801333-000	133	.75
801334-000	134	2.00
205649-000	138	2.10
205650-000	139	2.35
203773-000	150	2.25
203774-000	151	2.25
203775-000	152	2.00
203776-000	153	2.50
206771-000	154	2.00
206772-000	155	2.25
206773-000	156	2.50
206774-000	157	2.25
205651-000	158	1.05
205652-000	159	2.00
205653-000	160	2.25
205654-000	161	2.50
204950-000	162	13.80
205047-000	163	14.55
208444-000	164	2.00
208655-000	165	1.60
208656-000	166	1.85

Lamps

Stock No.	Code	Price
801363-000	4-A-2	See Below
801364-000	6-A-2	See Below
801365-000	8-A-2	See Below
801366-000	12-A-2	See Below
801367-000	16-A-2	See Below
801368-000	18-A-2	See Below
801369-000	24-B-2	See Below
801370-000	24-C-2	See Below
209569-000	24-H-2	See Below
801371-000	30-B-2	See Below
801372-000	44-A-2	See Below
801374-000	48-B-2	See Below
42201-000	48-C-2	See Below
201737-000	48-D-2	See Below
801375-000	55-C-2	See Below
45271-000	60-A-2	See Below

Switchboard Lamp Prices are as follows:

Less than 100	\$.45 each
100- 499	.40 each
500- 999	.35 each
1000-4999	.35 each
5000 and over	.30 each

Lamp Caps

801388-000	23A	\$.65
801389-000	23B	.65
801390-000	23C	.65
801391-000	23D	.65
207824-000	23E	.90
207825-000	23F	.90
207826-000	23G	.90
207827-000	23H	.90
209428-000	23J	.90
801392-000	27A	.20
801393-000	27B	.20
801394-000	27C	.20
801395-000	27D	.20
801396-000	27E	.20
801400-000	29A	.45
801401-000	29B	.20
801402-000	29C	.20
801403-000	29D	.20
801404-000	29E	.30
801405-000	29F	.30
801406-000	29G	.30
801407-000	30A	.45
801408-000	30D	.30
801409-000	30J	.30
801410-000	30K	.30
801411-000	30L	.45
801412-000	31A	.20
801413-000	31B	.20
801414-000	31C	.20
207177-000	31D	.30

14 EQUIPMENT SECTIONS

Issue Date: 7-13-59

PRICE INFORMATION

Lamp Sockets		
Stock No.	Code	Price
801417-000	9.....	\$ 1.25
801418-000	10.....	10.70
801419-000	11.....	12.70
801420-000	12.....	.70
801421-000	13.....	.70
801422-000	14.....	16.40
801431-000	121-60 Mtg.....	10.00
801432-000	121-61 Mtg.....	16.40
801424-000	121-80 Mtg.....	9.15
801425-000	121-81 Mtg.....	14.45
801427-000	121-83 Mtg.....	14.45
801429-000	121-89 Mtg.....	9.15
801440-000	121-91 Mtg.....	9.50
801439-000	121-92 Mtg.....	14.45

Number Plates			
Stock No.	Code	Blank	Price Engraved
7005-000	13.....	\$.20.....	\$.50
9573-000	17.....	.20.....	.50
15373-000	17A.....	.20.....	.50
15374-000	17B.....	.20.....	.50
15375-000	17C.....	.20.....	.50
15376-000	17D.....	.40.....	.70
13062-000	19A.....	.30.....	.80
13063-000	19B.....	.30.....	.80

Operators Headsets		
Stock No.	Description	Price
205701-000	"W.E." Type with W.E. Plug.....	\$27.70
205826-000	"W.E." Type less plug.....	26.15
205827-000	"W.E." Type with S.C. Plug.....	27.70

PRICE INFORMATION

P.X. and Convenience Systems

Stock No.	Code	Description	Rochester and Chicago	Atlanta and Kansas City	San Francisco
801714-000	2-6 or 1-7	Relay Cabinet.....	\$227.25	\$229.25	\$231.75
801718-000	2-10 or 1-11	Relay Cabinet.....	378.75	381.25	383.75
49700-000	3-9	Relay Cabinet.....	449.10	452.10	455.10
801715-000	2-M-6	Relay Cabinet.....	Prices on Application		
801716-000	3-5	Relay Cabinet.....	Prices on Application		
801719-000	2-M10 or 1-M11	Relay Cabinet.....	Prices on Application		
486137-000	6K	Trunk Relay Strip.....	43.95	44.20	44.45
486872-000	6K	Transformer.....	7.85	8.10	8.35
212870-000	6K	Key Box.....	10.55	10.70	10.85
489684-000	6K	Automatic Tie Line Unit Mtd. (6K)....	88.00	88.35	88.55
489840-000	6K	Dial Selective Unit Mtd. (10 station)...	78.80	79.15	79.50
489679-000	6K1	Basic Cabinet Assembly (3 trunks)....	252.70	254.70	256.15
489687-000	6K1	Trunk Relay Plate.....	47.60	47.85	47.95
212764-000	6K1	Buzzer Package Assembly.....	4.60	4.70	4.80
202132-749	6K1	Power Supply Unit.....	86.95	88.95	90.45
493737-000	6K1	Dial Selective (10 station) Plate Mtd....	68.65	68.90	69.15
493738-000	6K1	Dial Selective (15 station) Unit Mtd....	142.35	142.70	142.95
489683-000	6K1	Automatic Tie Line Plate Mtd. (6K1)...	43.90	44.15	44.40
216721-000	6K1	Manual Exclusion Cct. Assembly.....	19.15	19.30	19.45
216853-000	6K1	Exclusion Plunger Assembly.....	2.20	2.30	2.40
216719-000	6K1	Signal Flashing Unit.....	20.40	20.65	20.90
489827-000	6K1	No. 1-C Coil Package Assembly.....	4.80	4.90	5.00
489828-000	6K1	Power Fail Relay Package.....	4.40	4.50	4.60
484862-000	2-10	RELAYDIAL PX.....	730.45	734.45	738.95
485794-000	2-10	Mounting Stand and Cabinet.....	Included in above		
893721-000	Rectifier	(2-10 System).....	186.90	188.90	191.40
485650-000	4-20	RELAYDIAL PX.....	1466.30	1474.30	1484.30
485832-000	4-20	Mounting Stand and Cabinet.....	Included in above		
485833-000	Rectifier	(4-20 system).....	304.05	306.05	308.55
24726-000	1	Relay Cabinet.....	243.50	245.50	248.00
63006-000	D-3006	Relay Cabinet.....	272.70	274.70	277.20
801450-000	1A	Key Turret.....	92.50	93.25	94.05
801451-000	1B	Key Turret.....	128.15	129.20	130.30
801452-000	1C	Key Turret.....	163.90	165.25	166.65
24807-000		Top.....	4.75	4.90	5.05
24808-000		Key Section.....	35.70	36.00	36.30
24809-000		Base.....	51.95	52.25	52.50
26004-000		\$Top with 5 buttons and buzzer.....	16.25	16.50	16.75
54576-000		\$Top with 10 buttons and buzzer.....	21.00	21.30	21.60
		Additional Line Equipment for relay cabinet.....	18.45	18.90	19.40
		Intercepting Service—Per Line.....	6.05	6.15	6.25

\$NOTE: When above tops are equipped with cord and terminal blocks, add \$3.20 for No. 26004-000 top, and \$ 3.70 for No. 54576-000 top.

MANUAL and DIAL P.B.X. SWITCHBOARDS..... Prices on Application

Issue Date: 7-13-59

PRICE INFORMATION

Stock No.	Code	Plugs	Price
801481-000	42	.....	\$ 1.90
206517-000	56G	.....	1.90
206515-000	56R	.....	1.90
206516-000	56XR	.....	1.90
801498-000	57	.....	2.30
801500-000	59	.....	2.60
801501-000	60	.....	1.65
801502-000	61	.....	2.00
200516-000	61A	.....	2.00
801503-000	62	.....	7.05
801504-000	63	.....	3.20
801505-000	63N	.....	3.20
205544-000	64R	.....	2.50
205547-000	64DR	.....	2.50
205550-000	64ER	.....	2.50
205553-000	64FR	.....	2.50
205557-000	64GR	.....	2.50
205559-000	64NR	.....	2.50
205532-000	65R	.....	2.50
205535-000	65NR	.....	2.50
205541-000	65XR	.....	2.50
205538-000	65NXR	.....	2.50
201839-000	66	.....	1.40

Plug and Jack Gauges

Stock No.	Price
13070-000	\$ 4.80
13071-000	8.00
13113-000	3.20
13114-000	7.60
13118-000	8.25
13119-000	3.95

Plug Seats

Stock No.	Code	Price
4637-000	5	\$.10
4638-000	6	.10
12170-000	12	.10
203957-000	13	1.05

Plugs, Service

	No. 7 Type per C	No. 14 Type per C	No. 15 Type per C
1 to 99	\$12.60	\$ 3.35	\$ 3.35
100 to 499	11.35	2.95	2.95
500 to 999	10.20	2.65	2.65
1000 and over	9.15	2.40	2.40

Plug, Trouble Sleeves

Stock No.	Code	Less Than 1000 Per C	1000 & Over Per C
16582-000	1	\$15.50	\$11.85
16583-000	2	12.35	9.90
16631-000	3	15.50	11.85

Receivers

Stock No.	Code	Price
801592-000	29	\$10.20
801593-000	30 less cord	5.30

Receivers (Cont'd)

Stock No.	Code	Price
801595-000	30B with cord	\$ 6.15
34230-000	31	3.95
210278-000	32	3.60
211881-000	33	4.60

Type A, B, and C Relays

Type "A" Relays

To figure price on Type "A" relays, add to the price of frame and armature assembly, spring combinations and coils listed below:

	Price
"A" Type Frame and Armature Assembly	\$ 2.80
"A" Spring Combination	.40
"B" Spring Combination	.40
"C" Spring Combination	.50
"D" Spring Combination	.60
"F" Spring Combination	1.35
"G" Spring Combination	.85
"J" Spring Combination	1.15
"K" Spring Combination	.60
"Z" Spring Combination	1.15
"IC" Spring Combination	.60
"XA" Spring Combination	.40
"XB" Spring Combination	.40
"XC" Spring Combination	.60

Type "B" Relays

Prices on Application

Type "C" Relays

To figure price on Type "C" relays, add to price of frame and armature assembly spring combinations listed under Type "A," and 2 coils listed below:

Type "C"—Frame and Armature Assembly..... \$3.45

Relay Coils

Type A, B, and C Relays

Stock No.	Price
36200-000	\$ 2.80
36201-000	2.90
36202-000	3.25
36203-000	2.55
36204-000	2.70
36205-000	2.70
36206-000	3.10
36207-000	2.85
36208-000	2.80
36209-000	2.95
36215-000	2.80
36218-000	2.65
36219-000	3.10
36220-000	3.55
36221-000	2.90
36222-000	3.15
36223-000	2.95
36224-000	3.25
36225-000	3.30

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PRICE INFORMATION

Relay Coils—Type A, B, and C Relays (Cont'd)

Stock No.	Price	Stock No.	Price
36226-000	\$ 3.20	36832-000	\$ 2.80
36227-000	3.00	36833-000	2.85
36228-000	3.10	36834-000	2.90
36229-000	3.65	36835-000	2.85
36230-000	3.60	36836-000	3.00
36231-000	3.25	36837-000	2.70
36232-000	3.45	36838-000	3.30
36233-000	3.45	36839-000	2.80
36234-000	3.35	36840-000	3.95
36235-000	3.40	36841-000	2.90
36236-000	3.40	36842-000	2.80
36237-000	3.10	36843-000	3.25
36238-000	3.15	36844-000	2.65
36239-000	3.25	36845-000	3.00
36470-000	1.45	36846-000	3.60
36471-000	1.15	36851-000	3.10
36473-000	1.15	36852-000	2.90
36474-000	1.20	36853-000	2.90
36475-000	1.10	36854-000	2.75
36476-000	1.15	36855-000	2.30
36477-000	1.15	36857-000	3.15
36478-000	1.10	36858-000	3.25
36479-000	1.85	36859-000	3.25
36480-000	1.95	36860-000	3.35
36801-000	2.20	36861-000	2.70
36802-000	1.95	36862-000	2.95
36803-000	2.00	36863-000	2.65
36804-000	2.00	36864-000	2.55
36805-000	2.25	36865-000	2.60
36806-000	2.20	36870-000	1.60
36807-000	2.25	36871-000	1.85
36808-000	2.35	36872-000	1.95
36809-000	2.35	36873-000	1.75
36810-000	2.05	36874-000	2.20
36811-000	2.00	36875-000	2.00
36812-000	1.90	36876-000	1.75
36813-000	1.90	36877-000	1.85
36814-000	2.15	36878-000	3.35
36815-000	2.25	36879-000	3.10
36816-000	2.40	36880-000	2.45
36817-000	2.35	36881-000	3.40
36818-000	2.50	36882-000	3.25
36819-000	2.75	36883-000	3.10
36820-000	3.15	36884-000	3.60
36821-000	3.75	36885-000	3.00
36822-000	2.35	36886-000	2.90
36823-000	2.20	36887-000	3.30
36824-000	2.80	36888-000	3.30
36825-000	2.85	36889-000	2.85
36826-000	2.55	36890-000	2.80
36827-000	2.55	36891-000	2.90
36828-000	2.95	36892-000	3.15
36829-000	2.55	36893-000	3.10
36830-000	2.65	36894-000	2.95
36831-000	2.80	36895-000	3.35

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PRICE INFORMATION

Relay Coils—Type A, B, and C Relays (Cont'd)

Stock No.	Price	Stock No.	Price
36896-000	\$ 3.25	36941-000	\$ 3.85
36897-000	3.00	36942-000	4.00
36898-000	2.95	36943-000	4.10
36899-000	2.90	36944-000	3.80
36900-000	2.90	36945-000	3.75
36901-000	2.65	36946-000	3.60
36902-000	2.70	36949-000	3.50
36903-000	3.30	36950-000	3.85
36904-000	3.50	36951-000	2.35
36905-000	2.90	36952-000	2.75
36906-000	2.70	36953-000	2.55
36907-000	3.10	36954-000	2.95
36908-000	2.95	36955-000	2.35
36909-000	3.60	36956-000	2.90
36910-000	3.00	36957-000	2.55
36911-000	3.10	36958-000	3.80
36912-000	2.85	36959-000	2.50
36913-000	2.90	36961-000	2.80
36914-000	3.50	36962-000	4.15
36915-000	3.60	36963-000	2.65
36916-000	1.40	36965-000	3.70
36917-000	2.95	36967-000	2.40
36918-000	3.25	36969-000	2.80
36919-000	3.75	36971-000	4.00
36920-000	1.45	36972-000	4.10
36921-000	2.80	36973-000	4.00
36922-000	3.25	36974-000	3.85
36923-000	2.85	36975-000	3.70
36925-000	2.90	36976-000	3.40
36926-000	3.80	36977-000	3.55
36927-000	3.60	36978-000	5.20
36928-000	3.40	36979-000	4.60
36929-000	3.85	36980-000	4.30
36930-000	3.30	36986-000	2.25
36931-000	3.80	36987-000	1.90
36932-000	3.25	36988-000	1.95
36933-000	3.45	36989-000	2.25
36934-000	3.40	36990-000	2.45
36935-000	3.35	208536-000	3.10
36936-000	3.25	211002-000	3.00
36937-000	3.45	211428-000	1.40
36938-000	3.55		

190 Type Relays

Relays Only			Coils Only		
Stock No.	Code	Price	Stock No.		Price
802772-000	192A	\$ 4.45	12233-000		\$ 2.50
802773-000	193A	4.00	12234-000		1.50
802774-000	193BB	4.30	12234-000		1.50
802775-000	194A	3.65	12235-000		1.65
802776-000	194C	3.85	12235-000		1.65
803052-000	194-1-BB	4.35	12235-000		1.65
802777-000	195A	4.10	12265-000		2.20
200580-000	197BB	4.20	19075-000		1.40
802950-000	198A	4.40	21587-000		2.50
802778-000	199BB	4.30	12234-000		1.50

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PRICE INFORMATION

200 Type Relays

The prices specified for the 200 type relays cover relay less springs and to arrive at the price of complete relay, add for each spring combination as follows:

Stock No.	Code	Price	Code No.	Price Relay less Springs	Stock No.	Cell Only Price
12504-000	A	\$.40	223	\$ 5.00	12288-000	\$ 3.60
12505-000	B	.40	224	5.15	12289-000	3.70
12506-000	C	.60	225	5.30	12290-000	3.80
12507-000	D	.80	226	4.70	12291-000	3.30
12510-000	G	1.05	227	5.00	12292-000	3.60
12895-000	H	.70	228	4.70	12293-000	3.30
208011-000	I	.80	229	5.30	12294-000	3.80
12749-000	K	.65	231	5.15	12295-000	3.70
12900-000	L	.70	232	5.00	12296-000	3.60
13953-000	M	.80	241	4.45	12297-000	3.00
13954-000	N	.95	241-1	4.45	33856-000	3.00
13796-000	O	1.20	242	4.65	12298-000	3.25
28794-000	Q	.70	242-1	4.65	33857-000	3.25
30214-000	R	.85	243	4.35	15197-000	2.90
49149-000	U	1.20	243-1	4.65	37012-000	3.25
13624-000	AY	.50	244	4.45	15198-000	3.00
13409-000	BY	.50	245	4.75	15199-000	3.35
14042-000	CY	.70	246	4.25	15200-000	2.80
12508-000	EY	.70	247	4.55	15201-000	3.15
12509-000	FY	.85	248	4.55	15202-000	3.15
29381-000	HY	.80	249	4.85	29743-000	3.45
28873-000	NY	.90	251	5.15	15203-000	3.70
19359-000	PY	.95	251-1	5.15	39351-000	3.70
35270-000	QY	.90	251-2	5.30	211883-000	3.80
202345-000	SY	.80	252	4.80	15204-000	3.40
31082-000	TY	.90	252-1	4.90	42782-000	3.50
			253	4.90	15205-000	3.50
			254	5.30	17809-000	3.80
			254-1	5.30	202006-000	3.80
			255	5.40	15207-000	3.90
			255-1	5.40	203192-000	3.90
			256	4.90	15208-000	3.50
			257	4.90	15209-000	3.50
			258	5.15	15210-000	3.60
			259	4.70	15211-000	3.30
			261	4.10	15429-000	2.65
			262	4.20	15430-000	2.75
			263	4.30	15431-000	2.85
			264	4.40	15432-000	2.95
			265	3.80	15433-000	2.45
			266	4.00	202167-000	2.55
			267	4.50	202453-000	3.10
			274	5.40	15217-000	3.90
			275	5.40	16480-000	3.90
			276	5.40	202007-000	3.90
			277	5.50	202008-000	4.00
			278	5.60	202009-000	4.10
			279	5.50	201174-000	4.00
			281	5.40	15218-000	3.90
			291	5.05	15219-000	3.65
			292	5.20	33757-000	3.75
			293	5.35	33855-000	3.85
			295	4.50	28366-000	3.10
			296	4.60	28365-000	3.20
			297	4.70	28367-000	3.30
			298	5.00	32845-000	3.60
			299	4.70	38507-000	3.30

NOTE: These prices on Spring Combinations apply only when assembled with complete relays. When sold separately, add 50% to above prices.

When relays are mounted in factory, add \$.30 per relay.

When used as a restoring relay in combination with 300-X type relays, the letter X should be added to code number. Regular armature is then replaced with special armature (Stk. No. 12901). Add \$.35 per relay.

Code No.	Price Relay less Springs	Stock No.	Cell Only Price
201	\$ 3.50	12276-000	\$ 2.05
202	3.50	12277-000	2.05
203	3.60	12278-000	2.15
204	3.60	15491-000	2.15
205	3.70	12280-000	2.25
206	3.80	12266-000	2.35
207	3.80	12267-000	2.45
208	3.90	12281-000	2.45
209	4.00	12282-000	2.55
210	4.30	12283-000	2.85
212	5.00	30005-000	3.60
213	3.70	15435-000	2.25
214	4.00	15436-000	2.65
215	5.00	32846-000	3.60
218	4.45	201054-000	3.15
219	4.40	34947-000	2.95
221	4.00	12286-000	3.30
222	4.90	12287-000	3.50

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PRICE INFORMATION

300 Type Relays

The prices specified for the 300 type relays cover relay less springs and to arrive at the price of complete relay, add for each spring combination as follows:

Stock No.	Code	Price
13253-000	A	\$1.15
13258-000	B	1.00
13260-000	C	1.35
13265-000	X	.65

Code No.	Price Relay less Springs	Stock No.	Coil Only Price
306	\$ 5.05	15220-000	\$ 2.30
307	5.40	15221-000	2.65
313	5.85	15222-000	2.90

340 Type Relays

Code No.	Price Complete Relay
343CC	\$ 21.00
344C	21.00
345C	21.00
346C	21.00
347CC	21.00
348CC	21.00
349C	21.00

360 Type Relays

366A	} Prices on Application
367A	

370 Type Relays

372	Prices on Application
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375 Type Relays

Prices on Application

380 Type Relays

Stock No.	Code	Price Complete Relay
803103-000	381A	\$ 6.75
208075-000	382A	6.75
211909-000	384C	6.90
38308-000	383C	8.50

390 Type Relays

Prices on Application

Relay Casings or Covers

Stock No.	Code	Price
801597-000	16L	\$ 2.75
801598-000	17L	2.60
801600-000	18L	2.25
801603-000	20L	5.15
801605-000	21L	5.55
27056-000	23L	3.45
801609-000	24L	3.45
801610-000	25	2.00
801611-000	26	2.80
205108-000	27	2.70

Relay Mountings

801652-000	83L	\$ 4.15
801653-000	84L	9.30
801654-000	85L	10.30
200473-000	86L	7.55
801657-000	87L	3.80
801659-000	88L	7.20
801661-000	89L	3.40
44361-000	90L	2.75
801663-000	91L	7.80
45492-000	92L	2.65
801665-000	93L	1.00
801666-000	94L	1.00
801667-000	95L	1.20
801668-000	96L	3.60
801671-000	98L	6.80
801673-000	100L	2.30
801675-000	101L	3.70

PRICE INFORMATION

Relay Mountings (Cont'd)			Resistors (Cont'd)		
Stock No.	Code	Price	Stock No.		Price
801677-000	102L.....	\$ 4.80	36581-000.....		\$ 3.80
801679-000	103L.....	3.75	36582-000.....		3.10
801681-000	104L.....	5.30	36583-000.....		2.45
801683-000	105L.....	3.20	36584-000.....		2.15
801685-000	106L.....	2.95	36586-000.....		1.90
801688-000	109L.....	3.80	36587-000.....		2.30
801690-000	110L.....	1.30	36588-000.....		2.35
801692-000	111L.....	3.55	36589-000.....		1.60
801693-000	112L.....	4.45	36593-000.....		1.15
801694-000	113L.....	4.00	36594-000.....		1.95
801695-000	114L.....	6.60	36596-000.....		1.30
801696-000	115L.....	6.10	36610-000.....		1.10
801697-000	116L.....	6.25	36611-000.....		1.50
801698-000	117L.....	4.30	205412-000.....		2.55
801699-000	118L.....	8.45	205483-000.....		1.85
801700-000	119L.....	2.75	206800-000.....		2.65
801701-000	120L.....	2.80	207280-000.....		1.35
801702-000	121L.....	12.25	209796-000.....		1.35
39829-000	122L.....	12.25	210226-000.....		1.65

Resistors			Ringers		
Stock No.		Price	Stock No.	Code	Price
36271-000.....		\$.30	801820-000	28A.....	\$ 4.80
36272-000.....		.30	801822-000	28H.....	4.40
36273-000.....		.30	801825-000	35A.....	7.55
36274-000.....		.30	801826-000	35B.....	7.90
36275-000.....		.30	200577-000	35D.....	5.80
36276-000.....		.30	801827-000	35E.....	8.15
36277-000.....		.30	801830-000	46A.....	5.00
36278-000.....		.30	801832-000	46C.....	5.35
36279-000.....		.30	801834-000	46E.....	5.60
36280-000.....		.30	801835-000	46F.....	5.85
36281-000.....		1.15	801856-000	49A.....	5.60
36282-000.....		1.15	801857-000	49C.....	5.85
36283-000.....		1.20	801858-000	49F.....	6.10
36284-000.....		1.35	801861-000	50LL.....	5.70
36285-000.....		1.20	801864-000	52F.....	8.00
36311-000.....		.35	801891-000	59E.....	5.90
36312-000.....		.30	801892-000	59F.....	5.90
36313-000.....		.40	801893-000	59G.....	5.90
36314-000.....		.35	801894-000	59H.....	5.90
36315-000.....		.30	801913-000	59I.....	5.90
36316-000.....		.50	45389-000	59J.....	5.90
36565-000.....		2.15	801895-000	59K.....	5.90
36566-000.....		1.80	801896-000	59L.....	5.90
36567-000.....		1.60	801897-000	59M.....	5.90
36568-000.....		1.50	801898-000	59N.....	5.90
36569-000.....		1.35	801899-000	59P.....	5.90
36570-000.....		1.25	801900-000	59R.....	5.90
36571-000.....		1.80	801911-000	61A.....	5.00
36572-000.....		1.60	801912-000	61S.....	5.60
36573-000.....		1.55	803475-000	62E.....	5.40
36574-000.....		1.55	803476-000	62F.....	5.40
36577-000.....		1.50	803477-000	62G.....	5.40
36578-000.....		1.25	803479-000	62H.....	5.40
36579-000.....		1.35	803474-000	62I.....	5.40
36580-000.....		1.20			

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PRICE INFORMATION

Ringers (Cont'd)

Stock No.	Code	Price	Stock No.	Code	Price
803478-000	62J.....	\$ 5.40	201754-000	65C.....	\$ 5.65
803481-000	62K.....	5.40	201755-000	65F.....	5.65
803482-000	62L.....	5.40	207690-000	71A.....	4.55
803483-000	62M.....	5.40	202100-122	71B.....	4.55
803480-000	62N.....	5.40	207728-000	72E.....	5.20
803484-000	62P.....	5.40	207730-000	72F.....	5.20
205984-000	62Q.....	5.40	207731-000	72G.....	5.20
803485-000	62R.....	5.40	207732-000	72H.....	5.20
206726-000	62MF.....	5.40	207738-000	72I.....	5.20
206727-000	62MG.....	5.40	207740-000	72J.....	5.20
206728-000	62MH.....	5.40	207734-000	72K.....	5.20
206729-000	62MI.....	5.40	207735-000	72L.....	5.20
206730-000	62MK.....	5.40	207736-000	72M.....	5.20
206731-000	62ML.....	5.40	207729-000	72N.....	5.20
206732-000	62MM.....	5.40	207737-000	72P.....	5.20
206733-000	62MP.....	5.40	207739-000	72Q.....	5.20
206734-000	62MQ.....	5.40	207733-000	72R.....	5.20
47417-000	64E.....	5.70	202100-117	73E.....	5.20
47416-000	64F.....	5.70	202100-133	73F.....	5.20
47415-000	64G.....	5.70	202100-150	73G.....	5.20
47413-000	64H.....	5.70	202100-167	73H.....	5.20
47418-000	64I.....	5.70	202100-120	73I.....	5.20
47414-000	64J.....	5.70	202100-160	73J.....	5.20
47423-000	64K.....	5.70	202100-130	73K.....	5.20
47422-000	64L.....	5.70	202100-142	73L.....	5.20
47421-000	64M.....	5.70	202100-154	73M.....	5.20
47412-000	64N.....	5.70	202100-125	73N.....	5.20
47420-000	64P.....	5.70	202100-166	73P.....	5.20
209429-000	64Q.....	5.70	202100-140	73Q.....	5.20
47419-000	64R.....	5.70	202100-116	73R.....	5.20
201753-000	65A.....	5.65	202100-188	74A.....	4.55
202880-000	65B.....	5.65	202100-177	74B.....	4.55

NOTE: The above ringers do not include gongs. If ringers are ordered with gongs, add \$.50 for all types, except the No. 35 type ringer, in which case \$1.50 should be added to the above prices.

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PRICE INFORMATION

Telephones, Common Battery

Stock No.	Code	Rochester, Chicago	Atlanta, Kansas City	San Francisco
Suspended Type Telephones				
210957-000	1532.....	\$ 21.50.....	\$ 21.75.....	\$ 22.00
210958-000	1532-M.....	18.75.....	19.00.....	19.25
210959-000	1533.....	27.50.....	27.75.....	28.00
210960-000	1533-M.....	24.00.....	24.25.....	24.50
210952-000	1533-MK.....	26.30.....	26.55.....	26.80
210961-000	1534.....	16.70.....	16.95.....	17.20
210962-000	1534-M.....	15.40.....	15.65.....	15.90
Special Type Telephones				
211749-000	1544.....	16.30.....	16.60.....	16.90
211750-000	1544-B.....	17.90.....	18.20.....	18.50
211758-000	1544-C.....	25.90.....	25.50.....	25.80
211759-000	1544-K Less Ringer.....	21.25.....	21.55.....	21.85
211751-000	1544-P Less Ringer.....	14.70.....	15.00.....	15.30
212573-000	1574W with Desk Dial.....	28.60.....	28.90.....	29.20
Wall Type Telephone				
200791-409	1553W With Ringer as Specified.....	22.95.....	23.25.....	23.55
To the above price for wall telephone				
ADD: For color \$2.00				
For dial (Black) \$6.15				
For dial (Color) \$6.25				
For two-step operation \$1.10				
For super-imposed ringing tube \$3.75				
DEDUCT: for Less Ringer \$3.45				
Desk Type Telephones				
200830-288	1543-WAK.....	23.10.....	23.40.....	23.70
200830-277	1543-WBK.....	23.10.....	23.40.....	23.70
200830-217	1543-WEK.....	23.10.....	23.40.....	23.70
200830-233	1543-WFK.....	23.10.....	23.40.....	23.70
200830-250	1543-WGK.....	23.10.....	23.40.....	23.70
200830-267	1543-WHK.....	23.10.....	23.40.....	23.70
200830-220	1543-WIK.....	23.10.....	23.40.....	23.70
200830-260	1543-WJK.....	23.10.....	23.40.....	23.70
200830-230	1543-WKK.....	23.10.....	23.40.....	23.70
200830-242	1543-WLK.....	23.10.....	23.40.....	23.70
200830-254	1543-WMK.....	23.10.....	23.40.....	23.70
200830-225	1543-WNK.....	23.10.....	23.40.....	23.70
200830-266	1543-WPK.....	23.10.....	23.40.....	23.70
200830-240	1543-WQK.....	23.10.....	23.40.....	23.70
200830-216	1543-WRK.....	23.10.....	23.40.....	23.70
219328-000	1573WA.....	56.90.....	57.20.....	57.50
200792-209	1576-W.....	46.95.....	47.25.....	47.55

To the above prices for Desk type Telephones

ADD: For color \$2.00

For dial (Black) \$6.15

For dial (Color) \$6.25

For two-step operation \$1.10

For super-imposed ringing tube \$3.75

DEDUCT: For Less Ringer \$3.45

Issue Date: 7-13-59

PRICE INFORMATION

Telephones, Convenience Systems

Stock No.	Code	Rochester and Chicago	Kansas City and Atlanta	San Francisco
202298-000	1270.....	\$ 33.10.....	\$ 33.60.....	\$ 34.00
202299-000	1271.....	38.95.....	39.45.....	39.85
202300-000	1272.....	40.50.....	41.00.....	41.40
211117-000	1575-A Less Dial.....	63.40.....	64.05.....	64.70
219323-000	G-1575-WA1 Less Dial available in standard colors.....	67.40.....	68.00.....	68.65
211143-000	1575-B Less Dial.....	65.45.....	66.10.....	66.75
219325-000	G-1575-WB1 Less Dial available in standard colors.....	69.45.....	70.05.....	70.70

Telephones, Magneto

203071-000	1248-WA.....	47.75.....	48.20.....	48.65
206738-000	1248-WB.....	47.75.....	48.20.....	48.65
201804-000	1248-WI.....	47.75.....	48.20.....	48.65
201806-000	1248-WIP.....	49.05.....	49.50.....	49.95
201805-000	1248-WL.....	47.75.....	48.20.....	48.65
201807-000	1248-WLP.....	49.05.....	49.50.....	49.95
203069-000	1248-WS.....	47.75.....	48.20.....	48.65
209279-000	1258-WA.....	47.75.....	48.20.....	48.65
209280-000	1258-WB.....	44.00.....	44.45.....	44.90
201808-000	1258-WI.....	44.00.....	44.45.....	44.90
201810-000	1258-WIP.....	45.30.....	45.75.....	46.20
201809-000	1258-WL.....	44.00.....	44.45.....	44.90
201811-000	1258-WLP.....	45.30.....	45.75.....	46.20
209281-000	1258-WS.....	44.00.....	44.45.....	44.90
201812-000	1268-WI.....	33.00.....	33.30.....	33.60
201814-000	1268-WIP.....	34.30.....	34.60.....	34.90
201813-000	1268-WL.....	33.00.....	33.30.....	33.60
201815-000	1268-WLP.....	34.30.....	34.60.....	34.90

Telephones, Ironclad

		F.O.B. Rochester
802017-000	890I.....	\$106.25
802018-000	890L.....	106.25
207657-000	950C.....	80.45
†202133-476	950-D.....	86.00

NOTE: On above telephones plunger lock is standard. For No. 8468-000 Key Lock, add \$3.35.

†Denotes addition

STROMBERG-CARLSON

PRICE INFORMATION

***Telephone—Extension Ringer Boxes**

Stock No.	Code	Rochester and Chicago	Kansas City and Atlanta	San Francisco
209959-000	1561 Less Ringer.....	\$ 5.30	\$ 5.50	\$ 5.70
209973-000	1561-A.....	8.75	8.95	9.15
210900-000	1561-AH.....	8.75	8.95	9.15
210901-000	1561-AL.....	8.75	8.95	9.15
210923-000	1561-C.....	8.75	8.95	9.15
209961-000	1561-E.....	8.75	8.95	9.15
209962-000	1561-F.....	8.75	8.95	9.15
209963-000	1561-G.....	8.75	8.95	9.15
209965-000	1561-H.....	8.75	8.95	9.15
209960-000	1561-I.....	8.75	8.95	9.15
209964-000	1561-J.....	8.75	8.95	9.15
209967-000	1561-K.....	8.75	8.95	9.15
209968-000	1561-L.....	8.75	8.95	9.15
209969-000	1561-M.....	8.75	8.95	9.15
209966-000	1561-N.....	8.75	8.95	9.15
209970-000	1561-P.....	8.75	8.95	9.15
209972-000	1561-Q.....	8.75	8.95	9.15
209971-000	1561-R.....	8.75	8.95	9.15

*The above ringer boxes are also available in gray at an additional cost of \$1.00 each.

Telephone, Desk Set Ringer Boxes

210883-000	1560 Less Ringer.....	\$ 8.50	\$ 8.70	\$ 8.90
210897-000	1560-A.....	11.95	12.15	12.35
210885-000	1560-E.....	11.95	12.15	12.35
210886-000	1560-F.....	11.95	12.15	12.35
210887-000	1560-G.....	11.95	12.15	12.35
210889-000	1560-H.....	11.95	12.15	12.35
210884-000	1560-I.....	11.95	12.15	12.35
210888-000	1560-J.....	11.95	12.15	12.35
210891-000	1560-K.....	11.95	12.15	12.35

26 EQUIPMENT SECTIONS

Issue Date: 7-13-59

PRICE INFORMATION

Terminal Blocks		Price
Stock No.		
202300-106	Less than 25.....	\$.45 each
	25 and over.....	.40 each
11046-000	1-A.....	.50 each
11058-000	7-A.....	1.50 each
802384-000	15-A.....	.50 each
201339-000	18-A.....	1.10 each

Terminal Boxes		Price
Stock No.	Code	
201983-000	90A.....	\$ 8.40
210780-000	96A.....	8.65
211156-000	96B.....	11.50
212769-000	97.....	8.65
212765-000	98.....	12.30
212766-000	99.....	11.00

Terminal Strips		Price
Stock No.	Code	
802400-000	44.....	\$ 7.85
802401-000	45.....	8.80
802402-000	46.....	10.15
802403-000	49.....	7.70
802418-000	68.....	4.65
802420-000	70.....	3.25
802421-000	71.....	4.50
802422-000	72.....	2.00
802423-000	73.....	2.75
802424-000	74.....	3.55
802425-000	75.....	4.10
802426-000	76.....	4.95
802427-000	77.....	3.90
802428-000	78.....	4.90
802429-000	79.....	5.85
802430-000	80.....	6.20
802431-000	81.....	7.25
802432-000	82.....	8.65
802438-000	88.....	10.35
207089-000	92.....	5.30
207090-000	93.....	7.85
207091-000	94.....	9.80
207092-000	95.....	11.15
203311-000	101.....	1.95
203312-000	102.....	2.60
203313-000	103.....	3.15
203314-000	104.....	3.70
203315-000	105.....	4.20
203316-000	106.....	5.00
203317-000	107.....	4.80
203318-000	108.....	5.95

Terminal Strips (Cont'd)		Price
Stock No.	Code	
203319-000	109.....	\$ 6.30
203310-000	110.....	7.20
203361-000	111.....	4.05
203362-000	112.....	5.00
203363-000	113.....	3.95
203364-000	114.....	6.90
203365-000	115.....	10.25
203366-000	116.....	9.35
203367-000	117.....	8.20
203368-000	118.....	11.05
203369-000	119.....	11.35
203360-000	120.....	13.00
203321-000	121.....	3.50
203322-000	122.....	4.60
203323-000	123.....	8.60
203324-000	124.....	7.20
203325-000	125.....	8.20
203326-000	126.....	9.50
203327-000	127.....	9.55
203328-000	128.....	11.85
203329-000	129.....	12.45
203320-000	130.....	19.05
203371-000	131.....	4.70
203372-000	132.....	6.00
203373-000	133.....	5.30
203374-000	134.....	8.65
203375-000	135.....	8.20
203376-000	136.....	13.85
203377-000	137.....	11.35
203378-000	138.....	14.50
203379-000	139.....	15.50
203370-000	140.....	17.15
203331-000	141.....	4.95
203332-000	142.....	6.50
203333-000	143.....	7.95
203334-000	144.....	9.35
203335-000	145.....	11.10
203336-000	146.....	12.80
203337-000	147.....	14.75
203338-000	148.....	15.85
203339-000	149.....	17.35
203330-000	150.....	18.95
203341-000	151.....	5.90
203342-000	152.....	7.85
203343-000	153.....	8.10
203344-000	154.....	11.75
203345-000	155.....	11.70
203346-000	156.....	11.75
203347-000	157.....	16.25
203348-000	158.....	19.50
203349-000	159.....	20.30

PRICE INFORMATION

Terminal Strips (Cont'd)		
Stock No.	Code	Price
203340-000	160	\$23.50
203351-000	161	6.15
203352-000	162	8.90
203353-000	163	11.15
203354-000	164	14.20
203355-000	165	16.60
203356-000	166	20.15
203357-000	167	22.40
203358-000	168	24.35
203359-000	169	25.65
203350-000	170	29.35
212800-000	180	5.50
212801-000	181	6.95
212802-000	182	8.50
212803-000	183	10.40
212804-000	184	12.05
212805-000	185	13.60
212806-000	186	15.20
212807-000	187	16.55
212808-000	188	18.30
212809-000	189	19.60
212810-000	190	21.00
212811-000	191	5.00
212812-000	192	6.30
212813-000	193	7.70
212814-000	194	10.30
212815-000	195	10.75
212816-000	196	12.20
212817-000	197	13.45
212818-000	198	14.55
212819-000	199	16.05
212820-000	200	17.20
212821-000	201	18.40

Tools

802456-000	2	1.25
802457-000	7	6.95
802465-000	24	2.85
10438-000	36	2.70
12077-000	42	2.85
802474-000	44	5.90
802475-000	45	2.25
13372-000	47	.30
802482-000	53	1.05
802483-000	54	6.95
802485-000	56	.65
16646-000	62	3.25
23877-000	63	1.40

Tools (Cont'd)		
Stock No.	Code	Price
29372-000	64	\$.30
34048-000	65	2.75
34049-000	66	2.70
212477-000	69	4.80
201092-000	70	4.55
36372-000	72	3.85
36371-000	73	3.35
36377-000	74	3.75
203401-000	75	.50
204742-000	76	4.50
204954-000	77	6.65
205683-000	78	2.70
207625-000	79	.95
207628-000	82	.10
207629-000	83	2.25
892499-000	84	2.75
209441-000	85	4.75
209442-000	86	7.45
209444-000	88	8.50
209445-000	89	3.75
209446-000	90	18.75
209447-000	91	6.40
209449-000	93	1.65
210187-000	95	25.00
210188-000	96	25.00
210189-000	97	6.00
211712-000	98	15.00
212013-000	99	2.80
802498-000	100	2.70
213803-000	102	4.80
212756-000	103	12.00
213818-000	104	1.30
213819-000	105	1.60
218169-000	107	1.00
211209-000	265C	3.75

Transmitters

802522-000	20	5.60
802523-000	21	8.30
802525-000	22	6.50
28920-000	23	2.65
205784-000	27	3.50
210279-000	29	1.75
211969-000	30	1.70

Visual Signals

Prices on application.

