

STROMBERG - CARLSON COMPANY

"There is nothing finer than a Stromberg-Carlson"

ROCHESTER 3, NEW YORK

February 11, 1955

To all Holders of Stromberg-Carlson Catalogs:

The new Section B (Central Office Equipment) covering dial and manual central office equipment, which replaces major portions of former Sections B and C, is enclosed together with its tabbed divider and price page. In addition a green table of contents page for the equipment sections of the catalog is included. This page is to be inserted at the front of the catalog.

This new section B replaces all like matter formerly found in old Section B and C. The material not covered in the new section will be taken care of in a revised Section G (Power and Test Equipment). Until such time as Section G becomes available, it is advised that you retain the old Section B and C for information and ordering purposes.

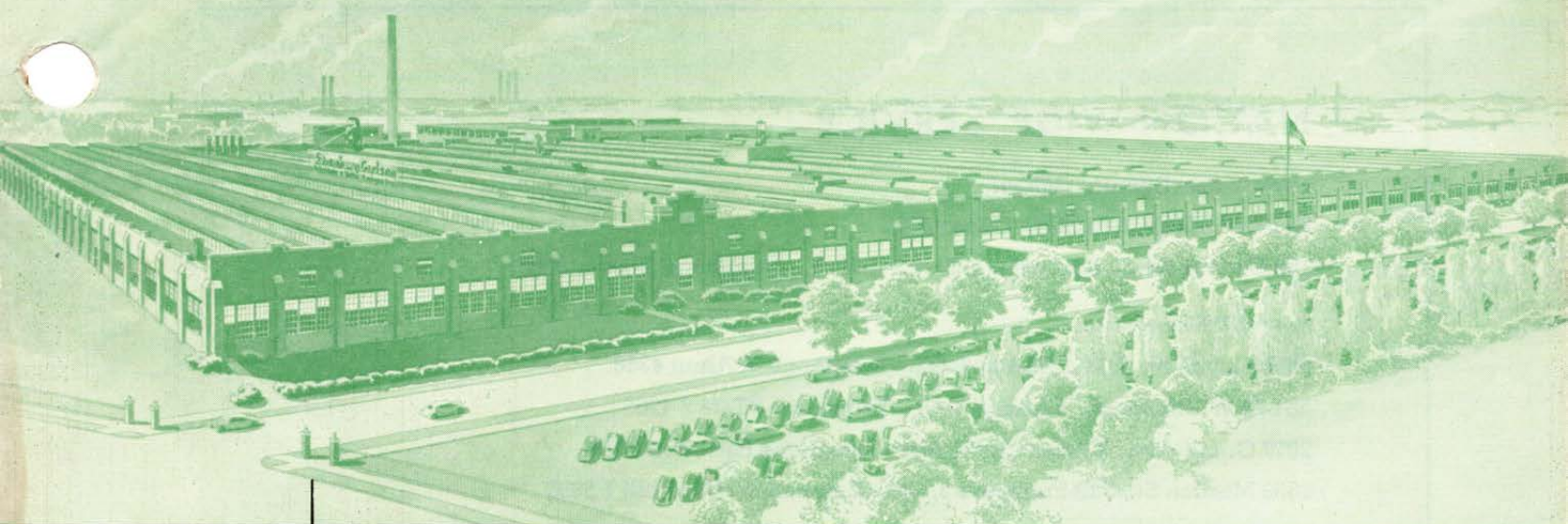
As our program of catalog revision progresses, new sections will be delivered to you as they become available.

Your comments and suggestions as to arrangement and material of the revised sections are welcome.

A. F. Mosher

A. F. Mosher
Catalog Editor

AFM:md
encl.



STROMBERG-CARLSON

TELEPHONE INSTRUMENTS

CENTRAL OFFICE EQUIPMENT

PBX AND INTERIOR SYSTEMS

CARRIER AND MICROWAVE

COMPONENT PARTS

POWER AND TEST EQUIPMENT

STROMBERG-CARLSON COMPANY

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

Hubbard 2-2200

NATION-WIDE SERVICE

Factory and General Offices:

STROMBERG-CARLSON COMPANY

100 Carlson Road, Rochester 3, N. Y., U. S. A.—Telephone CULver 0260

Branch Offices:

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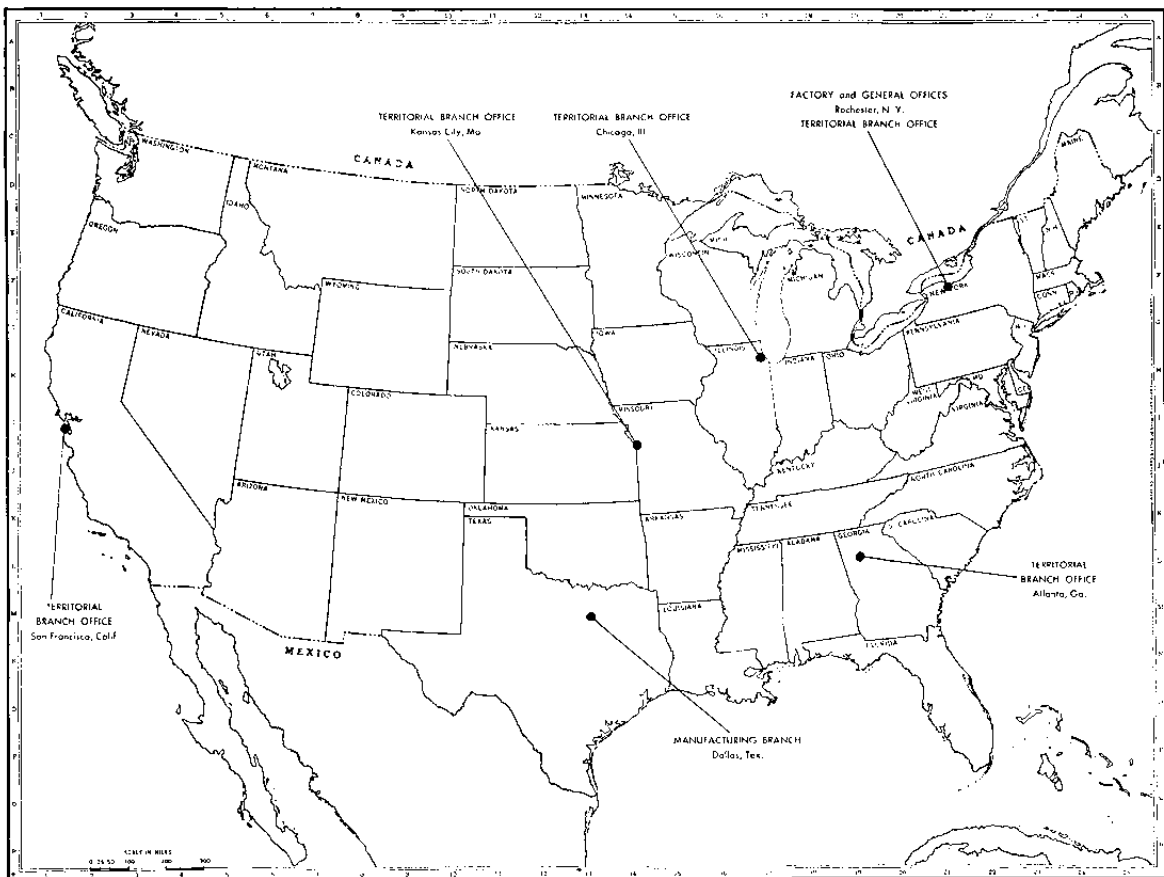
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Manufacturing Branch:

3127 Holmes St., Dallas 15, Tex.—Telephone HARwood 7132



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.

STROMBERG-CARLSON

Telephones



For over half a century the industry has relied on Stromberg-Carlson Telephones. They are found in modern skyscrapers and underground mines; in city apartments and scattered farms. Common battery or magneto, manual or dial service; with completely interchangeable parts for quick economical conversion.

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NEW STROMBERG-CARLSON TELEPHONES

meet four fundamental requirements

SIMPLICITY

Few Essential Parts

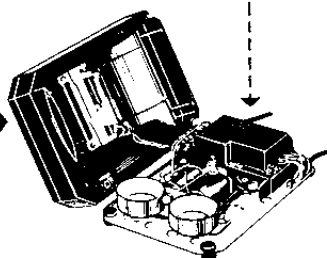
BASE

Combined Coil and
Capacitor Unit
Ringer
Minimum Wiring

HOUSING

Dial
Plunger Switch

HANDSET



DEPENDABILITY

Hydrolene-sealed unit of the capacitor and induction coil eliminates damage from water or condensed moisture.



All wiring including the handset cord is waterproof.



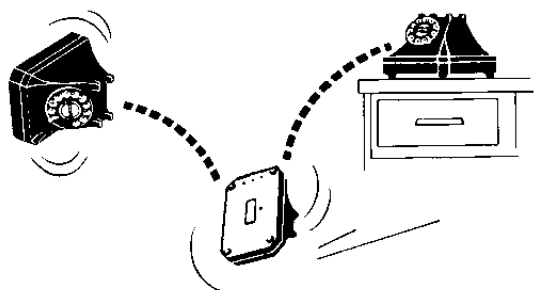
The only tool needed to make all connections is a screwdriver.

The handset will operate in any position, with high fidelity and clearness on long or short lines.

DURABILITY

Proven Ruggedness

Zinc die-cast housing withstands severe shock; is practically impossible to damage by careless handling.



The tough phenolic compound molded handset resists mechanical blows so well that it is almost impossible to render inoperative.

FLEXIBILITY

The variety of ways in which it can be furnished, and the ease with which it can be converted makes the Stromberg-Carlson Telephone an economical buy for operating companies.

It is supplied as a self-contained unit with ringer, or less ringer for use with separate bell box. It can be supplied for common battery Manual or Dial Service, and is readily converted from one to the other.

The Telephone with separate bell box can be used on either common battery or magneto service.

In the base of the instrument are the necessary provisions for mounting, Vincent Rare Gas Relays or W E Co.'s No. 333 A Tube, if required for grounding.

MAGNETO TELEPHONES

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

This new Magneto series includes a self-contained desk type handset telephone (No. 1248-W), a self-contained wall type handset telephone (No. 1258-W), and a Magneto desk set box (No. 1268-W).

The base assemblies of all three instruments are interchangeable for service economy. All are exact counter-parts of the new Stromberg-Carlson common battery telephones, and may be easily converted at any time by the operating company. Any American-made dial may be installed when this type of service is required.

DESK TYPE HANDSET TELEPHONES



No. 1248-W Handset Desk Telephone

THE NO. 1248-W is a thoroughly modern self-contained desk type magneto telephone in a streamlined die-cast zinc housing which includes the handset cradle. Below the cradle, in the rear of the housing, there is a recess which forms a convenient handle that can be used when the telephone is moved. The baked enamel finish has a rich, semi-glossy surface which is durable and wear-resisting. The four rubber feet that are forced into slotted openings at each corner of the base plate firmly grip any surface on which the telephone is placed. These feet are also used to elevate the base to a point where the ringer signal is plainly heard.

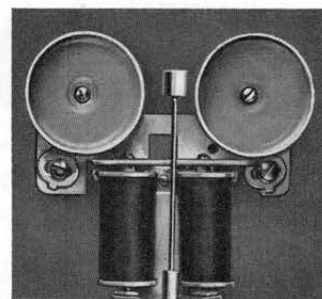
The base plate of cadmium finished flat steel is attached to the housing by screws which may be easily removed for inspection and testing of all component parts. These parts are so designed and mounted on the base that it is an easy matter to change from magneto to common battery operation with either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

THE NO 200595 INDUCTION COIL AND CAPACITOR ASSEMBLY consists of a sealed plastic housing in which the coil and capacitor are embedded in hydrolene, which is a dense, tar-like compound. This design effectively protects the apparatus from mechanical injury as well as excessive humidity, and is therefore particularly desirable in hot, damp climates. At either end of the housing there is a row of screw type terminals which are plainly marked to show the proper connections. These include terminals for the line and handset cords as well

as the wiring of the component parts that are mounted on the metal base of the telephone. The same induction coil and capacitor assembly are used in both the No. 1248 and No. 1243 type self-contained handset telephones so that this unit does not have to be replaced in changing from magneto to common battery service. In the No. 1248 telephone the $\frac{1}{2}$ mf section of the capacitor is wired in the receiver circuit for sure-ringing operation, but this feature is not fully effective unless other telephones on the line are similarly equipped. This condenser makes it possible to ring past telephones on party lines when the receiver is not on the hook. There is another $\frac{1}{2}$ mf capacitor section in the coil and capacitor unit that can be connected to the ringer circuit by making two simple wiring changes.

WIRING OF THE TELEPHONE consists of vinylite insulated conductors with a separate cable for the hookswitch assembly. The line and handset cords are waterproof, with conductors of vinylite-insulated flat ribbon tinsel and an external braid of black mercerized cotton. This type of insulation is used in permanent colors that will not fade and it successfully withstands the bad effects of damp and humid climates.

THE NO. 65 RINGER is of the same general design as the small type ringers in all self-contained telephones and desk set boxes in our current line. The two metal gongs are of different thickness which produces a two-toned effect, resulting in a clear, distinct, signal that compels attention without being annoying.



No. 65 Ringer

The Ringer is specially designed for Magneto service with standard resistances of 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. This is also true of 2500 ohms and 4850 ohm ringers.

The complete ringer movement, including gongs, is set in a rubber mounting which serves as a cushion to eliminate the harsh vibrations caused by a metal-to-metal mounting. The way in which the ringer is mounted provides a full view of the code number and frequency through a clear plastic window in the base plate.

STROMBERG-CARLSON

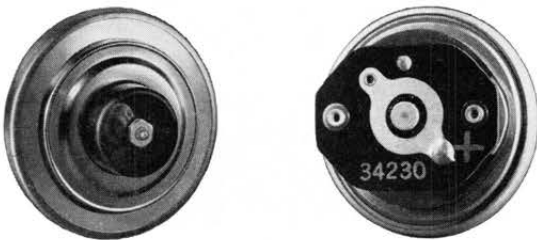
DESK TYPE MAGNETO TELEPHONES (Cont.)

THE HOOKSWITCH ASSEMBLY provides a reliable method of controlling the telephone circuit. The metal plunger rods at either end of the cradle engage a hinged lever which operates an arm that pushes the springs into the proper position, regardless of the position of the handset in the cradle. As a further means of assuring positive action, each spring is equipped with twin contacts.

THE NO. 24-W HANDSET is a new type in which the similar contour of transmitter and receiver produces an evenly balanced unit. The handle, as well as the earcap and mouthpiece, are made of tough molded material that has a maximum resistance to breakage. Spring contacts, attached to inserts, are molded into the cavities for the transmitter and receiver, each of which is firmly positioned when the mouthpiece and earcap are tightly clamped in place. The No. 24-W handset is equipped with a four conductor, 4' 6" waterproof cord with a black braid of mercerized cotton; otherwise it has the same parts as the No. 23-W handset used with the Common Battery Telephones.

THE NO. 200486 TRANSMITTER is a capsule type which will reproduce the voice naturally in any position. It is the result of knowledge gained in the design of loud speakers used in radios. The diaphragm is made in the shape of a cone which causes its center to move as a rigid unit with a piston-like motion. This movement is increased by the annular corrugations near the outer edge of the diaphragm which give it maximum flexibility.

This transmitter is placed in the correct position simply by dropping the capsule into the cavity in the handle. The mouthpiece is then clamped down tightly which makes solid spring-pressure contacts that will not work loose.

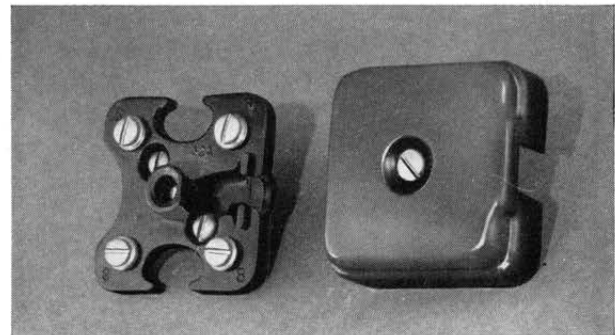


No. 200486 Transmitter No. 34230 Receiver

THE 34230 CAPSULE RECEIVER unit provides a smoother, less resonant response frequency characteristic than any previous receiver. Improved articulation is secured by placing the resonance peak at 2000 cycles per second, while at the same time introducing the proper degree of controlled damping. Temperature stability is maintained under all service conditions. Extreme ruggedness has been obtained through the careful choice and application of engineering materials. Freedom from electrical deterioration under the most severe humidity conditions results from the use of heavy enameled wire coils in conjunction with special insulating materials.

THE NO. 64 ALNICO GENERATOR, reduced in size for the new streamlined telephones, is as powerful as the older, more bulky types. This is due to the use of Alnico magnets which were furnished with equipment built for the Signal Corps and successfully used during the entire war period under every possible unfavorable condition.

NO. 205106 TERMINAL BLOCK is supplied with the No. 1248 Telephone and all other self-contained desk type telephones. This block consists of a square base of black plastic with four terminal screws and associated washers. Designations "R", "G", "Y" and "B" are clearly imprinted. Two oval openings in the base are useful when inter-connecting the line and station wires to the terminals. Another notch is provided for use if the station wires are brought through the baseboard into the back of the block. The brown metal cover is attached to an anchor post in the base plate by a single screw. Two notches — one on either side — provide the means for bringing the line core and station wires through the cover. Two wood screws for mounting the base are included. Dimensions: 2" x 2" x 3/4" high.



No. 205106 Terminal Block,
for either 3 or 4 Conductor Line Cord

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

Magneto Telephones With Straight Line Biased Ringer

To answer the request for a type of magneto service which would approximate the method of signalling in common battery operation, Stromberg-Carlson now offers the new Magneto Telephones Nos. 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. This selective signalling is accomplished by shifting the connecting wires within the telephone.

These telephones can be used wherever the standard straight line magneto telephone is used, except that it is not advisable to use the biased ringing type on straight bridged lines. This is because the biased ringer does not respond as well to party ringing by the subscriber, although perfectly satisfactory when rung from the central office. For best results do not mix the biased ringing type with the standard type of telephone on the same line.

Ordering information for No. 1248 Desk Telephones, both of the standard straight line type and the straight line biased (plus-minus) type are shown on the following page along with the No. 1258 Wall Telephone.

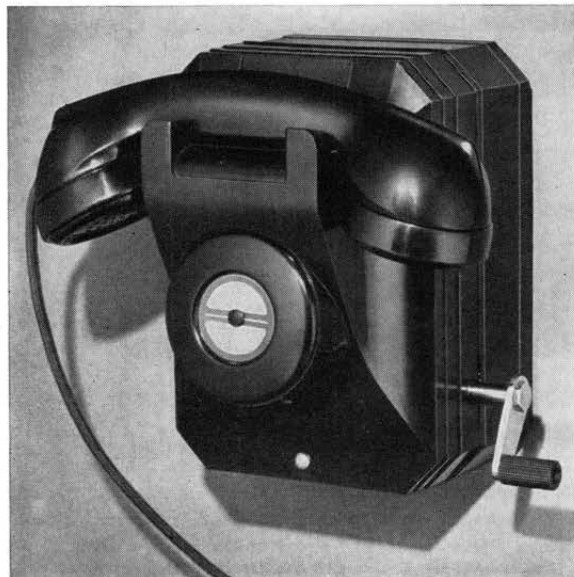
STROMBERG-CARLSON

Revised 2-15-50

MAGNETO TELEPHONES (Con't.)

NO. 1258-W WALL TYPE HANDSET, like the common battery wall type No. 1250, is a streamlined telephone having a plastic housing with a semi-glossy finish that will retain its luster indefinitely.

The removable metal sub-base that houses the generator and all the component parts is the same as in the No. 1248-W desk type; including base plate, coil and capacitor unit, generator, ringer and hookswitch. The handset piece which is also the same, rests in a cradle that is part of the molded case. Polyvinyl wiring is used for the component parts, with a separate cable for the hookswitch.



No. 1258-W Wall Telephone

EASY TO CONVERT. The design of this new wall set, as in the case of the No. 1248-W desk type, makes it easy and economical to change from magneto to common battery service with either manual or dial operation.

In the event that these magneto telephones are converted for common battery use, it is possible to obtain all the features of the 1240, 1250, and 1260 series, including the Vincent Rare Gas Relay and Western Electric Company's No. 333 A Tube.

NON-INTERFERING PUSH BUTTON. This is an additional feature, for which wiring only is provided. The No. 49299 push button is mounted in the center of a plastic plate which covers the dial opening. This push button can be installed in telephones shipped from the factory or ordered separately as Package assembly No. 201358.

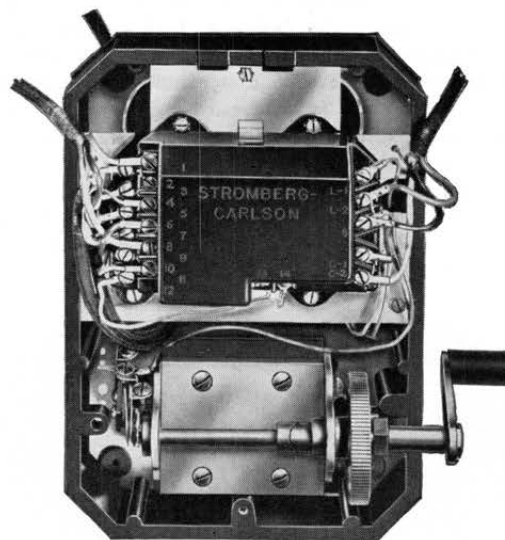
SURE-RING CONDENSER standard equipment includes a $\frac{1}{2}$ mf capacitor in the receiver circuit which makes it possible to ring past telephones on party lines when the receiver is not on the hook. There is also available another $\frac{1}{2}$ mf capacitor in the induction coil—capacitor unit that can be connected to the ringer circuit by making two simple wiring changes.

DIMENSIONS:

1248-W $7\frac{1}{4}$ " high with handset in cradle, $5\frac{3}{4}$ " x $8\frac{1}{8}$ " base
1258-W $8\frac{3}{4}$ " high with handset in cradle, $5\frac{3}{4}$ " x $8\frac{1}{8}$ " base

WEIGHT:

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



Interchangeable Magneto Base
Common to all telephones
Easily Converted to Common Battery

STOCK AND CODE NUMBERS OF TELEPHONES

STOCK AND CODE NUMBERS OF TELEPHONES

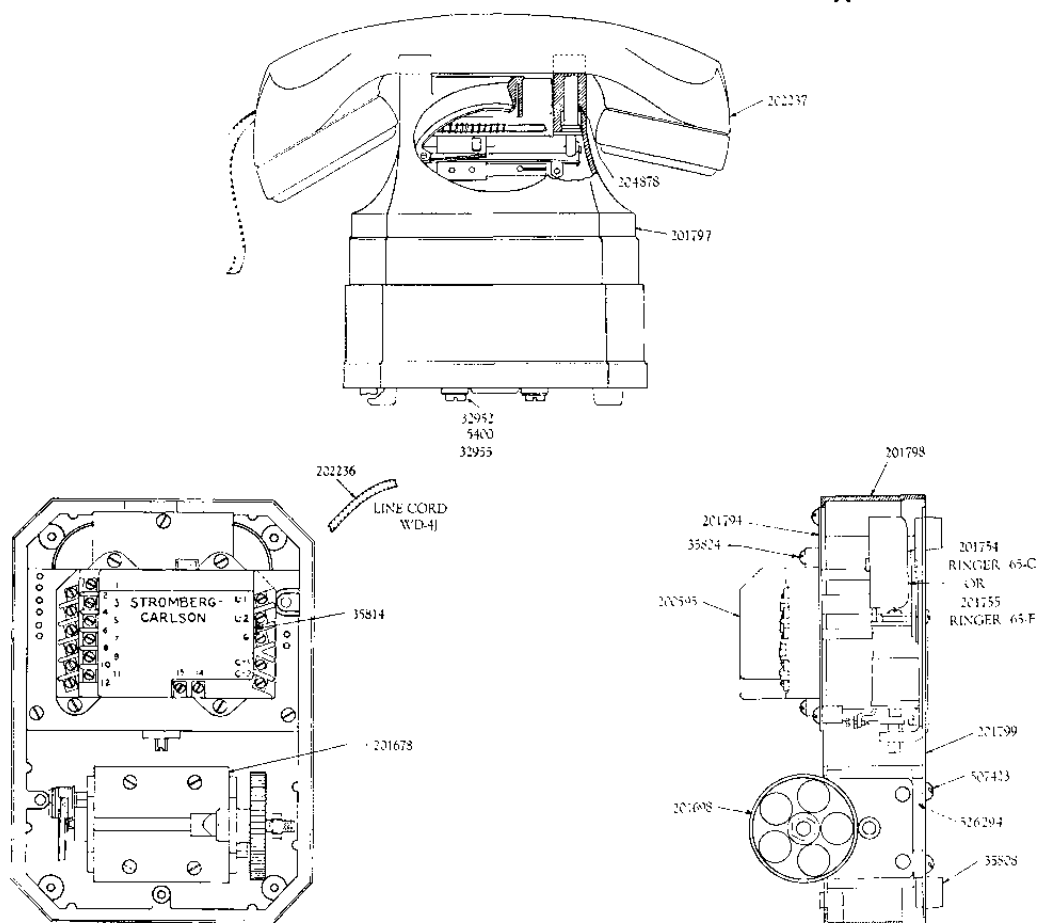
No. 1248-W Handset Desk Type					No. 1258-W Handset Wall Type				
Telephone		Ringer		Resistance	Telephone		Ringer		Resistance
Stock No.	Code	Stock No.	Code		Stock No.	Code	Stock No.	Code	
Straight Line					Straight Line				
201804	(1248-WI)	201754	(65-C)	3100 Ohms	201808	(1258-WI)	201754	(65-C)	3100 Ohms
201805	(1248-WL)	201755	(65-F)	4850 Ohms	201809	(1258-WL)	201755	(65-F)	4850 Ohms
*201806	(1248-WIP)	201754	(65-C)	3100 Ohms	*201810	(1258-WIP)	201754	(65-C)	3100 Ohms
*201807	(1248-WLP)	201755	(65-F)	4850 Ohms	*201811	(1258-WLP)	201755	(65-F)	4850 Ohms
Straight Line Biased					* The letter "P" indicates No. 49299 Push Button mounted on Dial Blank. All No. 1248-W Telephones are equipped with Sure-Ring Condensers (½ MF) in the receiver circuit.				
203071	(1248-WA)	801911	(61-A)	1800 Ohms					
203035	(1248-WB)	202880	(65-B)	3100 Ohms					
203069	(1248-WS)	801912	(61-S)	4850 Ohms					

* The letter "P" indicates No. 49299 Push Button mounted on Dial Blank. All No. 1248-W Telephones are equipped with Sure-Ring Condensers ($\frac{1}{2}$ MF) in the receiver circuit.

STROMBERG-CARLSON

MAGNETO TELEPHONES (Con't.)

Parts of No. 1248-W (Desk) and No. 1258-W (Wall) Types



Parts of No. 1248 and 1258 Magneto Telephones

Telephone Parts

- 201797 Housing (No. 1248-W only)
- 201796 Housing (No. 1258-W only)
- 201798 Sub-Base (Die-cast housing adapter)
- 508753 Screws (2) Sub-Base
- 201799 Base Plate (Metal)
- 35808 Feet (4)
- 32889 Rod (Handle)
- 33234 Screws (Bracket)
- 35860 Cable (Hookswitch)
- 35814 Connector (3) Term Block
- 200595 Ind. Coil and Capacitor Unit in Plastic case
- 201794 Plate (Plastic case mounting)
- 35824 Screws (4) Case to Plate
- 204878 Plungers (2)

Handset Parts

- 202237 (No. 24-W) Handset with black cord
- 202235 Cord (WC-4J) 4' 6"
- 32862 Molded Handle
- 200486 Transmitter
- 34230 Receiver
- 32863 Mouthpiece (Transmitter)
- 32864 Earcap (Receiver)

Hookswitch

- 42158 Complete Spring Comb. (Hookswitch)
- For parts see page 9a or 20a

Generator Parts

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

Ringer Parts

- 201754 (No. 65-C) Ringer (3100 Ohms)
 - 201755 (No. 65-F) Ringer (4850 Ohms)
 - 201751 Coil (2) (No. 65-C) Ringer
 - 34950 Coil (2) (No. 65-F) Ringer
 - 28569 Gong } pair 1 3/4"
 - 28570 Gong }
 - 28433 Screws (2) Gongs
 - 526281 Washers (2) Gongs
- For other parts see Ringers in Coded Parts Section

Waterproof Cord (Black)

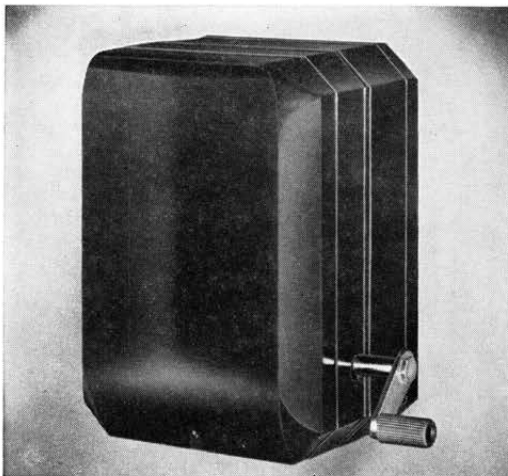
- 202236 Line Cord (WD-4J) 6' (No. 1248-W only)

Terminal Block

- 205106 For Line Cord (No. 1248-W only)
- When push button is not furnished
- 35709 Dial Blank covers the dial opening — with
 - 23766 Cap
 - 25404 Protector
 - 28479 Card

STROMBERG-CARLSON

MAGNETO DESK SET BOX AND TWO-PIECE TELEPHONES



No. 1268-W Desk Set Box

The No. 1268-W Desk Set Box is a companion set of the No. 1248-W and No. 1258-W Handset Telephones, in a streamlined housing of black plastic with a durable, semi-gloss finish. It may be used with the No. 1244 Desk Type or No. 1234-M Suspended Handset Telephone to make an attractive and serviceable two-piece set. This new desk set box replaces the No. 1180 type.

The base plates of the No. 1268 Desk Set Box and the No. 1248 and No. 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 receiver circuit, with a $\frac{1}{2}$ MF. capacitor which is embedded in the same sealed casing as the induction coil. This "Sure-Ring" feature makes it possible to ring past other telephones whose receiver has been removed, if desired, by changing wiring.

Optional Feature

No. 49299 Push Button is not furnished unless the letter "P" is added to the code number and its use is confined to full metallic (two-wire) lines.

When the button is depressed the central office switchboard is signalled by ringing over one side of the line and ground without disturbing the bells of other telephones on the line.

Parts of No. 1268-W Desk Set Box

Stock No.	Description
201795	Plastic Housing
41710	Retaining Screw (Front)
525033	Hex, Nut (Retaining Screw)
201798	Sub-Base (Die-Cast Housing Adapter)
201799	Base Plate (Flat Metal)
41563	Screws (2) Housing to base
41685	Bracket (Base Plate)
35808	Feet (4) Base Plate
200595	Ind. Coil and Capacitor unit in plastic case
201678	Generator (See Generator in Coded Parts Section)
201754 (65-C)	Ringer (3100 Ohms)
201755 (65-F)	Ringer (4850 Ohms) (see Ringer in Coded Parts Section)

STOCK and CODE NUMBERS

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

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

Handset Telephone		Used With
Stock No.	Code	Desk Set Box
201377	(1244-W)	No. 1268
201650	(1244-B)	No. 327

TELEPHONES FOR TWO-PIECE SETS



No. 1244 Desk Telephone

THE NO. 1244-W DESK TYPE Handset Telephone is the companion piece to the No. 1268 Desk Set Box shown above. This telephone is exactly the same externally as the No. 1243 self-contained Common Battery telephone, and can be used without change if Magneto service is changed to Common Battery; or the No. 1244-W can be converted to a No. 1243 by the addition of the ringer and induction coil-capacitor unit in the base.

The die-cast zinc housing has a long-wearing finish of black enamel. The removable base has four rubber feet which are designed to grip any surface. The No. 23-W Handset is an evenly balanced unit with capsule type transmitter and receiver for efficient transmission and operating economy.

THE NO. 1244-B TELEPHONE is the same as No. 1244-W except that it has an induction coil. It may, therefore, be used with desk set boxes which do not have induction coils, such as our old No. 327, or similar boxes of other makes.

TWO PIECE TELEPHONE SETS (Con't.)

Parts of No. 1244-W and 1244-B Telephones

Stock No.	Description
32883	Housing
35809	Base Plate
41563	Screws (2) Housing to Base
35808	Feet (4)
37001	Instrument Cable
Hookswitch	
42158	Hookswitch Spring Assembly (Complete)
35804	Bracket
204877	Lever
32957	Stiffener (2)
502752	Screw (2)
525122	Nut (2)
204881	Plate (2)
32890	Rod
28246	Spring Asm.
28248	Spring Asm. (2)
204884	Spring Asm.
13820	Insulation (8)
204882	Bushing (2)
204879	Pusher
204880	Plunger Spring
Induction Coil	
25677 (45-B)	Induction Coil Assembly (1244-B)
There is no induction coil in No. 1244-W Telephone.	
Handsets	
803486 (23-W)	Handset with Cord (1244-W, 1244-B)
803552 (WC-3-J, 4' 6")	Cord 23-W Handset
Line Cords	
201374 WD-4-G, 6' 6"	(1244-W)
803490 WD-3-J, 6' 0"	(1244-B)



No. 1234-M Mounted on Side of Desk

NO. 1234-M SUSPENDED TELEPHONE

THE NO. 1234-M SUSPENDED TYPE Handset Telephone is the other companion piece to the No. 1268 Desk Set Box when a telephone of the hang-up type is desired. The handset (No. 20A) is of the new balanced-contour capsule type, and is easily gripped in its suspended position on the hook. The inconspicuous metal hook-switch box is finished in black to match.

A single screw unlocks the casing of the hook-switch box so that inspection and adjustments can be made easily when necessary. The mounting bracket is adjustable, allowing a choice of positions.

Many users have found this type of telephone to be a convenient space-saver, as it will mount on a wall, on the side of a desk, or in the knee-hole space.

The 1234 Telephone may be converted to common battery use without change; at this time a dial may be added if this type of operation is needed.

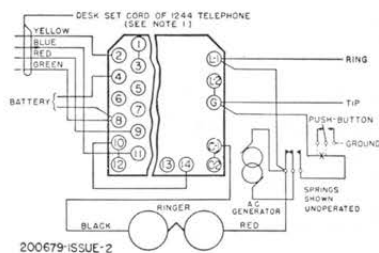
Parts of No. 1234-M Telephone

Stock No.	Description
34517	Casing Assembly
34518	Bracket (Casing)
505355	Screws (4) Bracket
526044	Washers (4) Bracket Screws
19136	Hookswitch Spring Assembly
503685	Screws (2)
24093	Hook (Handset)
Handset	
42906 (20-A)	Handset with cord
800617 (MC-3-F, 4' 9")	Cord (Handset)
18257	Card Frame
18397	Card
18398	Protector (Card)
501055	Screws (2) Card Frame

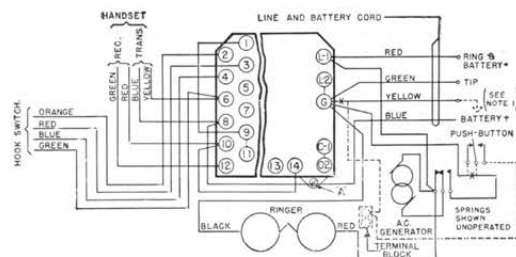
STOCK and CODE NUMBERS

Stock No.	Code	Description
802976	(1234-M)	Less Ringer and Induction Coil

For other Suspended Telephones,
see Common Battery Section

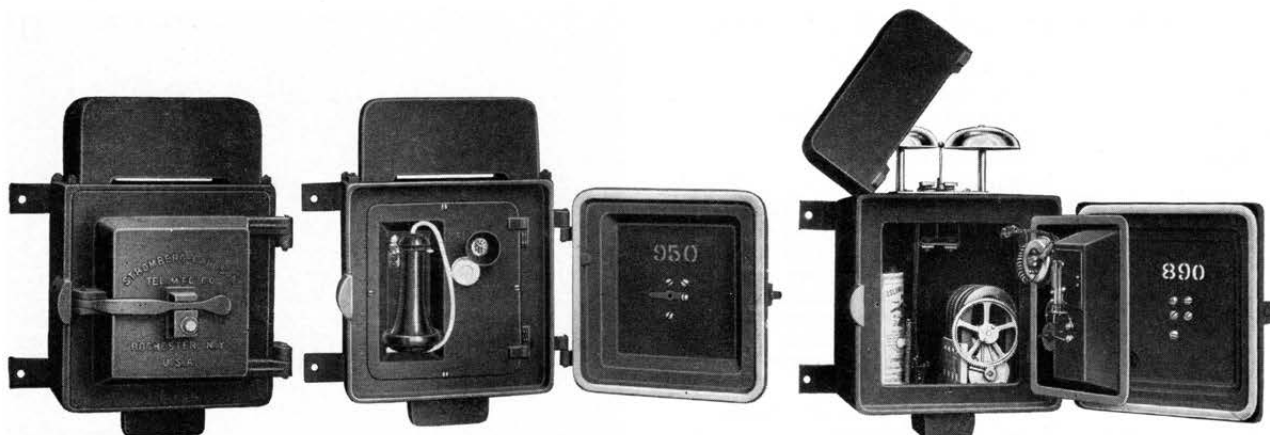
No. 1268 Desk Set Box
with No. 1244 Telephone

Wiring for Magneto Telephones

No. 1248 and No. 1258
Magneto Telephones

STROMBERG-CARLSON

IRONCLAD WEATHERPROOF TELEPHONES



No. 950 BY Ironclad Telephone Open View No. 950 BY Ironclad Telephone
No. 890 Generally Similar to the above No. 950.

Showing Inner Compartment No. 890
Ironclad Telephone

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 Central Energy or Magneto models.

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 it is desired to keep these telephones locked so that only designated persons may use them, the 11563 Plunger Lock may be replaced with a No. 8468 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, but is at all other times held securely closed by machine screws and a felt gasket. The inner door mounts the transmitter and receiver.

THE TRANSMITTER is of the solid back, long distance carbon cup type with a black, phenol compound mouthpiece.

THE RECEIVER consists of an outside plastic receiver shell and ear cap and a capsule type receiver unit. The capsule may be changed by removing the ear cap. An automatic 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.

No. 950 Common Battery Type

The No. 950-BY Telephone is wired for the standard Common Battery Booster Circuit. It is used extensively for out-of-door services such as taxicab stands, police booths, subway service, unheated store rooms, and the like. A No. 44-B Induction Coil is standard in this telephone.

WEIGHTS — No. 890 Telephone — 81 lbs. net; packed for shipment, approx. 100 lbs.

No. 950 Telephone — 62 lbs. net; packed for shipment, approx. 78 lbs.

Parts of No. 950 Telephone

Stock No.	Code	Description
801825	(35-A)	Ringer-less gongs (1000 Ohms)
8437		Gongs (2) 4 inch
1345		Lock nuts (4) used with gongs.
35434		Transmitter (Less back and mouthpiece)
13774		Mouthpiece only
800521		Condenser (IMF)
800425	(44-B)	Induction coil
801595	(30-B)	Receiver with cord (Capsule type)
800627	(M-2-1)	Receiver cord only (22")
33179		Receiver Shell
32864		Earcap
34230		Capsule unit only (30-B receiver)

Receiver (Present Capsule Type)

Stock No.	Code	Description
801595	(30-B)	Receiver and cord
33179		Receiver Shell
32864		Earcap
34230		Capsule Unit
800627	(M-2-1,22")	Cord (Both types)
9998		Cord take-up reel

Parts for former 27-B Receiver (Replaced by No. 30-B)

Stock No.	Description
13370	Receiver shell
13371	Earcap
9924	Diaphragm

Complete 30-B and 27-B receivers are interchangeable but components parts are not.

STROMBERG-CARLSON

IRONCLAD WEATHERPROOF TELEPHONES (Cont.)

No. 890 Magneto Type

This instrument is equipped with a powerful five bar hand generator (Stromberg-Carlson No. 62-A). A No. 26-T Condenser is installed in the receiver circuit so that leaving a receiver off the hookswitch will not interfere with ringing other telephones on the same line. It is equipped with a No. 44-A Induction Coil, and is wired for bridged Magneto service. Space is available for two dry cells.

Parts of No. 890 Telephone

Stock No.	Description
8420	Outer door only
10703	3 ft. soft rubber tubing (Door groove)
10730	Clamp (For holding tubing)
8489	Screws (8) For attaching clamp
11563	Cross-bar locking lever
509603	Steel plunger lock
	Screws (5) Lock

When use of telephone is restricted specify—

8468	Key snap lock (with two keys)
8534	Key only (For 8468 lock)

These locks mount interchangeably.

When a complete outer door assembly is needed, order A-7085-B and specify whether for snaplock or key lock.

Stock No.	Description
10636	Inner door only
8535	Felt gasket (Around inner edge)
8438	Screws (4) (Inner door to casing)

When a complete inner door assembly, including all the parts above, is needed order A-7085-B Inner Door.

Dome and Ringer

Stock No.	Code	Description
8418		Dome (Top of casing)
511403		Screws (4)
*801826	(35-B)	Ringer 1600 Ohms—less gongs
*801827	(35-E)	Ringer 2500 Ohms—less gongs
8536		Gasket (Under ringer plate)
12272		Coil (2) 800 Ohms (Ringer)
12273		Coil (2) 1250 Ohms (Ringer)
8437		Gongs (2) 4 inch
1345		Lock nuts (4) (Gongs)

*These ringer assemblies include a solid plate of brass with gong posts attached to the top and ringer coils mounted on the under side.

Receiver (Present Capsule Type)

Stock No.	Code	Description
801595	(30-B)	Receiver and cord
33179		Receiver shell
32864		Earcap
34230		Capsule Unit
800627	(M-2-I, 22")	Cord (Both types)
9998		Reel, Cord take-up

Parts For Former 27-B Receiver
(Replaced by No. 30-B)

Stock No.	Description
13370	Receiver shell
13371	Earcap
9924	Diaphragm

NOTE—The new capsule type receiver (No. 30-B) is now used on all ironclad telephones. This is interchangeable as a unit with the No. 27-B, but the parts are not.

Receiver Terminal Post Parts

Stock No.	Description
10719	Terminal Posts (2)
515103	Screws (2) In recess
6204	Insulations (2) of door
525613	Washers (2)
652	Terminals (2)
2436	Washers (2) In inner
8479	Bushings (2) compartment
2901	Nuts (4)

Hookswitch

Stock No.	Description
10818	Hook only (Holds receiver)
8457	Contact spring assembly
8465	Plunger Rod
505303	Screws (2) (Mtg. Hook on door)
Stock No.	Description
35434	Transmitter (less back and mouthpiece)
13774	Mouthpiece (On inner door)
8467	Holder (Threaded for mouthpiece)

Induction Coil

Stock No.	Code	Description
8636		Induction Coil on Base
800424	(44-A)	Induction Coil only

Condenser

Stock No.	Code	Description
800526	(26-T)	1/2 MF-Rec. circuit

Generator

Stock No.	Code	Description
800769	(62-A)	Generator (5 bar)
11346		Insulation (Under generator)
11344		Brass Plate (Generator mounting)
507603		Screws (4) (Generator to plate)
507633		Screws (4) (Plate to casing)
11039		Armature with winding
3556		Magnet (5) (Horseshoe type)
6013		Shunt Spring assembly
246		Clutch (Generator shaft)
4444		Gear, large
11576		Crank and Handle, assembled
11562		Gasket (Round rubber)
3498		Pinion (Small generator gear)
4133		Spring (In recess of pinion)
3497		Stop, (Covering pinion recess)
11674		Hex Screw (For attaching stop)

NOTE—For other generator parts, see Generators in the Coded Parts section under No. 62-A and No. 38 Types.

Line Terminal Box

Stock No.	Description
2858	Iron Box only
507603	Screws (4) Box to casing
2985	Terminal Posts (13/16" x 1/2")
9575	Screws (3) 8/32" x 3/8" (Terminal Posts)
2993	Rubber Bushings (3) 5/8" Head
6274	Connectors (3)
505403	Screws (3) In inner
2992	Bushings (3) compartment

STOCK AND CODE NUMBERS

Stock No.	Code	Description
802017	(890-I)	1600 Ohm Ringer, 5 Bar Generator
802018	(890-L)	2500 Ohm Ringer, 5 Bar Generator
802046	(950-BY)	1000 Ohm Ringer, 1 MF Condenser

Standard telephone is equipped with plunger lock. When key snap lock with two keys is desired instead of plunger lock, specify No. 8468 Lock.

Revised 2-15-50

FORMER MAGNETO TELEPHONES

Wall Sets with Oak Cabinets

(These Models are no longer manufactured; parts only are obtainable)

No. D-2843 Wall Type

Standard Equipment

D-2843 — Wall type Handset telephone, long type Cabinet with battery compartment and inclined writing shelf.

- 201395 (D-2843-I) — 5 bar generator, 1600 Ohm ringer
201399 (D-2843-L) — 5 bar generator, 2500 Ohm ringer

Used on D-2843 Only

Handset

Stock No.	Code	Description
801008	(16)	Handset with Cord (1933 Model)
* 42907	(21-A)	Handset with Cord (1940 Model)
800621	(MC-4F, 4' 9")	Brown Cord (For No. 16 and 21-A)
22575		Handle (No. 16 Handset)
32862		Handle (No. 21-A Handset)
24562		Transmitter (No. 16 Handset)
200486		Transmitter (No. 21-A Handset)
23166		Mouthpiece (No. 16)
32863		Mouthpiece (No. 21-A)
66390		Clamping Collar (Mouthpiece No. 16)
34242		Receiver with Earcap (No. 16)
34364		Earcap (Receiver, No. 16)
34230		Receiver-less cap (capsule) No. 21-A
32864		Earcap (Receiver, No. 21-A)

* For No. 20 Type Handset, complete with black waterproof Cord, Specify:

Stock No.	Code	Description
201498	(21-W)	Handset with WC-4F, 4' 9" Cord
201497	(WC-4F)	4' 9" waterproof black Cord only

Hookswitch

13824	Hookswitch (less hook)
27677	Hook only

Instrument Cable

35680	Cable Assembly (D-2843)
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No. 896 Wall Type

No. 896 — Transmitter and receiver separately mounted, long type cabinet with battery compartment and inclined writing shelf.

Standard Equipment

- No. 896-I — 5 bar generator, 1600 Ohm ringer
No. 896-L — 5 bar generator, 2500 Ohm ringer

Used on No. 896 Only

Receiver (Long Type)

Stock No.	Code	Description
801590	(27-A)	Receiver with cord
800652	(MR-2G)	36" Cord (No. 27-A)
13370		Shell (No. 27-A)
13371		Earcap (No. 27-A)
9924		Diaphragm (27-A)

For replacing complete receiver Specify No. 30 capsule type as follows: —

801593	(30)	Less Cord
801594	(30-A)	With MR-2J, 39" Cord

Transmitter

* 802522	(20)	Transmitter with back, and molded mouthpiece front
* 26791		No. 20 Transmitter less back
25600		Molded Mouthpiece front (No. 20)
* The No. 20 Transmitter replaced the No. 7-L Type. The No. 7-L is no longer available but an allowance is made on this old type — less back and mouthpiece — for No. 26791 Transmitter which is the counterpart of the No. 20 Type and mounts in the same back.		

Mounting Parts

802528	(19)	Transmitter Arm (No. 20 or 7-L)
12038		Transmitter Back (No. 20 or 7-L)
1266		Screws (2) Back to arm
2525		Screws (4) Transmitter to back

Hookswitch

801956	(41-B)	Hookswitch (Springs and Hook)
13824		Hookswitch (Less Hook)
8741		Hook only

The following parts are common to D-2843 and No. 896 types of magneto telephones.

Generator

201678	(64)	Alnico type with adapter (replaces No. 38 5-bar generator as a unit).
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Parts of No. 38 Generator

Stock No.	Description
3577	Shaft with No. 247 tip (5-bar)
11730	Crank
11039	Armature (5-bar)
3556	Magnets (5)
6013	Shunt Spring
246	Clutch, attached to Shaft by —
245	Cotter pin
278	Collar, attached to large gear by —
503655	Screw
4444	Large gear
4786	Washer (between large gear and clutch)
265	Spring (between large gear and clutch)
3498	Pinion (Small gear)
4133	Spring (in pinion recess)
3497	Stop (over pinion recess)
11674	Hexagon screw (attaches stop)
11673	Washer (Under Hexagon screw)

Ringer

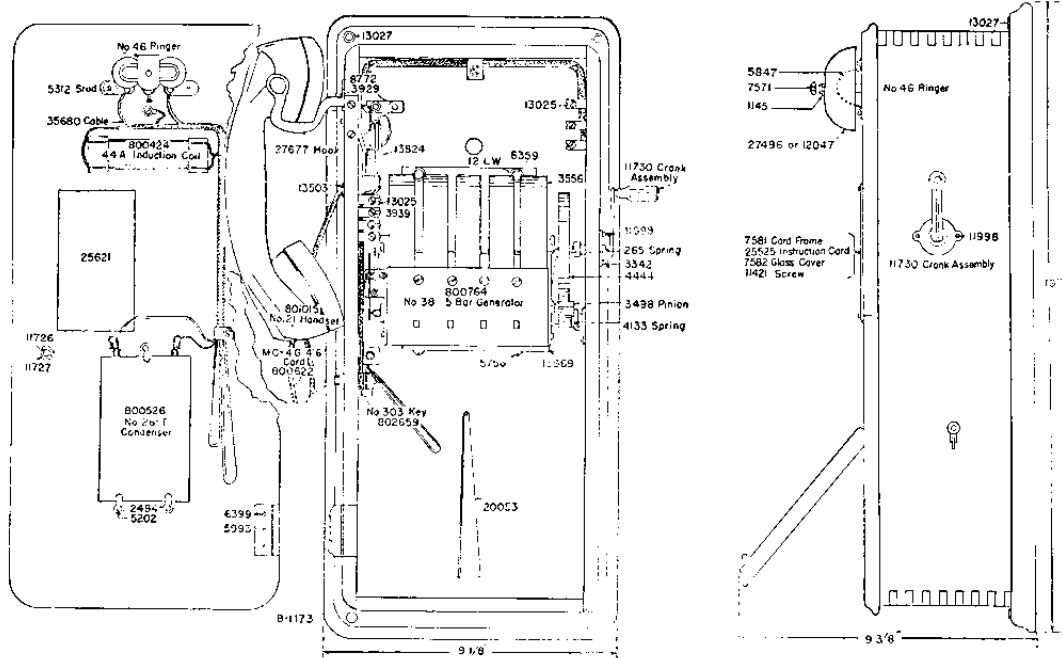
801832	(46-C)	Ringer (1600 Ohms) less gongs
801835	(46-F)	Ringer (2500 Ohms) less gongs
12047		Gongs — 2 1/2" (2)
7571		Cap Nuts (2)
525053		Lock Nuts (2)
505385		Mtg. Screws (2)
525713		Washers (2)
5312		Studs (2) For Wood Mounting
12240		Coil, 800 Ohms (2)
12241		Coil, 1250 Ohms (2)
2423		Armature and Clapper rod
33986		Adjusting Screw
2580		Pivot screw and nut
8594		Yoke assembled, (including gong posts)

Induction Coil

800424	(44-A)	Induction Coil
Condenser and Key		
802659	(303)	Push Button Key
800526	(26-T)	1/2 MF Condenser
2494		Clips (3) For Mounting
520675		Screws (3) Condenser

STROMBERG-CARLSON

FORMER MAGNETO TELEPHONES (Cont.)

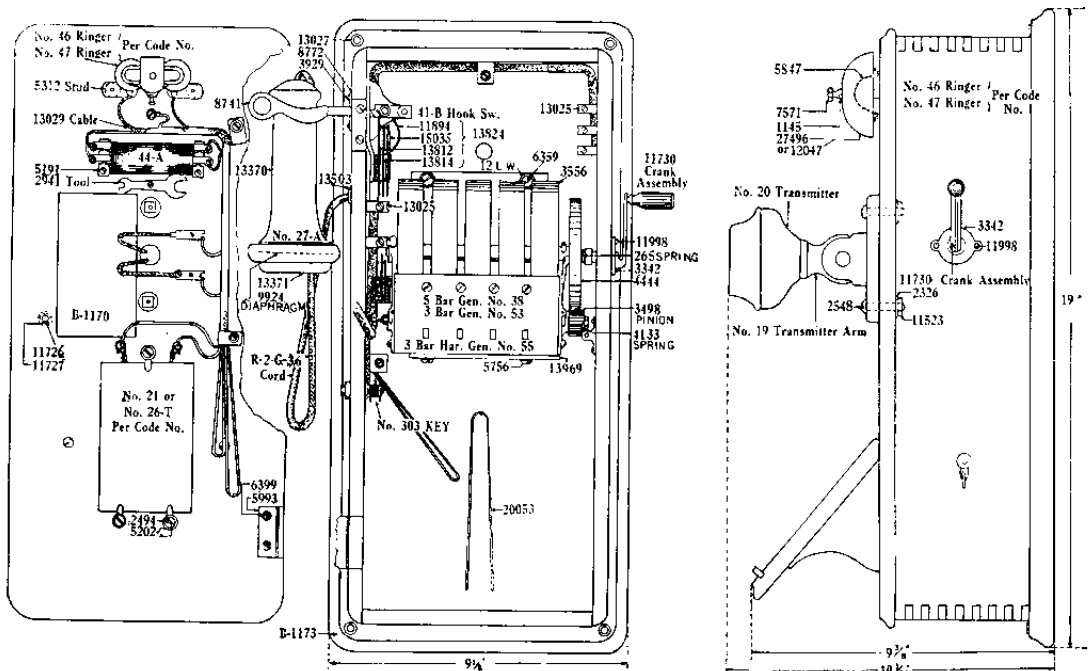


Line Drawing showing Codes and Parts of D-2843 Telephone

62842 (D-2842) Package Assembly

In this package the necessary apparatus is furnished for changing the No. 896 Type, with separate transmitter and receiver, to a wall type handset telephone.

Specify No. 62842 Package which contains handset piece with cord, switchhook and other parts required for this change.



Line Drawing showing Codes and Parts for No. 896 Telephone

FORMER MAGNETO TELEPHONES (Cont.)

Desk Set Boxes with Oak Cabiners

NO. 1180 TYPE MAGNETO DESK SET BOX which included an induction coil as stand equipment has been replaced by the No. 1268-W with corresponding but more modern equipment. The No. 1180 box was used with the No. 1224-A and 1244 Desk Type Handset Telephones to make two-piece magneto sets.

Standard Equipment

- *802179 (1180-I) 5 bar generator, 1600 Ohm ringer
- *802180 (1180-L) 5 bar generator, 2500 Ohm ringer

NO. 327 TYPE MAGNETO DESK SET BOX does not have an induction coil but in other respects it is similar to the No. 1180 Type. This box is used with magneto telephones having the induction coil in the base such as the No. 992 Desk Stand and the No. 1207 and 1224-B Desk Type Handset Telephones which are no longer manufactured. This box can also be used with the present model No. 1244-B Desk Type Handset Telephone.

Standard Equipment

- No. 327-I Alnico generator, 1600 Ohm ringer
- No. 327-L Alnico generator, 2500 Ohm ringer

Assembly Parts

Magneto Desk Set Boxes
Used with Two-Piece Sets

Parts of No. 1180 and 327 Types

- No. 46-C Ringer — 1600 Ohms (Less Gongs)
- No. 46-F Ringer — 2500 Ohms (Less Gongs)
- 12240 Coils (2) 800 Ohms
- 12241 Coils (2) 1250 Ohms
- 2423 Armature (Ringer)
- 2580 Screw and Nut (Armature)
- 577 Adjusting Screw

Parts used with No. 38 (5-Bar) Generator

- 3577 Shaft with No. 247 Tip (5-Bar)
- 6013 Shunt Spring
- 11039 Armature
- 11730 Generator Crank Assembly

* The No. 38 Generator is replaced by No. 64 Alnico Generator.

The preceding pages are from Section A of the Stromberg-Carlson General Catalogue, giving description and useful ordering information for Magneto Telephones. Other sections in the catalogue cover Switchboards of all types, Coded Parts, Accessories, Cords, and Construction Materials. Contact your nearest Stromberg-Carlson representative for further information on products listed in this or other sections.

Handset Telephones used with Two-Piece Sets

- No. 1207 Plastic Housing — Ind. Coil in base (Uses No. 327 D.S. Box)
- No. 1224-A Metal Housing — No induction coil (Uses No. 1180 D.S. Box)
- No. 1224-B Metal Housing — Induction Coil in base (Uses No. 327 D.S. Box)

Assembly Parts

Magneto Handset Telephones
Used with Two-Piece Sets

Parts of No. 1207, 1224-A, 1224-B Types

- 24476 Molded Base (1207)
- 23173 Cover (Base) (1207)
- 32883 Zinc Housing (1224-A, 1224-B)
- 32876 Cover (Housing) (1224-A, 1224-B)
- 23111 Plunger (Hookswitch) (1207)
- 32882 Plunger (2) Hookswitch (1224-A, 1224-B)
- MD-4G — 6' 6" Line Cord (1224-A)
- MD-3H — 6' Line Cord (1224-B)
- MD-3G — 5' 3" Line Cord (1207)
- 25677 Induction Coil (1207, 1224-B)

Desk Stands With Induction Coil in Base

No. 992 and 1170 — Used with No. 327 Type Desk Set Box. The No. 992 Desk Stand was originally equipped with No. 7-L transmitter (metal front and separate mouthpiece) while the No. 1170 Stand had the present No. 20 type which has the same back and mounts interchangeably.

Parts of No. 992 Desk Stand

† No. 20 Transmitter — complete with combination mouthpiece-front (plastic) and metal back.

- 26791 Transmitter (No. 20 less back)
- 2525 Screws (4) (Transmitter to back)
- 13374 Mouthpiece (No. 7-L Trans.)
- 39-A Induction Coil
- 11675 Bottom Cover
- MD-3-C 6 ft. Line Cord

† Specify No. 20 when complete transmitter, with back, is wanted.

Parts of No. 1170 Desk Stand

- 13370 Shell (No. 27-A Receiver)
- 13371 Earcap (No. 27-A Receiver)
- 9924 Diaphragm (No. 27-A Receiver)
- MR-2-G Receiver Cord — 36"
- 6596 Hook (No. 27-A, "No. 30 Receiver)

* When complete receiver is wanted the present No. 30 Capsule Type should be specified as follows:

- 801593 (30) Receiver less cord
- 801594 (30-A) Receiver with Cord

Stromberg-Carlson



Telephones

FOR COMMON BATTERY SERVICE

DESK TYPE HANDSET TELEPHONES

The Handset Telephone of today is the result of years of patient development and improvement. It has progressed from the bulky appearance and noisy transmission qualities of its early predecessor to a beautiful, compact instrument. It has fewer, more rugged parts, and extremely fine, quiet transmission and reception. It is low in both first cost and in maintenance expense — truly a piece of equipment to gladden the heart of subscribers and equipment superintendents alike.

No effort has been spared to make this series of Stromberg-Carlson Telephones efficient, reliable, and easy to maintain. Ample evidence of this can be seen in the quiet, dust-sealed dial, in the plunger switch with its optional "two step" operation feature, in the moisture sealed anti-side tone induction coil and capacitor assembly; in the dual, pleasant toned ringer, and in the new balanced handset.



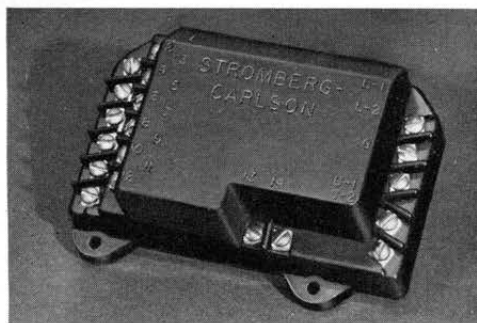
No. 1243-W Desk Type Handset Telephone With Stromberg-Carlson Dial

THE HOUSING consists of a single zinc die-casting which includes the handset cradle. This material was chosen because of its mechanical strength and its ability to take the smooth surface and sharply defined lines of the mold. Breakage under normal use is practically eliminated. It is finished with a synthetic baked enamel which compares favorably with the wear resisting qualities of solid plastic. A recess, below the cradle at the rear of the housing, forms a convenient handle by which the telephone may be moved. The clean sweeping lines of this instrument fit quietly into its normal surroundings.

NO. 61 TYPE STRAIGHT LINE AND NO. 62 TYPE HARMONIC RINGERS employed, are time and service tested, being of the same general construction which has met with universal approval in years past. Two-toned gongs produce a clear, penetrating signal, that commands attention. The ringer with gongs, is a single complete unit mounted on rubber to eliminate the clatter which is normally radiated from a solid mounting. The ringer is adjusted and tested separately from the instrument. This allows changes from one frequency to another to be made with the least amount of effort. The only tool required in substituting a ringer is a screw driver. Improvements to insulation and coil structure are the result of latest engineering development and practice, and the use of new thoroughly tested materials.

THE PLUNGER SWITCH provides a highly reliable means of controlling the telephone circuit. Plastic plunger rods, one at each end of the cradle, engage a hinged lever which operates the spring-pushing arm, regardless of how the handset is placed in the cradle. Reliability of contact operation is insured by the use of twin precious metal contacts on forked springs. The springs are reinforced with stiffeners, so that definite and permanent adjustments in tension can be made. Directly behind the plunger rods, a movable plunger switch handle is located, which is standard in all telephones of this type. It comes into play for special services.

THE NO. 200,595 COIL AND CAPACITOR ASSEMBLY streamlines and modernizes the interior of the 1243 Type Telephone. Both the induction coil and capacitor units are mounted in a single plastic housing which is filled with hydrolene, a tar-like compound. By this means the structure is rendered practically impervious to moisture, making it particularly suitable for use in hot, humid climates. Mounted at each end of the plastic housing are screw type terminals, plainly marked; which are used to terminate both the line and handset cords and the wiring from the induction coil and capacitors.



200595 Coil and Capacitor Assembly

Proper apportioning of the four windings of the induction coil and capacitances, together with the circuit arrangement in connection with the handset units, produce a superlative degree of transmitting and receiving efficiency with a negligible amount of side-tone.

The capacitors consist of two separate units, a 2.0 mf. capacitor for the talking circuit and a split 1.0 mf. capacitor (consisting of two .5 mf. units) for the ringing circuit. The capacitor units are embedded in the compound inside the case. By this method of assembly and treatment, the allowable working voltage at the capacitors and the operating safety factor has been brought to a high standard of excellence.

STROMBERG-CARLSON

DESK TYPE HANDSET TELEPHONES — (Cont.)

TWO-STEP OPERATION is an optional service. This feature may be added whenever desired. By taking advantage of this provision, only the receiver comes across the line in the first step, when the handset is removed from the cradle. This does not affect supervision or signalling at the central office.

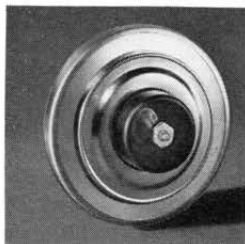
In the first step it is possible for a subscriber on a party line to "listen in" to determine if the line is already in use. Thus, in dial systems, the subscriber is warned not to mutilate dial pulsing already under way by another subscriber on the line. Conversation level will not be materially affected when a subscriber cuts in on a line already in use. If the line is busy the telephone may be returned to normal by replacing the handset in the cradle.

The second step is accomplished by pressing the plunger marked "Push to Dial or Talk," which brings the transmitter into circuit for normal talking or dialing operation.

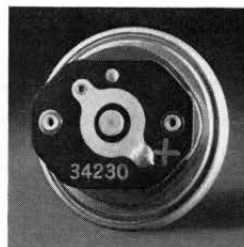
This movable plunger-switch two-step feature may be obtained by ordering the telephone under the code number for two-step operation of any standard telephone of the 1240 or 1250 series.

NO. 202346 PACKAGE ASSEMBLY contains the necessary parts and complete instructions for changing these telephones from standard to two-step hookswitch operation.

THE 200486 TRANSMITTER is patterned after those used with previous handsets, which have gained well deserved recognition in the telephone field. High in fidelity and unusually good on long and short lines, reproducing the voice naturally in any position in which it is held, it retains the clear articulation demanded by modern telephone practice. Spring pressure contacts in the transmitter compartment enable the transmitter to be dropped in position and to make reliable connections when the mouthpiece is screwed into position.



200486 Transmitter



34230 Receiver

THE 34230 RECEIVER used in the code 23 Type Handset was designed especially for handset use. It is of the capsule type and provides a smoother, less resonant, frequency response characteristic than any previous Stromberg-Carlson receiver. Improved articulation is secured by placing the resonance peak at approximately 2000 cycles per second, while at the same time introducing sufficient damping. When mounted in the handset, two circular contacts engage two spring points, no matter in which position it is placed. This assures positive circuit contacts under spring pressure as soon as the earcap is screwed down.

THE NO. 23-W TYPE HANDSET is well balanced in appearance because the general contour of the transmitter and receiver is similar. The handle of the handset, mouthpiece and earcap are made of tough molded material. All connections are made through spring contacts which are securely fastened to inserts molded into the handle. Both the receiver and transmitter are complete capsule units, so designed that they are simply placed in their respective compartments and clamped tightly in place by the earcap or the mouthpiece. No centering or wire connections are necessary. The No. 23-W Handset is equipped with standard waterproof cord which has an external braid of black mercerized cotton.



Interior View of 1243-W Handset Desk Telephone

THE BASE PLATE of this instrument, of heavy gauge aluminum, mounts all equipment of the telephone except the plunger switch and the dial. The base plate is fastened to the housing by necked screws. Four replaceable grommet type rubber feet are forced into slotted openings at each corner of the flat base. The feet are of an improved design so that they firmly grip the surface upon which the telephone rests, thus preventing mutilated impulses that could be caused by movement of the telephone when dialing. These feet also elevate the base sufficiently to allow the ringer signals to be plainly heard. On all types of Stromberg-Carlson telephones the code number and frequency of the ringer is clearly marked. This may be seen from the bottom, without removing the cover, and makes for positive identification in inventory.

Parts are easily accessible and readily interchanged when the housing is removed from the base. A screw driver is usually the only tool required for installing, replacing or adjusting the instrument. As indicated under separate descriptions, the same base used in this handset is also used in the 1250 Wall Telephone and the 1260 Desk Set Box.

THE BASE PLATES of the desk and wall types are interchangeable and their component parts are identical. Dials may be added or removed as occasion requires. These features make for a versatility and flexibility that reduces to a minimum the necessary stock of parts and telephones.

DURATEX CORDS are of the moisture-proof type with black braided covering. The conductors used have polyvinyl insulation which withstands the bad effects of humid damp climates. A more complete description of these cords is given in Section G of this catalogue.

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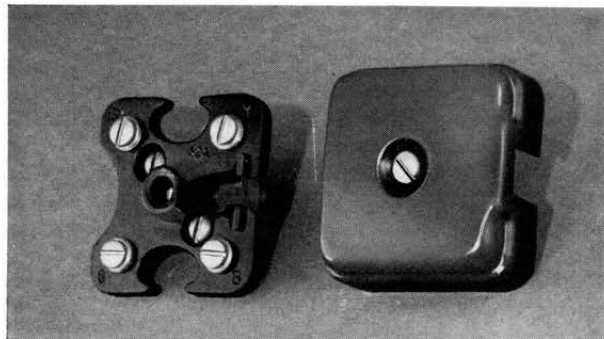
DESK TYPE HANDSET TELEPHONES — (Cont.)

WIRING for the telephone is a cable protected by a braided binding. The conductors are insulated with extruded polyvinyl and the identifying colors that are used will retain their brilliancy indefinitely. Separate cables are used to connect the hookswitch and dial circuits to complete the streamlined appearance.

The dial portion of the cable is provided only when dial equipped telephone is ordered. The telephone circuit is anti-side-tone, arranged so that either bridged or divided circuit ringing may be used. The use of the self contained capacitor, induction coil and terminal assembly has simplified wiring as well as maintenance.

SPECIAL PROVISIONS have been made for mounting the Vincent Rare Gas Relay 202723 or Western Electric Co.'s No. 333-A Tube 37029. Under certain grounded line ringing conditions, these units are employed to isolate the ground from the ringer circuit, except while generator current is applied. Package Assembly 35825 is available for mounting the Vincent Rare Gas Relay used in tuned frequency ringing systems; while Package Assembly 35827 is available for mounting the Western Electric Tube employed in superimposed ringing systems, used principally in exchanges with Western Electric systems. Mounting space is provided for installation of a varistor to offset clicks in the receiver when required. Thus the 1243 and 1250 Type Telephones are universal in their application to common battery lines.

DIAL MOUNTING space is covered by a plastic molded part when the telephone is to be used in manually operated systems. It is readily removable when the dial is added. When dials are ordered separately, specify the code number of the telephone in which they are to be used so that the proper dial cable may be provided. See section describing Stromberg-Carlson dials.



No. 16-A Terminal Block

NO. 205106 TERMINAL BLOCK, with removable screw-type cover and base of molded plastic material is also furnished with each telephone.

GENERAL NOTES:

The new desk type handset telephones have the same general appearance as the replaced No. 1223 and 1224 models. Internally, they have been improved with simplified wiring and greater accessibility of parts. They may be grouped as follows according to the types of service required:

NO. 1243-W TYPE — A complete self-contained telephone for any type of common battery service.

NO. 1244-W TYPE — Used with a desk set box to make a two-piece sub-station set. Does not have induction coil, capacitor, nor ringer. This Telephone may be used for either common battery or magneto service.

NO. 1247 TYPE — A complete self-contained telephone similar to No. 1243-W, arranged for local battery talking and common battery signalling, for use on long common battery rural lines. The design requires the use of an additional induction coil.

1. These telephones are equipped with handset and line cords of waterproof construction covered with black mercerized cotton braid. Terminal blocks are included with all self-contained desk type instruments.

2. All telephones are equipped with dial blanks unless otherwise specified, or unless ordered with dials.

3. The No. 1243-W Type telephone may be used on lines arranged for metallic or divided circuit ringing. Straight line ringers are equipped with biasing springs. No. 1243-WS telephones are especially arranged for service on long common battery rural lines.

4. No. 1244-W telephones may be used for common battery service with desk set boxes having anti-side tone circuits such as No. 1230 and 1260 type or No. 1217 and 1218 type chime boxes. Also, for magneto service, with No. 1180 and 1268 magneto desk set boxes.

5. Both the No. 1243-W desk and No. 1250-W Wall Type Handset Telephones have the necessary wiring and mounting facilities for installing the Vincent Rare Gas Relay or Western Electric No. 333-A Tube.

For Vincent Relay — Add V to Code Number as
1243 — WHV (Extra charge).

For W.E. 333A-Tube — Add T to Code Number as
1243 — WHT (Extra charge).

DESK TYPE HANDSET TELEPHONES — (Cont.)

STOCK AND CODE NUMBERS OF TELEPHONES

Metallic and Divided Circuit Ringing

Regular Instruments

Two-step Instruments

Straight Line

Stock No.	Code	Description of Ringer	Stock No. of Ringer	Code	Stock No.	Code
803548	(1243-WA)	1800 Ohms,	801911	(61-A)	48193	(2-1243-WA)
803549	(1243-WS)	4850 Ohms,	801912	(61-S)	48194	(2-1243-WS)

Standard Harmonic

Stock No.	Code	Description of Ringer	Stock No. of Ringer	Code	Stock No.	Code
†803537	(1243-WE)	16 $\frac{3}{4}$ Cyc. 4th Pty.	803475	(62-E)	†48182	(2-1243-WE)
†803538	(1243-WF)	33 $\frac{1}{2}$ Cyc. 1st Pty.	803476	(62-F)	†48183	(2-1243-WF)
†803539	(1243-WG)	50 Cyc. 2nd Pty.	803477	(62-G)	†48184	(2-1243-WG)
†803541	(1243-WH)	66 $\frac{2}{3}$ Cyc. 3rd Pty.	803479	(62-H)	†48186	(2-1243-WH)
803542	(1243-WN)	25 Cyc. 5th Pty.	803480	(62-N)	48187	(2-1243-WN)

†Used with rotary multi-cycle ringing machines or converters.

Other Tuned Frequencies

Stock No.	Code	Description of Ringer	Stock No. of Ringer	Code	Stock No.	Code
‡803543	(1243-WK)	30 Cyc. 1st Pty.	803481	(62-K)	‡48188	(2-1243-WK)
‡803544	(1243-WL)	42 Cyc. 2nd Pty.	803482	(62-L)	‡48189	(2-1243-WL)
‡803545	(1243-WM)	54 Cyc. 3rd Pty.	803483	(62-M)	‡48190	(2-1243-WM)
‡803546	(1243-WP)	66 Cyc. 4th Pty.	803484	(62-P)	‡48191	(2-1243-WP)
‡803547	(1243-WR)	16 Cyc. 5th Pty.	803485	(62-R)	‡48192	(2-1243-WR)
803536	(1243-WI)	20 Cyc.	803474	(62-I)	48181	(2-1243-WI)
803540	(1243-WJ)	60 Cyc.	803478	(62-J)	48185	(2-1243-WJ)

‡(For converter operation only)

SPECIAL GROUP

Stock No.	Code	Ringer	Induction Coil	Condenser	Use
*803521	(1243-W)	None	Yes	Yes	For common battery service as extension set.
201650	(1244-B)	None	Yes	None	With No. 327 Desk Set Box.
201139	(1244-P)	None	None	None	Operator's Tel. Set for No. 121 and No. 104 Cordless Switchboard.
201377	(1244-W)	None	None	None	No. 1180 and 1268 Magneto Desk Set Boxes.
					No. 1230 and 1260 Common Battery Desk Set Boxes.
*Two Step Type — 48134	(2-1243-W)				Handset Telephone.

DIAL SERVICE

Ordinarily, telephones are furnished with a plastic cover over the dial opening and without dial cables. Dials, however, may be easily added in service or, when specified, they will be put on telephones at the factory. See section on Dials on pages 30a and 31a.

DESK TYPE HANDSET TELEPHONES — (Cont.)



1247 Handset Desk Telephone
Less Dial

Parts of No. 1243-W, 1244-W and 1247 Handset Telephones

Used Commonly Unless Otherwise Specified

Stock No.	Description
32883	Housing (Die-Casting)
35809	Base Plate
41563	Screws (2) (Housing to plate)
35808	Feet (4)
35709	Dial Blank (Plastic)
28479	Card
25404	Protector
23766	Cap
33234	Screws (3) Bracket
32889	Rod (Handle)

Hookswitch Parts

42158	Complete Spring Combination — Consisting of —	
35804	Bracket	28246 Spring Asm.
204877	Lever	28248 Spring Asm.
32957	Stiffener (2)	204884 Spring Asm.
502752	Screw (2)	13820 Insulation (8)
525122	Nut (2)	204882 Bushing (2)
204881	Plate (2)	204879 Pusher
32890	Rod	204880 Plunger Spring

Line Cords and Terminal Block

803490	(WD-3-J), 6' Cord (1243-W, 1247)
201374	(WD-4-G), 6'6" Cord (1244-W)
205106	Terminal Block

No. 1247 Desk Type Handset Telephone For Long Common Battery Rural Lines

The No. 1247 is a self-contained desk type telephone with a common battery signalling and local battery talking circuit for greater efficiency on long common battery rural lines.

The No. 1247 Telephone uses the same housing, handset piece and all other parts as the No. 1243 Type and, in addition, a separate No. 45-A Induction Coil in the local battery talk-circuit.

Dial Service

The No. 1247 Telephone, like the No. 1243, is furnished with a dial blank unless a dial is specified. See page 30a for Dials.

Hand Set Parts

Stock No.	Description
803486	(23-W) Handset with Waterproof Cord (1243W-1244W)
202237	(24-W) Handset with Waterproof Cord (1247W)
803552	Cord (Blk) WC-3-J, 3 Cond. Used with 23-W Handset
202235	Cord (Blk) WC-4-J, 4 Cond. Used with 24-W Handset
203397	Molded Handle, 3 Cond. 34230 Receiver (Capsule)
203398	Molded Handle, 4 Cond. 32863 Mouthpiece
200486	Transmitter (Capsule) 32864 Ear Cap

Ringer Parts (No. 1243-W and 1247 Only)

801911	(61-A) Ringer — 1800 Ohms Less Gongs (S. L. Bias)
	No. 62 Type Ringer (Harmonic and tuned)
25869	Gong } Pair 28433 Screws (2) Gongs
25870	Gong } 526281 Washers (2) Screws

For other ringer parts see No. 61 and 62 Ringers

Induction Coil and Capacitor

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

Rare Gas Relay and Ringing Tube

35825	Package Assembly (Vincent Relay)
35827	Package Assembly (W. E. No. 333-A Tube)

Dial Cables

35861	Dial Cable (1243-W, 1247)
37002	Dial Cable (1244-W)
200703	Dial Cable (5 Conductor)

STOCK AND CODE NUMBERS OF TELEPHONES

Metallic and Divided Circuit Ringing

Straight Line

Stock Code No.	Ringer Description	Stock Code No. of Ringer
200641 (1247-A)	1800 Ohms, St. Line	801911 (61-A)
200642 (1247-S)	4850 Ohms, St. Line	801912 (61-S)

Standard Harmonic

Stock Code No.	Frequency (Cycles)	Stock Code No. of Ringer
200630 (1247-E)	16 $\frac{2}{3}$ — 4th Party	803475 (62-E)
200631 (1247-F)	33 $\frac{1}{3}$ — 1st Party	803476 (62-F)
200632 (1247-G)	50 — 2nd Party	803477 (62-G)
200634 (1247-H)	66 $\frac{2}{3}$ — 3rd Party	803479 (62-H)
200635 (1247-N)	25 — 5th Party	803480 (62-N)

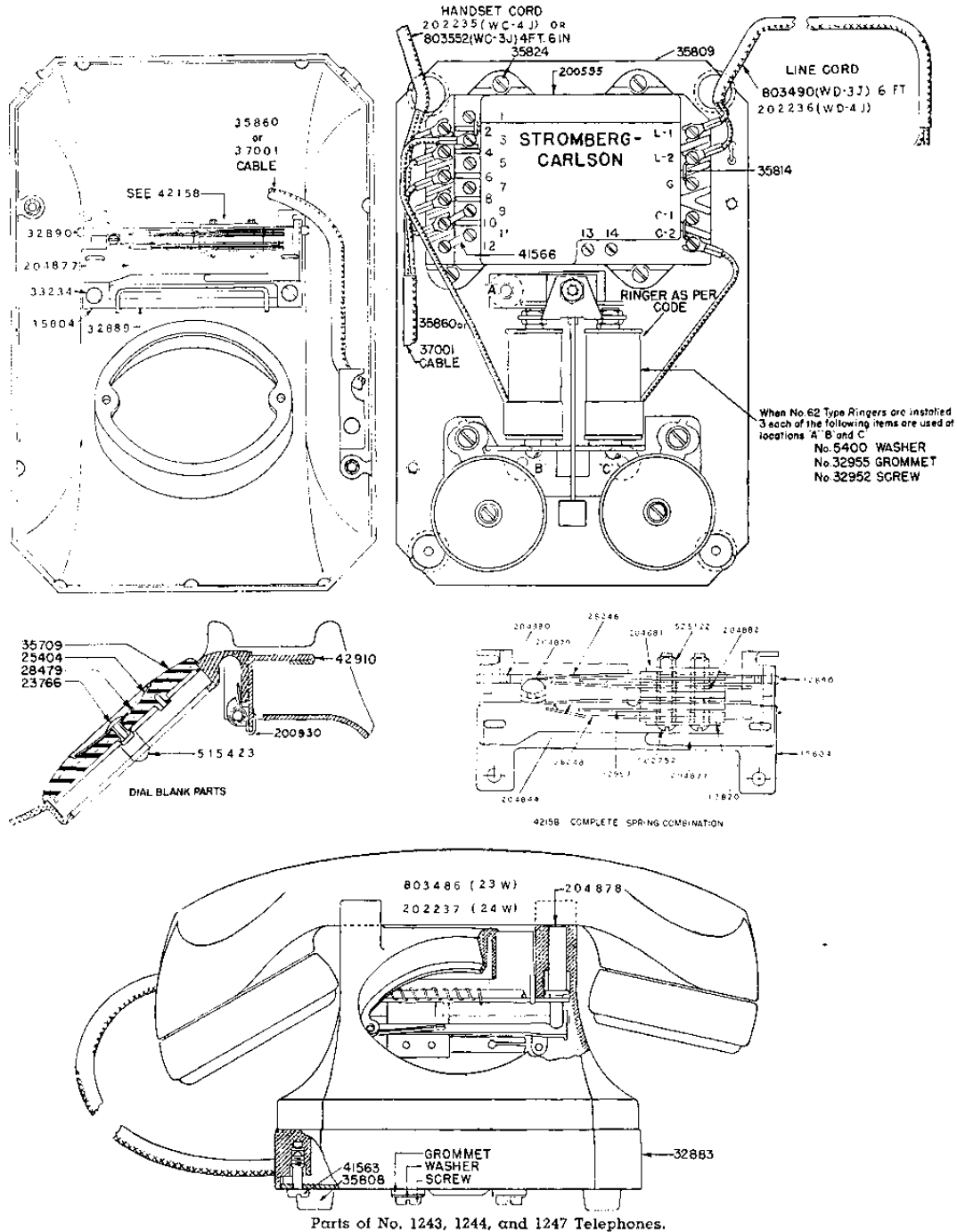
Other Tuned Frequencies

Stock Code No.	Frequency (Cycles)	Stock Code No. of Ringer
200636 (1247-K)	30 Cyc. 1st Party	803481 (62-K)
200637 (1247-L)	42 Cyc. 2nd Party	803482 (62-L)
200638 (1247-M)	54 Cyc. 3rd Party	803483 (62-M)
200639 (1247-P)	66 Cyc. 4th Party	803484 (62-P)
200640 (1247-R)	16 Cyc. 5th Party	803485 (62-R)
200629 (1247-I)	20 Cycle	803474 (62-I)
200633 (1247-J)	60 Cycle	803478 (62-J)

For Rare Gas Relay and Ringing Tube the following letters should be added to the last letter of the Telephone Code Number —

"V" for Vincent Rare Gas Relay (35825 Pkg. Assemb.)
"T" for W.E. No. 333-A Tube (35827 Pkg. Assemb.)

DESK TYPE HANDSET TELEPHONES — (Cont.)



Versatility

One of the most important features in design of these telephones is ease of conversion from the desk type telephones to the wall type telephones.

The mechanical construction of the base is exactly the same for the 1243 Desk Telephone, the 1250 Wall Telephone and the 1260 Desk Set Box.

This standardization effects real economy for the operating company by holding stocks of various types to a minimum.

For example, a No. 1243 self-contained Desk Type Telephone may be converted to a No. 1250 Wall Type Handset Telephone by merely replacing the housing and a few minor parts. When ordering these parts from the factory, Package No. 201349 should be specified.

Convenience, reliability and beauty of design are outstanding in these modern instruments.

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WALL TYPE HANDSET TELEPHONES



No. 1250 Telephone With Dial

THE HOUSING is of black plastic which retains its lustrous finish indefinitely. When not in use, the handset rests in a cradle molded into the upper portion of the outer case. Its contour fits the general lines of the design to present a pleasing over-all appearance.

THE PLUNGER SWITCH has the same characteristics and construction as the switch described under Handset Desk Tele-

phones. The customer's parts requirements may be held to a minimum because of the interchangeability of this item.

A STAMPED METAL BASE identical to the one used with the desk set and desk set box, mounts the equipment as shown in the line drawing. The base is fastened to the wall by screws which are inserted through the holes at the center of the feet. The feet elevate the base from the wall sufficiently to allow the dispersion of sound produced by the ringer signal.

THE RINGER used is the No. 61 or No. 62 type equipped with two toned gongs of different thicknesses, giving a pleasing response which commands attention when the telephone is signalled.

No. 23 HANDSETS are used with the No. 1250 Wall Telephones. Both receiver and transmitter are of the capsule type which are readily replaced, as a complete unit, when necessary. See detailed description under No. 1240 Type Desk Handset Telephones. **CAPACITOR AND INDUCTION COIL ASSEMBLY** enclosed in a plastic case upon which the terminals for the telephone are mounted. This construction protects the units from changing atmospheric conditions and mechanical injury.

A DIAL may be installed readily in any No. 1250 Telephone. Standard telephones are equipped with blanks over the dial openings, unless dials are ordered with the instruments or unless the instruments are ordered less blanks. Dial cable required for converting manual telephones to dial is:

No. 35861 Cable for No. 1250-W and No. 2-1250W Telephones.

DIMENSIONS: 8 3/4" high with handset in cradle, base height 8 1/4", base width 5 3/4", base depth less handset 4 1/8", depth with handset in cradle 4 3/8".

NET WEIGHT: 5 1/4 lbs. Packed for domestic shipment 7 lbs. 12 oz.

STOCK AND CODE NUMBERS OF TELEPHONES

Metallic and Divided Circuit Ringing

Regular Instruments

Stock No.	Code
41929	(1250-WA)
41930	(1250-WS)

Description of Ringer
1800 Ohms., St. Line
4850 Ohms., St. Line

Straight Line

Stock No.	Code
801911	(61-A)
801912	(61-S)

Two-Step Instruments

Stock No.	Code
48221	(2-1250-WA)
48222	(2-1250-WS)

Standard Harmonic

Stock No.	Code
†41918	(1250-WE)
†41919	(1250-WF)
†41920	(1250-WG)
†41922	(1250-WH)
41923	(1250-WN)

Description of Ringer
16 2/3 Cyc. 4th Pty.
33 1/3 Cyc. 1st Pty.
50 Cyc. 2nd Pty.
66 2/3 Cyc. 3rd Pty.
25 Cyc. 5th Pty.

Stock No.	Code
803475	(62-E)
803476	(62-F)
803477	(62-G)
803479	(62-H)
803480	(62-N)

Stock No.	Code
†48210	(2-1250-WE)
†48211	(2-1250-WF)
†48212	(2-1250-WG)
†48214	(2-1250-WH)
48215	(2-1250-WN)

Other Tuned Frequencies

Stock No.	Code
41924	(1250-WK)
41925	(1250-WL)
41926	(1250-WM)
41927	(1250-WP)
41928	(1250-WR)
41917	(1250-WI)
41921	(1250-WJ)

Description of Ringer
30 Cyc. 1st Pty.
42 Cyc. 2nd Pty.
54 Cyc. 3rd Pty.
66 Cyc. 4th Pty.
16 Cyc. 5th Pty.
20 Cyc.
60 Cyc.

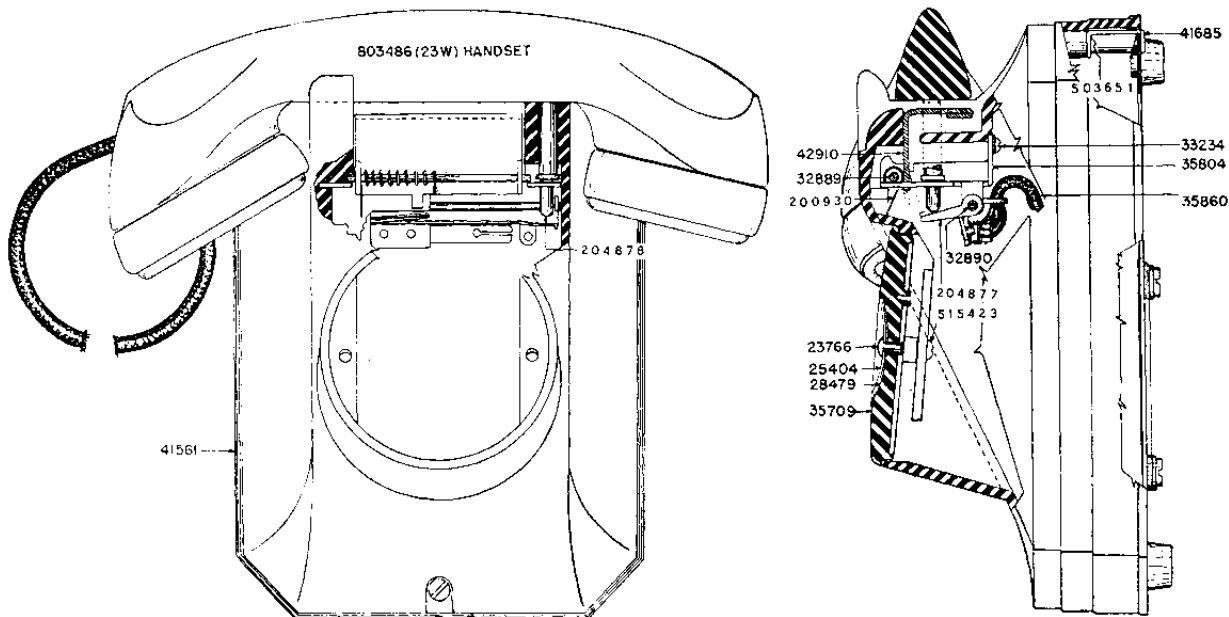
Stock No.	Code
803481	(62-K)
803482	(62-L)
803483	(62-M)
803484	(62-P)
803485	(62-R)
803474	(62-I)
803478	(62-J)

Stock No.	Code
48216	(2-1250-WK)
48217	(2-1250-WL)
48218	(2-1250-WM)
48219	(2-1250-WP)
48220	(2-1250-WR)
48209	(2-1250-WI)
48210	(2-1250-WJ)

†Used with rotary multi-cycle ringing machines or converters.

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WALL TYPE HANDSET TELEPHONES — (Cont.)



Parts of No. 1250-W Wall Type Telephone

Stock No.	Description
41561	Housing (Plastic)
35809	Base Plate
35808	Feet (4)
204878	Plunger Rods (2) Engage Lever
32890	Rod (Lever)
33234	Screws (3) Bracket
42910	Lever
32889	Rod (Handle)
204877	Lever (Plunger Switch)
41685	Bracket (Base)
503651	Screw (Base Mounting)
200930	Spring (Two Step Feature)

Hookswitch Parts

Stock No.	Description
42158	Complete Spring Combination For list of parts see Page 20a

Handset Parts

803486	(23-W) Handset with waterproof Cord
803552	Cord (Black) WC-3-J, 4'6"
203397	Handle (Molded)
200486	Transmitter (Capsule)
32863	Mouthpiece
34230	Receiver (Capsule)
32864	Ear Cap

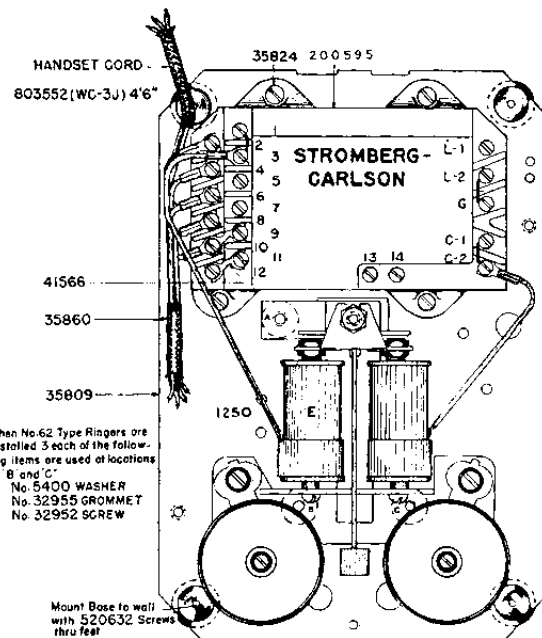
Ringer Parts

801911 (61-A)	Ringer (Less Gongs) 1800 Ohms S. L. Bias
801912 (61-S)	Ringer (Less Gongs) 4850 Ohms S. L. Bias
No. 62	Type Ringer (Harmonic and tuned)
25869	Gong
25870	Gong
28433	Screws (2) Gongs
526281	Washers (2) Screws

For harmonic frequencies and additional parts see No. 61 and 62 Type Ringers.

Induction Coil and Capacitor

200595	Ind. Coil-Cap. Unit (In plastic casing)
35824	Screws (4) to mount casing.



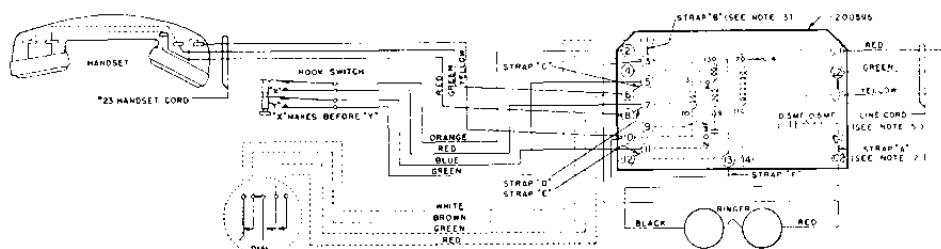
Dial Opening Cover

Stock No.	Description
35709	Dial Blank (Plastic)
28479	Card
25404	Protector
23766	Cap
35861	Dial Cable
35860	Instrument Cable
515423	Screw (Dial)

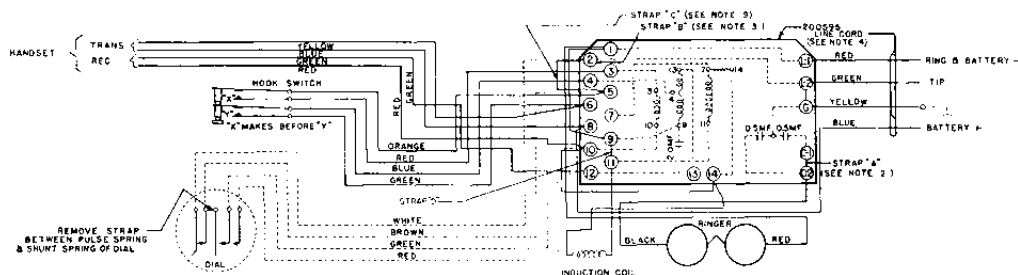
Optional Features

35825	Package Assembly (Vincent Rare Gas Relay)
35827	Package Assembly (W.E. No. 333-A Tube)

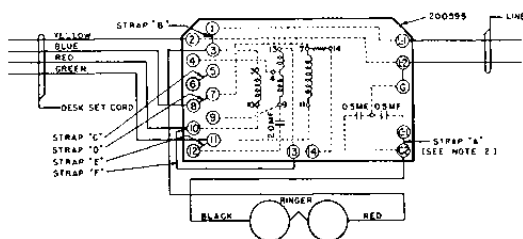
WIRING DIAGRAMS FOR TELEPHONES



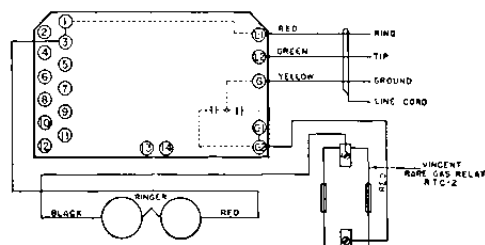
Bridged Ringing for 1243 and 1250 Telephones



Bridged Ringing for 1247 Telephones



Wiring for 1260 Desk Set Box



DESK TYPE HANDSET TELEPHONE NO. 1244 TWO-PIECE SET

THE 1244 HANDSET TELEPHONE is designed for use with the 1260 Ringer Type Desk Set Box or the 1217-A and 1218-A Chime Boxes to make a two-piece anti-sidetone common battery set. This telephone is exactly the same as the 1243 Telephone in die-cast housing and handset piece. The waterproof line cord, however, has four conductors whereas the 1243 is equipped with a three conductor cord.

The difference between the 1244 and 1243 Telephones is in the interior arrangement and wiring. In the 1244 the ringer and induction coil-capacitor unit are omitted because these parts are in present types of desk set boxes as well as in the following boxes of older types which may also be used:

For anti-sidetone circuits: 1156-A 1156-Ad 1167 ADF.

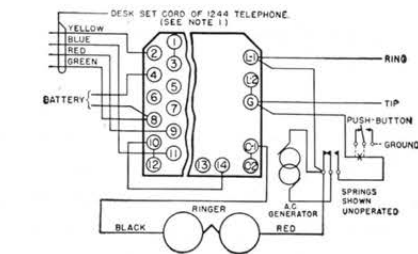
For booster circuit: 1156 and 1167.



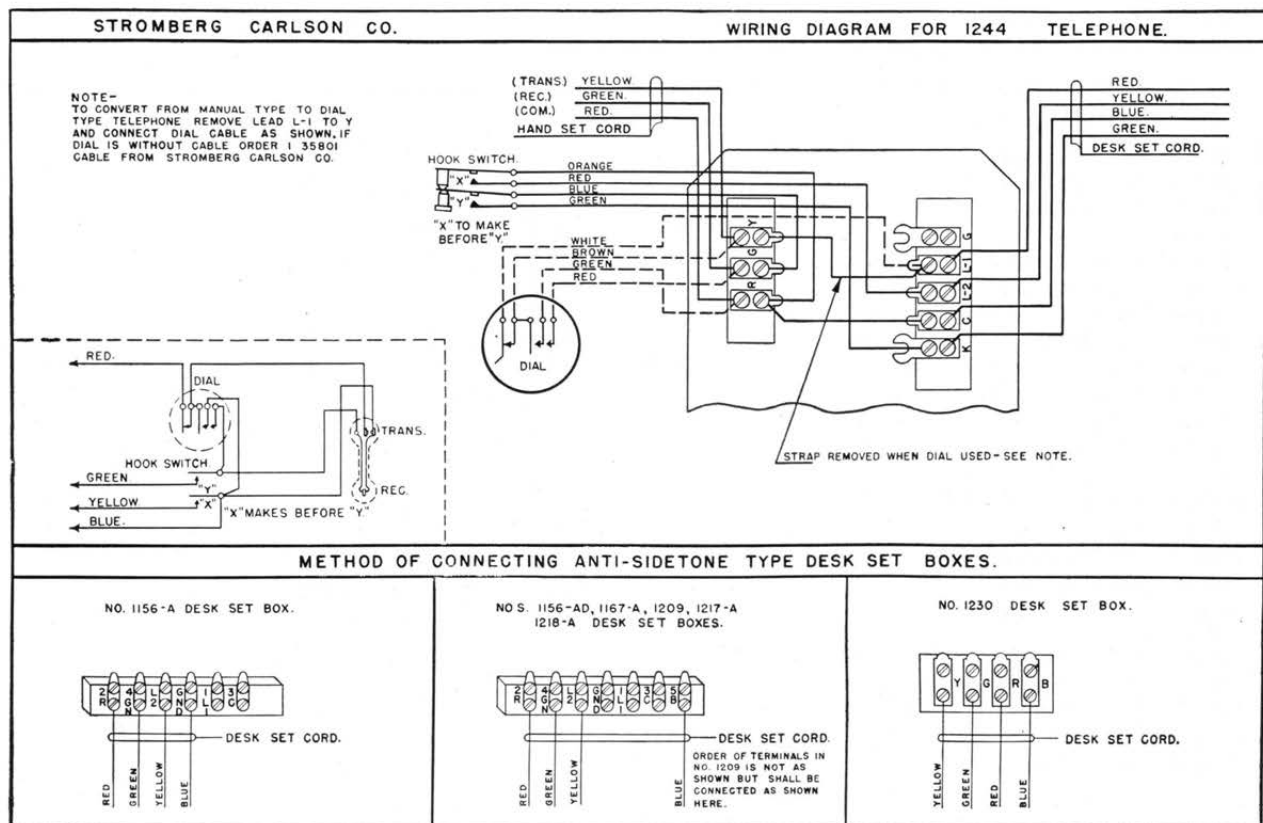
1244 Handset Desk Telephone

1244 Telephones may also be used with magneto desk set boxes which assures a saving when converting from magneto to dial or common battery service. Present day purchases become an investment for the future. For further information and code numbers see the section describing magneto telephones.

The diagram at the left shows the wiring and connections for the No. 1244 Telephone used for magneto service with the No. 1268 Desk Set Box. For more details see the preceding pages on magneto telephones.



No. 1244 Telephone with Magneto Desk Set Box

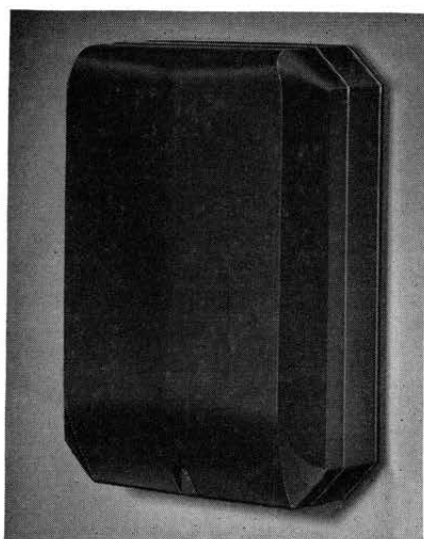


Wiring Diagrams and Circuit Arrangement of 1244 Type Telephones.

STROMBERG-CARLSON

Revised 2-15-50

DESK SET BOX



1260 Desk Set Box

THE NO. 1260 DESK SET BOX and accompanying telephone is a companion set of the No. 1243 and 1250 Handset Telephones, in a streamlined housing of black Plastic with a lustrous, durable finish. It may be used with the No. 1244 Desk Type or No. 1234 Suspended Handset Telephone to make an attractive and efficient two-piece set.

The base plates of all three sets are interchangeable and the same ringer and coil-capacitor assembly are used, together with identical parts for mounting this apparatus.

Parts of No. 1260-W Type Desk Set Box

Stock No.	Description
41562	Plastic Housing
41710	Retaining Screw
525033	Hexagon Nut
35809	Base Plate
41685	Bracket (Base Plate)
503651	Screw (Bracket)
35808	Feet (4) Base Plate
200595	Coil and Capacitor Assembly in plastic case
35824	Screws (4) Coil and Capacitor Assembly to base
35814	Connectors (3) Terminal block
41566	Connectors (4) Terminal block
35825	Mounting (Vincent Relay) Package Assembly
35827	Mounting (W.E. 333-A Tube) Package Assembly
202723	Vincent Rare Gas Relay
37029	W.E. 333-A Tube
521431	Wood Screws, Mtg. (4)
200787	Washers, Mtg. (4)

Code No.	Description
61-A	Ringer (Straight line (See ringers)
61-S	Ringer (Straight line (See ringers)
*62	Ringer (Harmonic (See ringers)

*See Coded Telephone List above for available frequencies and identifying numbers.

NOTE

For No. 1261 Desk Set Box used as an incoming trunk signal, see Convenience Systems in Section D.

STOCK AND CODE NUMBERS

Straight Line

Stock No.	Code	Description	Stock No.	Code	No. of Ringer
41723	(1260-A)	1800 Ohms, St. Line	801911	(61-A)	
41724	(1260-S)	4850 Ohms, St. Line	801192	(61-S)	

Standard Harmonic

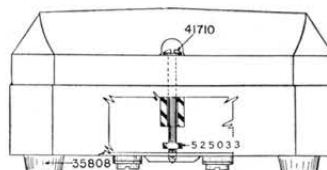
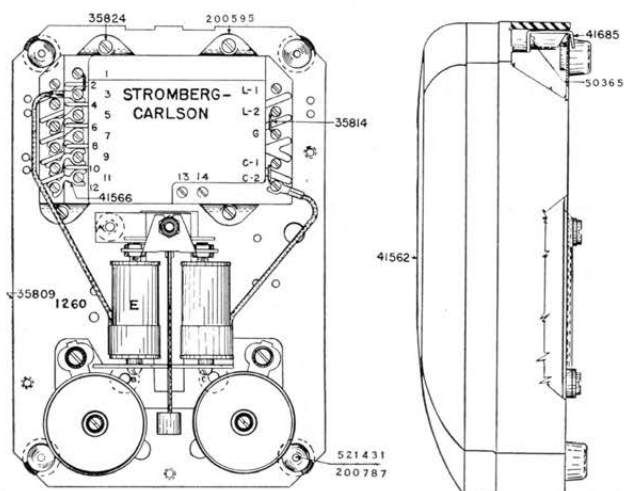
Stock No.	Code	Description	Stock No.	Code	No. of Ringer
†41712	(1260-E)	16 $\frac{2}{3}$ Cyc. 4th Pty.	803475	(62-E)	
†41713	(1260-F)	33 $\frac{1}{3}$ Cyc. 1st Pty.	803476	(62-F)	
†41714	(1260-G)	50 Cyc. 2nd Pty.	803477	(62-G)	
†41715	(1260-H)	66 $\frac{2}{3}$ Cyc. 3rd Pty.	803479	(62-H)	
41717	(1260-N)	25 Cyc. 5th Pty.	803480	(62-N)	

†Used with rotary multi-cycle ringing machines or converter.

Other Tuned Frequencies

Stock No.	Code	Description	Stock No.	Code	No. of Ringer
‡41718	(1260-K)	30 Cyc. 1st Pty.	803481	(62-K)	
‡41719	(1260-L)	42 Cyc. 2nd Pty.	803482	(62-L)	
‡41720	(1260-M)	54 Cyc. 3rd Pty.	803483	(62-M)	
‡41721	(1260-P)	66 Cyc. 4th Pty.	803484	(62-P)	
‡41722	(1260-R)	16 Cyc. 5th Pty.	803485	(62-R)	
41711	(1260-I)	20 Cyc.	803474	(62-I)	
41715	(1260-J)	60 Cyc.	803478	(62-J)	

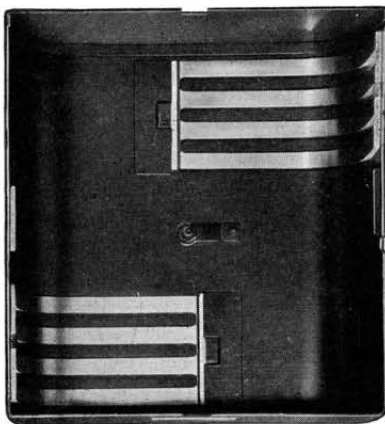
‡(for converter operation only)



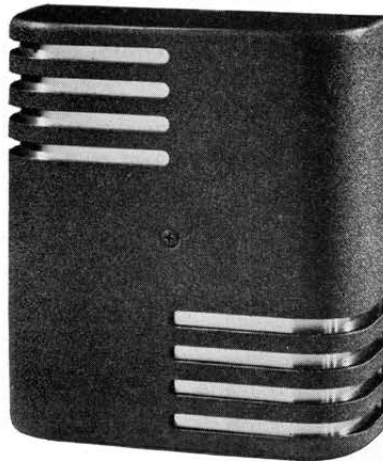
Parts Drawing of 1260 Desk Set Box

STROMBERG-CARLSON

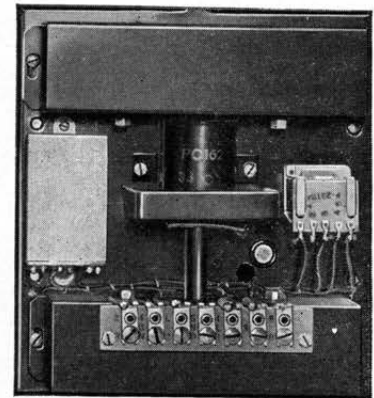
CHIME SIGNAL BOXES (Desk Set Boxes) (Anti-Side Tone)



Inside of Cover



Exterior



Interior — Showing Base

No. 1217-A Chime Signal Box

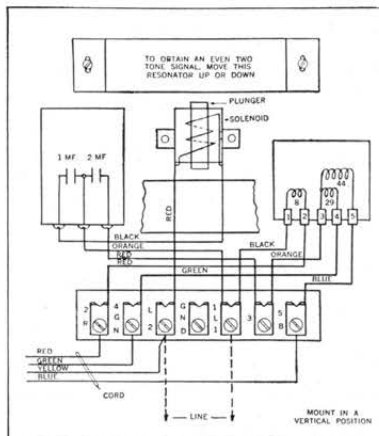
STROMBERG-CARLSON CHIME BELL BOXES were designed for subscribers who prefer signals having mellow musical tones instead of the ringing tones of the ordinary telephone. They fit in with the requirements of refinement and good taste.

The chime box is $7\frac{15}{16}$ " high by $7\frac{1}{4}$ " wide and is finished in black crackle with light finished guards behind open louvers. It may be used with any Stromberg-Carlson anti-side-tone telephone which has a separate bell box and which operates on straight line ringing. The chime box is not suitable for harmonic or other tuned frequency ringing.

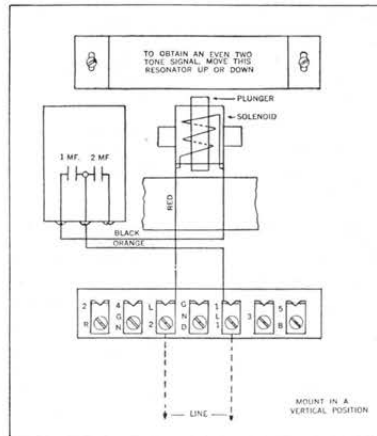
Standard chime boxes are equipped with one high and one low tone which alternate — one chime signal when ringing is impressed, and the other chime signal upon the release of the ringing current.

Assembly Parts

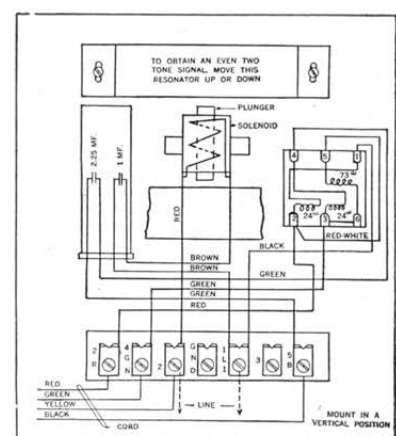
Stock No.	Code	Description	Used On
23124	(45-A)	Induction Coil	—No. 1217-A, 1218-A, B, C
28463		Condenser	—No. 1217-A, 1218-A, B, C
32943	(46-A)	Induction Coil	—No. 1219-A, B, C, 1220-A, B, C
33231		Condenser	—No. W-1218-A



Wiring Diagram of No. 1217-A and No. 1218-A Chime Signal Boxes



Wiring Diagram of No. 1220-A Chime Signal Box



Wiring Diagram of No. W-1218-A Chime Signal Box

STOCK NUMBERS OF CHIME BOXES

With Induction Coil				Less Induction Coil			
Stock No.	Code	Description	Tones	Stock No.	Code	Description	Tones
802321	(1217-A)	33 1/3	High and Low	802324	(1219-A)	33 1/3 Cycle	High and Low
802322	(1218-A)	16-20	High and Low	802934	(1219-B)	33 1/3 Cycle	Two Low
802914	(1218-B)	16-20	Two Low	802938	(1219-C)	33 1/3 Cycle	Two High
802916	(1218-C)	16-20	Two High	802325	(1220-A)	16-20 Cycle	High and Low
*802323	(W-1218-A)	16-20	High and Low	802941	(1220-B)	16-20 Cycle	Two High
*Used with W.E. anti-sidetone telephones with 4-Cond. line Cords.				802946	(1220-C)	16-20 Cycle	Two Low

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SUSPENDED TYPE HANDSET TELEPHONES WITH HOOKSWITCH BOXES



No. 1233 Telephone Desk Mounting Position

THE NOS. 1232, 1233 AND 1234 TYPE COMPACT HANDSET TELEPHONES are convenient instruments for a large number of uses, especially where space is at a premium. The No. 1232 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 to signal the extension. The No. 1233 is a complete self-contained instrument which uses an A. C. Buzzer to provide the signal. The letter "M" affixed to the code number indicates telephone for manual operation. The code number less suffix letter denotes telephone arranged for dial.

MOUNTING—This type of instrument may be readily mounted at the end of a desk, on a column or in a restricted wall space. Drillings for attaching the mounting bracket allow the switchbox assembly to be mounted with the broad portion at the front or the narrow portion in this position, as shown in the illustration. The dial may be turned to any convenient angle by loosening one screw beneath the dial mounting bracket. When the screw is reset, it locks permanently into the position chosen.

SIGNAL—The No. 1232 and 1232-M Handset Extension Telephones make use of their associated main line telephone signals. The No. 1233 and No. 1233-M Telephones are equipped with high grade 1000 ohm miniature buzzers, which respond to straight line ringing current only (not tuned frequencies). They are particularly adaptable for offices where there are a number of desk installations in the same room. Each telephone has its own soft toned buzzer signal, thus avoiding the confusion occasioned by a number of bell signals. The No. 1234 and No. 1234-M Telephones are arranged to be used with standard desk set boxes and therefore do not have the induction coil, capacitor or buzzer installed in the switch box.

MAINTENANCE—By removing one screw at the bottom of the apparatus box, the case slips off the main assembly. This

exposes the terminals, hookswitch, induction coil buzzer and wiring for ready inspection.

TRANSMISSION AND RECEPTION are of the same high grade as that provided by standard wall and desk sets. The units used as the talking components are time tested and efficient products. The anti-side-tone characteristics make reception at the far end exceptionally quiet and pleasing to the listener. **FINISH**—The assembly box has a durable black wrinkle finish of baked enamel which harmonizes with the black satin finish of the handset itself. Attractive, compact and neat, it fits into the requirements of many installations where the more conventional instrument is less well adapted.

DIMENSIONS AND WEIGHT—Height over Dial and Handset 12 $\frac{3}{8}$ "; Height of equipment box 5 $\frac{3}{8}$ "; Depth 3 $\frac{1}{16}$ "; Width 2 $\frac{9}{16}$ "; Weight: 5 $\frac{1}{4}$ lbs. net.

Parts of No. 1232, 1233, 1234 Handset Telephones Suspended Wall Type

Stock No.	Description	Used No.
34517	Shell Assembly	1232, 1233, 1234
34518	Bracket (Shell)	1232, 1233, 1234
505355	Screw (Bracket)	1232, 1233, 1234
526044	Washer (Bracket)	1232, 1233, 1234
34512	Cover & Strap Assembly	1232, 1233, 1234
* 34991	Cover & Strap Assembly	1232-M, 1233-M, 1234-M
* 34989	Plate (Covers hole for Dial)	1232-M, 1233-M, 1234-M
* 31798	Screw (Dial Plate)	1232-M, 1233-M, 1234-M
19136	Hookswitch Assembly	1234
34522	Hookswitch Assembly	1232, 1233
24093	Hook (Hookswitch)	1232, 1233, 1234
38474	Mounting (Dial)	1232, 1233, 1234
34533	Screw (Dial Mounting)	1232, 1233, 1234
525620	Washer (Dial Mounting)	1232, 1233, 1234
35001	Cable (Dial)	1232, 1233
35002	Cable (Dial)	1234
32943 (46-A)	Induction Coil	1232, 1233
34524 (49)	Condenser	1233
34917 (50)	Condenser	1232
45304 (2-A)	Buzzer	1233
35009	Cord (Buzzer) 4 $\frac{1}{2}$ "	1233

*Manual Only (M)

Handset

Stock No.	Code	Description	Used No.
42906	(20-A)	Handset with Cord	1232, 1233, 1234
800617	(MC-3F)	4' 9" Cord (20-A Handset)	1232, 1233, 1234
†803486	(23-W)	Handset with W.P. Cord	1232, 1233, 1234
803552	(WC-3J)	4' 6" Cord (23-W Handset)	1232, 1233, 1234

†Equipped with black waterproof cord.

STOCK AND CODE NUMBERS

Manual Instruments

Stock No.	Code	Description
802372	(1232-M)	For Extension, (less D. S. Box)
45282	(1233-M)	Complete Telephone with Buzzer
*802976	(1234-M)	Telephone, requires D. S. Box.

Dial Instruments

with Dial Mtg., less Dial

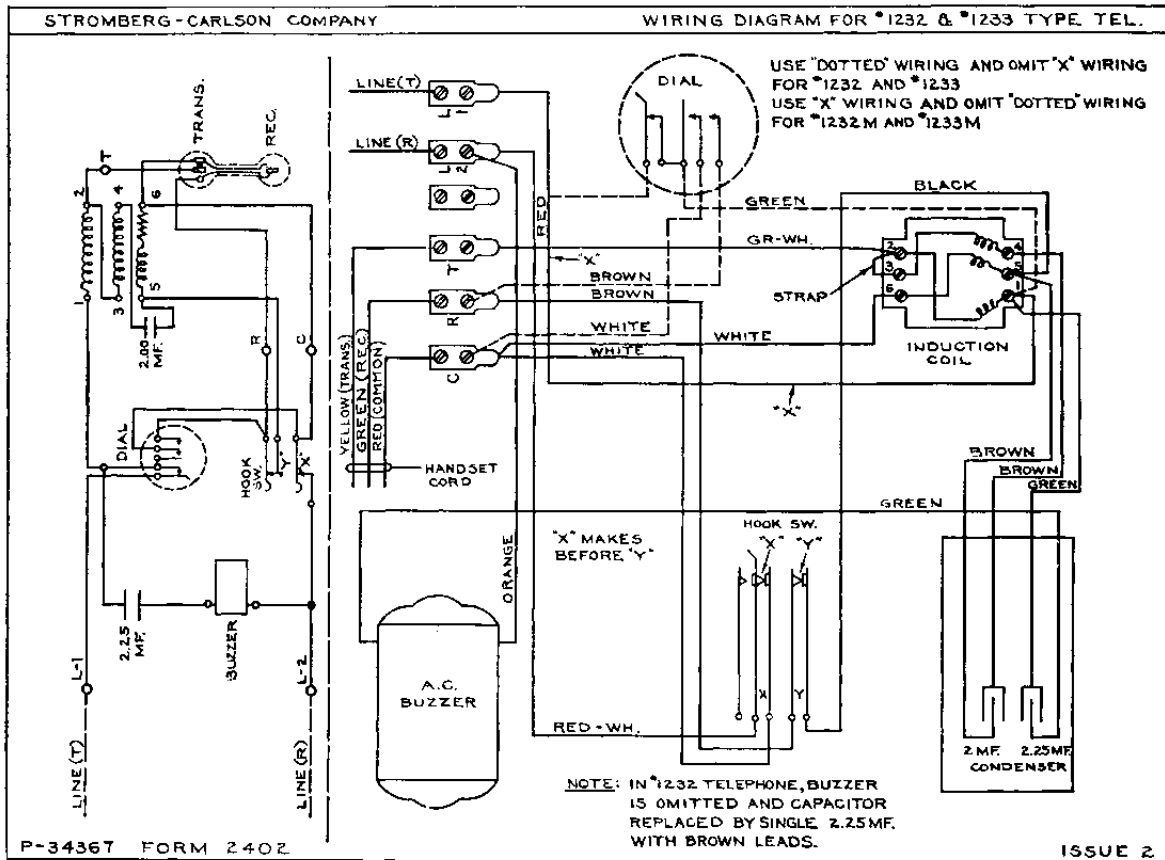
Stock No.	Code	Description
802373	(1232)	For Extension, (less D. S. Box)
802374	(1233)	Complete Telephone with Buzzer
*802963	(1234)	Telephone, requires D. S. Box.

*Desk Set Box for Common Battery Service is No. 1260.

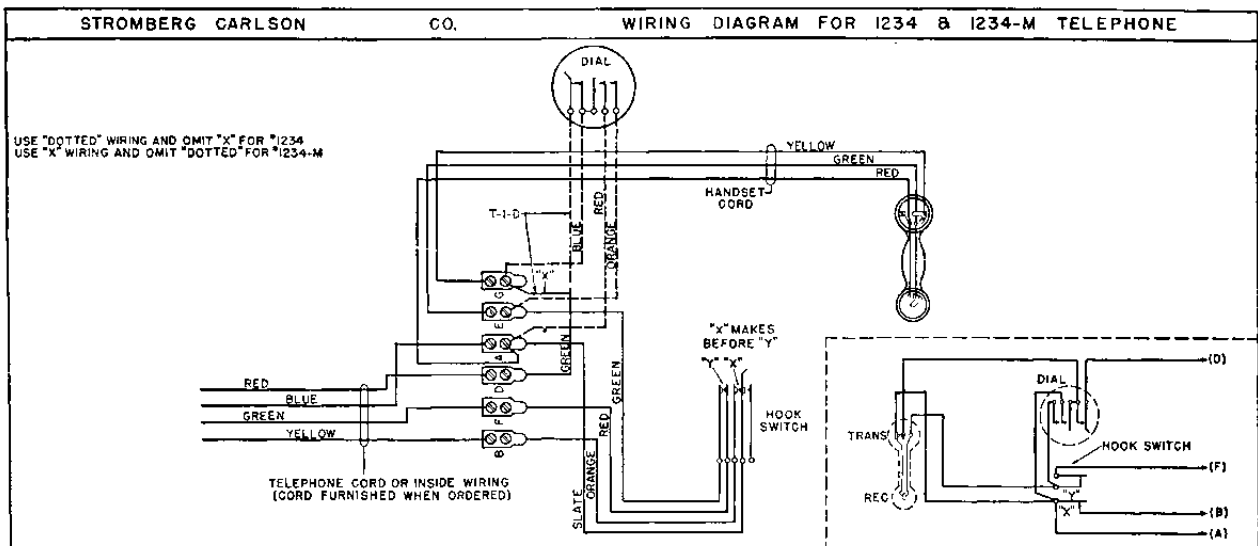
*Desk Set Box for Magneto Service is No. 1268-W.

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SUSPENDED TYPE HANDSET TELEPHONES (Cont.)



Circuit Diagram of No. 1232-33 Type Telephones



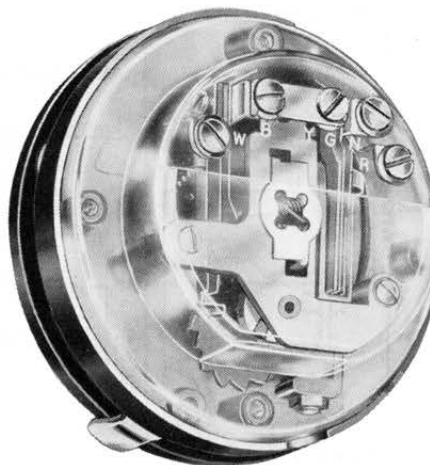
Circuit Diagram of 1234 Type Telephone

Revised 2-15-50

DIALS (C-Series)



Front View of Dial



Rear View Through Plastic Cover

Since their introduction as one of the first post-war products, the Stromberg-Carlson Dials have received enthusiastic approval from subscribers and maintenance men alike. One of the greatest contributions to subscriber satisfaction is its unusual quietness. The maintenance man will approve the transparent plastic dust cover with snap-on lid opening for ease in adjustment; the permanent alignment of all parts in the mechanism.

Laboratory tests, equivalent to many years of hard service, have proved conclusively that these dials will stand up in use.

DIALS — 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 is 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. A further design improvement locks the digit number plate 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 design improvement 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 in this latest design improvement, without removing the dial from the sub-set. An 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 now be done without disturbing any connections or mounting screws.

Adaptability

The Stromberg-Carlson dial size is standard for use on any American made telephone. With the terminals outside the plastic dust cover, connections for any telephone can be made quickly and easily.

Spring Combinations

Shown below are the spring combinations most commonly used. Shunt springs are illustrated in off-normal positions. Other types of spring combinations can be furnished when desired.

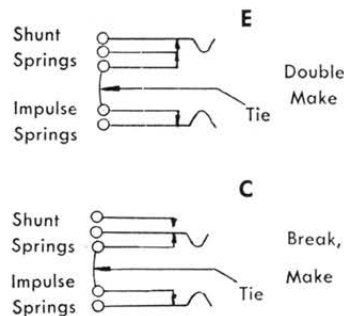


Diagram of Spring Combinations

SPRING COMBINATIONS shown are "E" (double-make), and "C" (break, make). 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 metal finger plate is standard with a black enamel finish. In the code number the black enamel fingerplate is indicated by "20."

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**DIALS (Con't.)
(C-Series)****Number Plates**

There are three standard number plate designs, as shown below. These are offered in aluminum colored polyvinyl. All number plates, as well as finger plates, are interchangeable respectively.

The number plates are fastened with a screw and two tabs which do not require bending, and are easily accessible from the front without disturbing anything but the finger plate.

Cables

Cables are required only when the telephone does not include wiring for dial. "4" indicates a four-conductor cable; "5" indicates a five conductor cable.

Station Card

The Station Card is standard and carries the code designation "4."



Number Plate 4
Numerals only 1 — 0 Black



Number Plate 5
Numerals 1 — 0 Black "Operator" over "0"



Number Plate 6
Numerals 1 — 0 Red "Operator" over "0"
Letters as shown in Black

DIAL ORDERING INFORMATION

Dials are coded in order to make it easy to specify the proper dial to fit your requirements. The following information is necessary, and should be used as in the example below.

- | | | | |
|-------------------------|---|----------------|---|
| First | character of code is the Series-letter of dial: "C" is the present series. | Fifth | character of code denotes which of the three number plates illustrated above is desired. |
| Second | character of code denotes the spring combination wanted: "E" and "C" are illustrated. | | Following the dash, the |
| Third and Fourth | characters of code denote the finger plate: 20 for standard black enamel. | Sixth | character denotes the number of conductors in the dial to sub-set cable: 4 conductors or 5. |
| | | Seventh | character, "4," denotes the standard station card. |

Example of Correct Order:

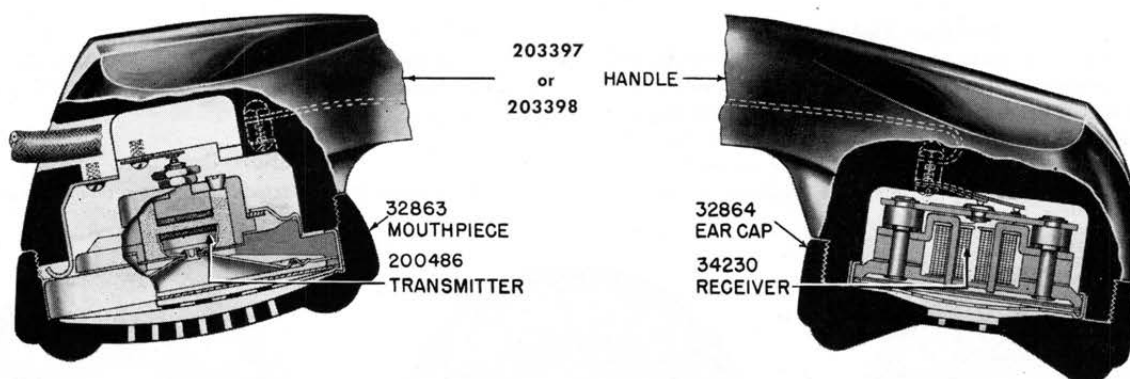
Present Series	Spring Combination	Finger Plate	Number Plate	Dash	Cable	Station Card	Description
C	E						Double-Make Combination
		20					Black Enamel Finger Plate
			4				1-0 Number Plate
				—			Dash
					4		4 Conductor Cable
						4	Std. Station Card

So that the ordering code of the above dial is CE 204-44

An attractive 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. Stromberg-Carlson is proud of this new addition to its line of the finest in telephone equipment.

Revised 2-15-50

HANDSETS (NO. 20 TYPE)



Handset Assemblies in the Code No. 20 Series are standard for use on present Stromberg-Carlson Telephones. They are well-balanced in appearance because the general contour of the transmitter and receiver is similar. The handle of the handset, mouthpiece and earcap are made of tough molded material. Connections are made through spring contacts which are securely fastened to inserts molded into the handle. Both the transmitter and receiver are complete capsule units, so designed that they may be placed in their respective compartments and clamped tightly in place by the earcap or the mouthpiece. No centering nor wire connections are necessary.

The 200486 Transmitter is patterned after those used with previous handsets, which have gained well-deserved recognition in the telephone field. High in fidelity and unusually good on long and short lines, reproducing the voice naturally in any position in which it is held, it retains the clear articulation demanded by modern telephone practice. Spring-pressure contacts in the transmitter compartment enable the transmitter to be dropped in position and to make reliable connections when the mouthpiece is screwed into position.

The 34230 Receiver was designed especially for handset use. It is of the capsule type and provides a smoother, less resonant response frequency characteristic. Improved articulation is secured by placing the resonance peak at approximately 2000 cycles per second, while at the same time introducing sufficient damping. When mounted in the handset, two circular contacts engage two spring points, no matter in which position it is placed. This assures positive circuit contacts under spring pressure as soon as the earcap is screwed down.

Parts of No. 20 Series Handsets

Stock No.	Code	Description
800618	(MC-3G) 4' 6"	Cord, No. 20 Handset
800622	(MC-4G) 4' 6"	Cord, No. 21 Handset
800613	(MC-2F) 4' 9"	Cord, No. 22-A Handset
800617	(MC-3F) 4' 9"	Cord, No. 20-A Handset
201497	(WC-4F) 4' 9"	Cord, No. 20-WA Handset
800621	(MC-4F) 4' 9"	Cord, No. 21-A Handset
800624	(WC-3F) 4' 9"	Cord, No. 21-W Handset
803551	(MC-3J) 4' 6"	Cord, No. 23 Handset
803552	(WC-3J) 4' 6"	Cord, No. 23-W Handset
202235	(WC-4J) 4' 6"	Cord, No. 24-W Handset
32864		Earcap for Receiver
203397		Handle for Handset (3 Cond)
203398		Handle for Handset (4 Cond)
32863		Mouthpiece for Transmitter
34230		Receiver, Capsule Unit
*200486		Transmitter, Unit

* This unit is interchangeable with the No. 24562 transmitter when used with No. 20 series handsets, but cannot be used on the No. 15, 16, and 17 handsets.

STOCK AND CODE NUMBERS OF HANDSETS

Handsets with "W" affixed to the code number, are equipped with waterproof cords which have an external braid of black mercerized cotton.

Stock Code No.	Cord Used	Type Telephone
803486 (23-W)	WC-3J, 4' 6"	1243-W, 1244-W, 1250-W
202237 (24-W)	WC-4J, 4' 6"	1247, 1248-W, 1258-W
201498 (21-W)	WC-4F, 4' 9"	D-2843-W
202037 (20-WA)	WC-3F, 4' 9"	1212-W

Molded Handle Assembly with wiring, capsule contacts and terminal screws.

Stock No.	Conductors	Handset
203397	3-Conductor	Nos. 20, 23, 20-W, 23-W
203398	4-Conductor	Nos. 21, 24, 21-W, 24-W

Handsets of older types were furnished with cords having an external braid of brown mercerized cotton. They are not waterproof.

Stock Code No.	Cord Used	Replaces	Type Telephone
801014 (20)	MC-3G, 4' 6"	No. 15	1222, 1223, 1224-A
42906 (20-A)	MC-3F, 4' 9"	No. 15	1191, 1195, 1197, 1201-C, 1202-10-11, 1212-15-16, 1232-33-34
801015 (21)	MC-4G, 4' 6"	No. 16	1222-T
42907 (21-A)	MC-4F, 4' 9"	No. 16	D-2843, 1192, 1207
42908 (22-A)	MC-2F, 4' 9"	No. 17	1201-A, 1201-B (Inter-Comm)
801017 (23)	MC-3J, 4' 6"	1243, 1244, 1250

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HANDSETS (Cont.)

Parts of Former Handsets

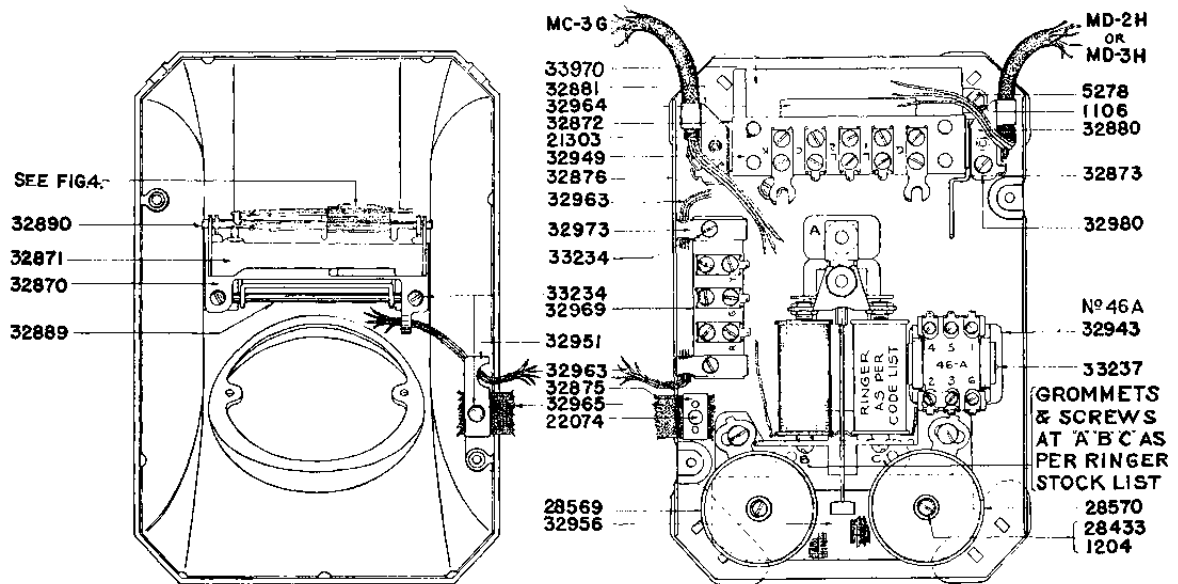
Parts for Stromberg-Carlson handsets that are no longer manufactured are available in many instances for the servicing of apparatus now in use. If these parts are ordered, it will be helpful to mention the apparatus, so that a substitution can be made if necessary.

Stock Code No.	Description
800617 (MC-3F), 4'9"	Cord used on No. 15 Handset
800621 (MC-4F), 4'9"	Cord used on No. 16 Handset
800613 (MC-2F), 4'9"	Cord used on No. 17 Handset

Stock No.	Description
66390	Clamping Collar
34364	Earcap for Receiver
34243	Diaphragm
22575	Handle of Handset
23166	Mouthpiece for Transmitter
34242	Receiver with Earcap
23165	Tension Ring
22580	Spring
24562	Transmitter Unit
23877 (No. 63)	Tool (Removing transmitter and receiver units)

FORMER TELEPHONE MODELS

Nos. 1222 and 1223 Handset Telephones
(No longer manufactured—Parts only are obtainable)



Line Drawing of No. 1222 and 1223 Telephones

Piece Parts of Nos. 1222, 1223, and 1224 Handset Telephones

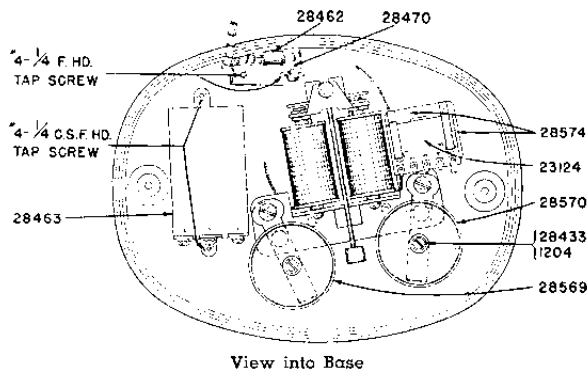
(Where these parts are interchangeable with new parts, substitution will be made at the factory)

Stock No.	Description	Stock No.	Description	Stock No.	Description
174	Screw, Dial Blk.	32842	Bushing, Spr. Comb.	32969	Terminal Strip
1106	Lock Washer, Cond. Mtg.	32870	Bracket, Spr. Comb.	32976	Screw, Grommet
1204	Lock Washer, SH. Pr.	32871	Lever	32978	Dial Blank
5278	Screw, Capacitor	32878	Grommet	33237	Screw, Dial
5400	Washer, Ringer Mtg.	32882	Plunger	33378	Stud, Spr. Comb.
13820	Insulation	32883	Housing, Telephone	33970	Capacitor (No. 48)
21437	Screw, Spr. Comb.	32889	Rod, Handle	34522	Complete Sw. Assem.
23766	Cap, Dial Blank	32890	Rod, Lever	28570	Gong
24727	Separator, Spr. Comb.	32943	Induction Coil (No. 46A)	28569	Gong
24731	Stud, Spr. Comb.	32949	Terminal Strip	6 x 3/8	Pk. R. H. Tap Screw
25404	Protector, Dial Blk.	32952	Screw, Grommet	MC-3G	4 1/2' Cord, Handset
28246	Spring Assembly	32953	Screw, Base	MD-2H	6' 0" Cord, Line 2 Cond.
28248	Spring Assembly	32954	Insulation, Lever Tip	MD-3H	6' 0" Cord, Line 3 Cond.
28433	Screw, Gong	32955	Grommet	MD-4G	6' 6" Cord, Line for No. 1224-A
28479	Card, Dial Blk.	32957	Stiffener, Spr. Comb.	60	Type Ringer, Harmonic
29961	Terminal Block	32959	Foot Assembly	61-A	Ringer, Straight Line

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FORMER TELEPHONE MODELS (Cont.) No. 1212-WAD



Parts of No. 1212-WAD

Stock No.	Code	Description
800607	(WD-3F)	6' 6" Line Cord
202037	(20-WA)	Handset
800624	(WC-3F)	4' 9" Handset Cord

Stock No.	Code	Description
28221		Base
34986		Base Screw
28509		Cable
28463		Condenser
205109		Cradle Package Assembly
28426		Cover Assembly, Base
28425		Cushion Rubber, Base
202329		Dial Blank
28569		Gong
28570		Gong
28433		Gong Screw
39264		Hookswitch Assembly
23124 (45-A)		Induction Coil
513033		Ind. Coil Screw
28424		Plunger, Hookswitch
28421		Plunger Spring
28575		Screw, Ringer Mtg.
39264		Hookswitch Spring Asm.
28470		Terminal Asm., Base
201339		Terminal Block, Line

STOCK AND CODE NUMBERS — 1212-WAD TELEPHONES

Telephone Stock No.	Code	Description	Ringer Stock No.	Code
201405	(1212-WADBZ)	Straight Line	801911	(61-A)

Harmonic Frequencies

Telephone Stock No.	Code	Description	Ringer Stock No.	Code
201406	(1212-WADE)	16 2/3 — 4th Party	801891	(59-E)
201407	(1212-WADF)	33 1/3 — 1st Party	801892	(59-F)
201408	(1212-WADG)	50 — 2nd Party	801893	(59-G)
201409	(1212-WADH)	66 2/3 — 3rd Party	801894	(59-H)
201410	(1212-WADN)	25 — 5th Party	801898	(59-N)

Other Tuned Frequencies

Telephone Stock No.	Code	Description	Ringer Stock No.	Code
201411	(1212 WADK)	30 Cy. 1st Party	801895	(59-K)
201412	(1212 WADL)	42 Cy. 2nd Party	801896	(59-L)
201413	(1212 WADM)	54 Cy. 3rd Party	801897	(59-M)
201414	(1212 WADP)	66 Cy. 4th Party	801899	(59-P)
201415	(1212 WADR)	16 Cy. 5th Party	801900	(59-R)

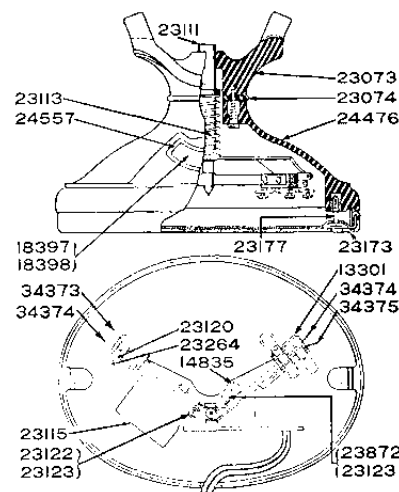
No. 1197 and 1198

(No longer manufactured—Parts only are obtainable)

Parts for No. 1197 and No. 1198 Telephone

Stock No.	Code	Description
24476		Base of 1197
23071		Base of 1198
800617	(MC-3F, 4' 9")	Cord used on 20-A Handset
800621	(MC-4F, 4' 9")	Cord used on 21-A Handset
800601	(MD-3G, 5' 3")	Cord used on 1197, 1198, 1207
44344	(MD-4G, 5' 3")	Cord used on 1198-A, 1197-B
800603	(MD-4G, 6' 6")	Cord used on 1197-A
23173		Cover, Bottom
42906	(20-A)	Handset, replaces No. 15
42907	(21-A)	Handset, replaces No. 16
25677		Induction Coil, 1207
23111		Plunger
23113		Plunger Spring
23609		Spring Assembly
34373		Spring Assembly (1)
34374		Spring Assembly (2)
34375		Spring Assembly (1)
23119		Terminal
23120		Terminal
23073		Cradle
23074		Collar

No. 1197 and No. 1198 Handset Telephones were formerly used with No. 1156 and No. 1230 Desk Set Boxes.



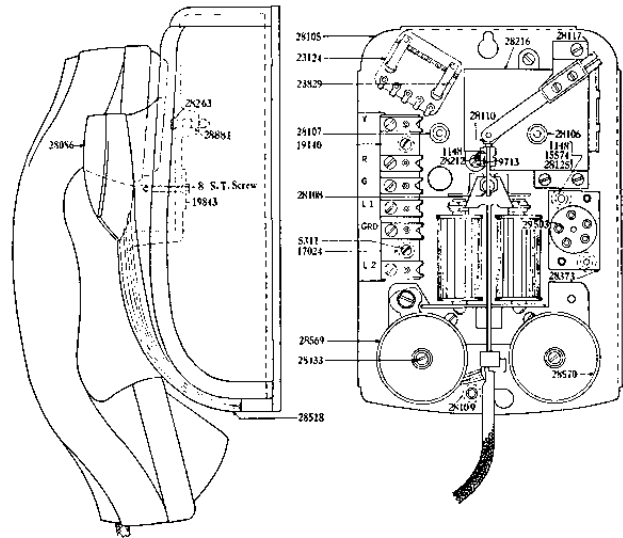
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FORMER TELEPHONE MODELS (Cont.)

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.



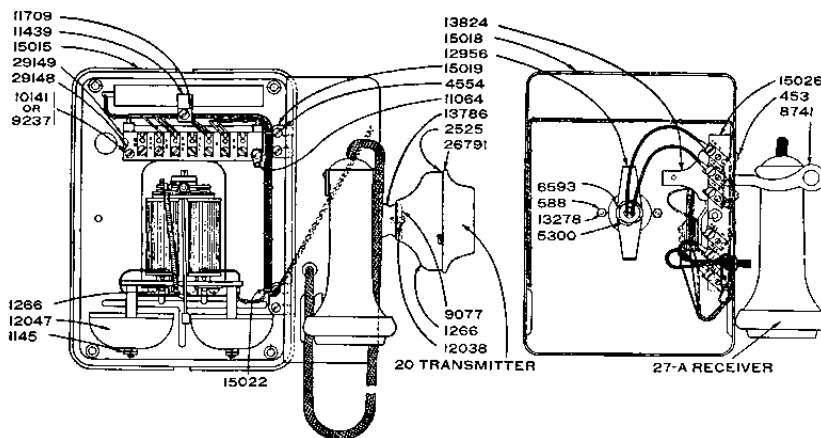
Stock No.	Description	Stock No.	Description
19140	Term. Strip	28505	Dial Case Cover
23124	Ind. Coil	28518	Case (1211)
35010	Comp. Hooksw. Asm.	28569	Gong
28086	Holder	28570	Gong
28108	Lever	28542	Cord with Plug
28373	Plug	29503	Plug
28476	Dial Case		

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)	* 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.		
32864		Earcap (No. 30-A Receiver)			
33179		Shell (No. 30-A Receiver)			
19725		Hook (Receiver)			

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

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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

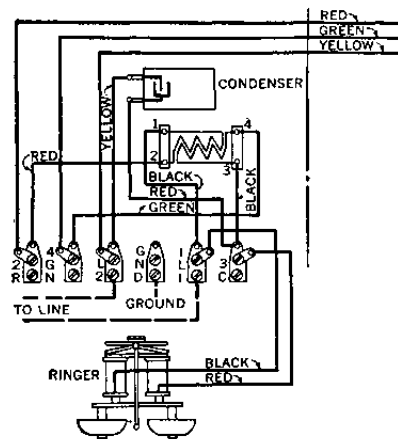
The No. 1156 Desk Set Box is also replaced by the No. 1260 which is standard.

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

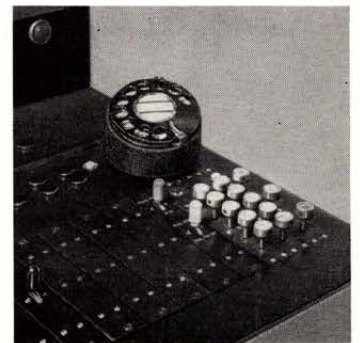
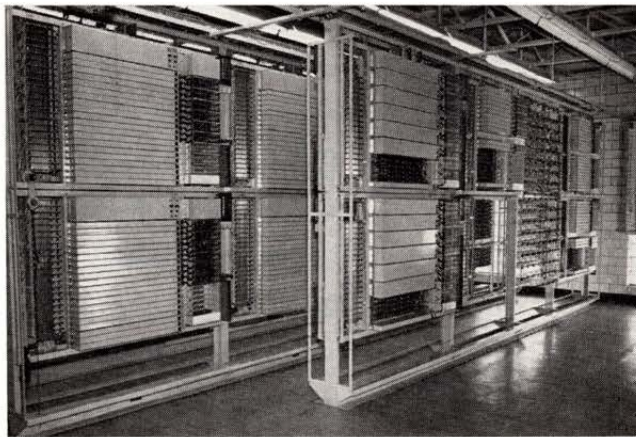
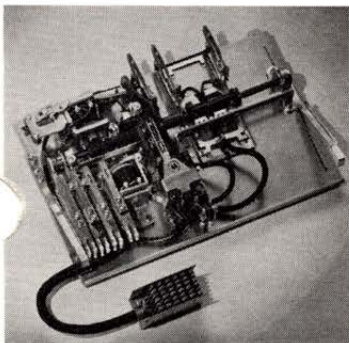
Divided Ringing — Booster Circuit

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.

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STROMBERG-CARLSON CENTRAL OFFICE EQUIPMENT

Flexibility

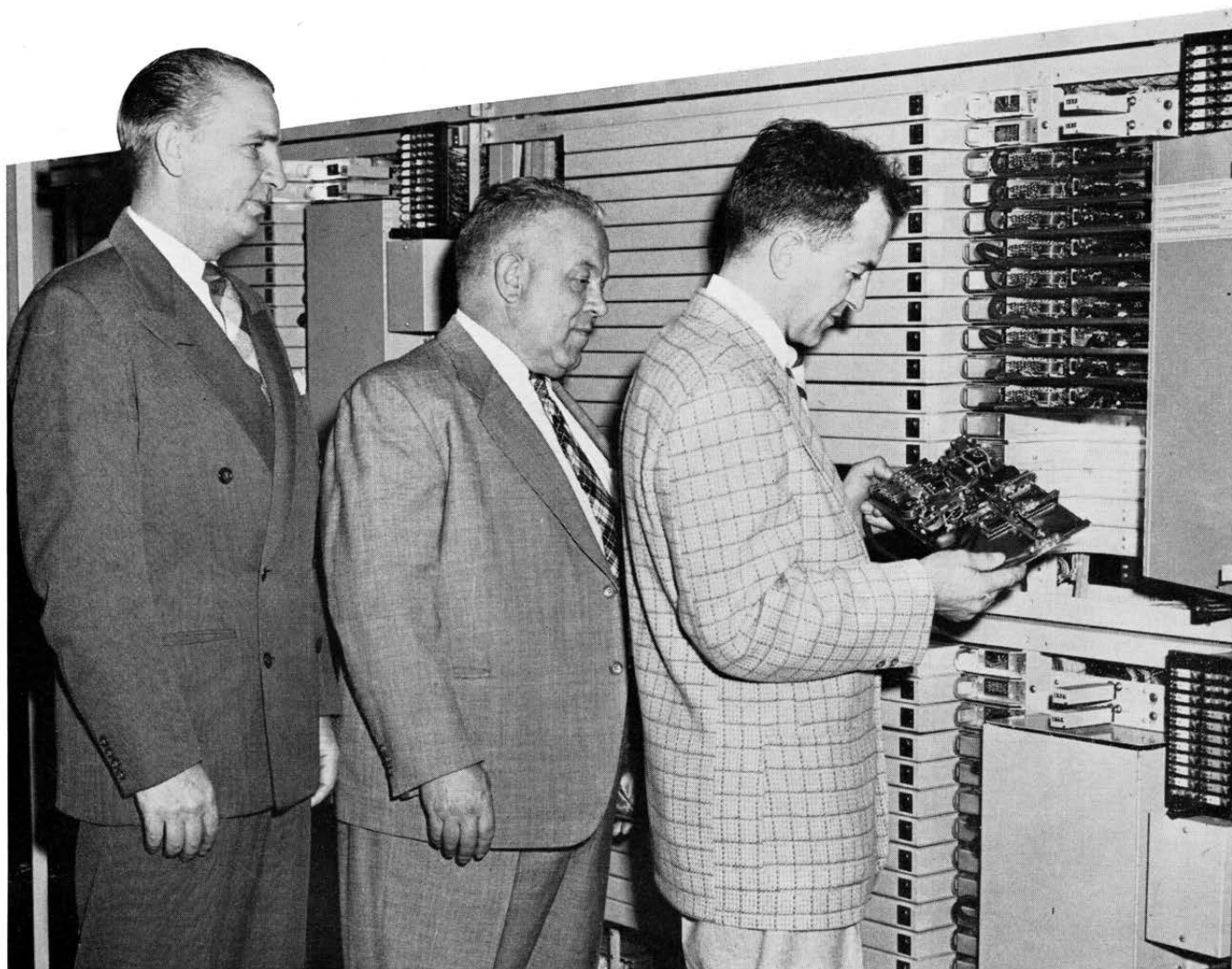
XY Dial Systems employ a universal switching mechanism serving in any capacity—line finder, selector or connector. Both switches and circuit plates are ready-for-use, jack-in-place units.

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.

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.



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 SWITCH SYSTEMS ARE MORE READILY ADAPTABLE** to large installations than an all-relay system.

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

3. **UNIVERSAL USE OF THE XY SWITCH.** The same switch can be used as a line finder, selector or connector.
4. **XY 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 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.

STROMBERG-CARLSON

Revised 1-3-55

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, synchromonic, 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 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.

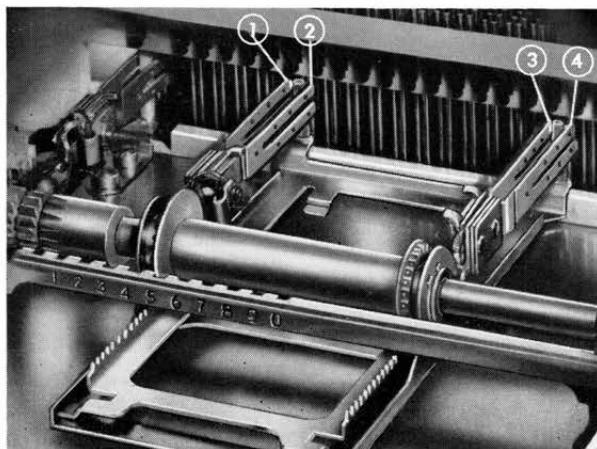
Dialing of the first digit sets the wipers of the first selector opposite the level (X motion) of the digit dialed, whereupon a hunting action (Y motion) takes place to locate a trunk to an idle second selector or to the next unit in the switch train. This procedure is repeated as the second digit is 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 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.

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



Wire (4) is the famous Fourth Wire which solves party-line and many other problems.

XY Switch in Wire Bank, after "x" travel

STROMBERG-CARLSON

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:

Line Finder 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 line finders 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.

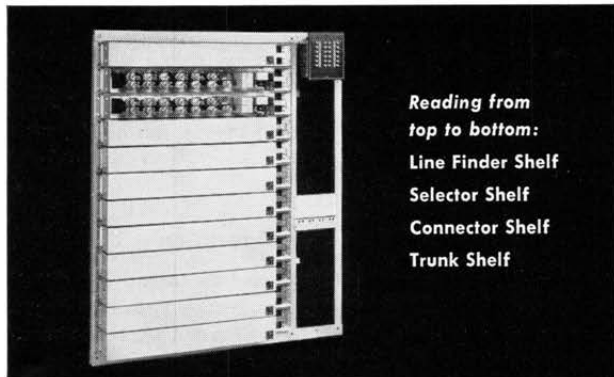
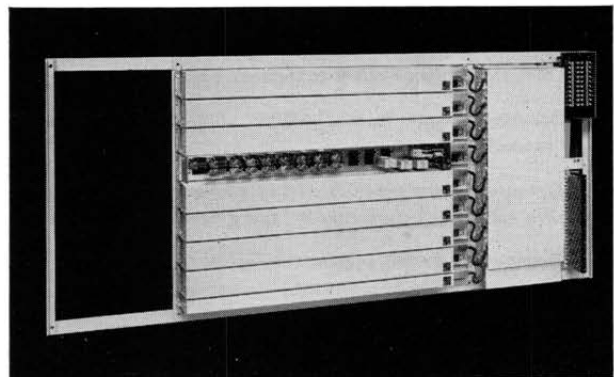
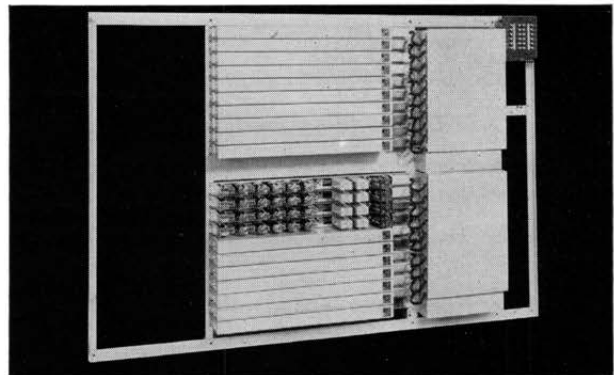
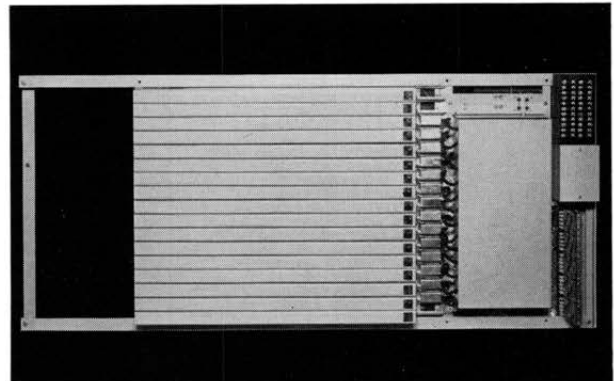
Each shelf has its own fuse panel, signal equipment and alarm lamps.

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

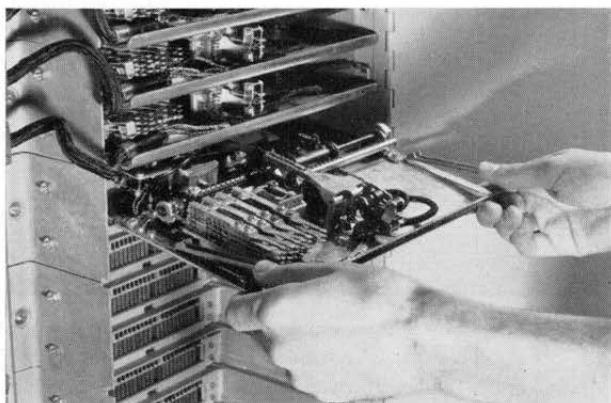
Trunk circuits, reverting call circuits and all miscellaneous circuits (pay station, information, intercepting, etc.) not requiring switches will be mounted on trunk shelves. These shelves are made in two standard sizes, one with a capacity for 20 mounting plates, and the other for 10 mounting plates. 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:*
Line Finder Shelf
Selector Shelf
Connector Shelf
Trunk Shelf

THE XY SWITCH

The XY 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 ($12\frac{1}{2} \times 1\frac{9}{16}$ 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 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 racked 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 'X' and 'XX' 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.

STROMBERG-CARLSON

THE XY 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 holding circuit is provided in conjunction with the off-normal contacts to lock 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 lock 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,

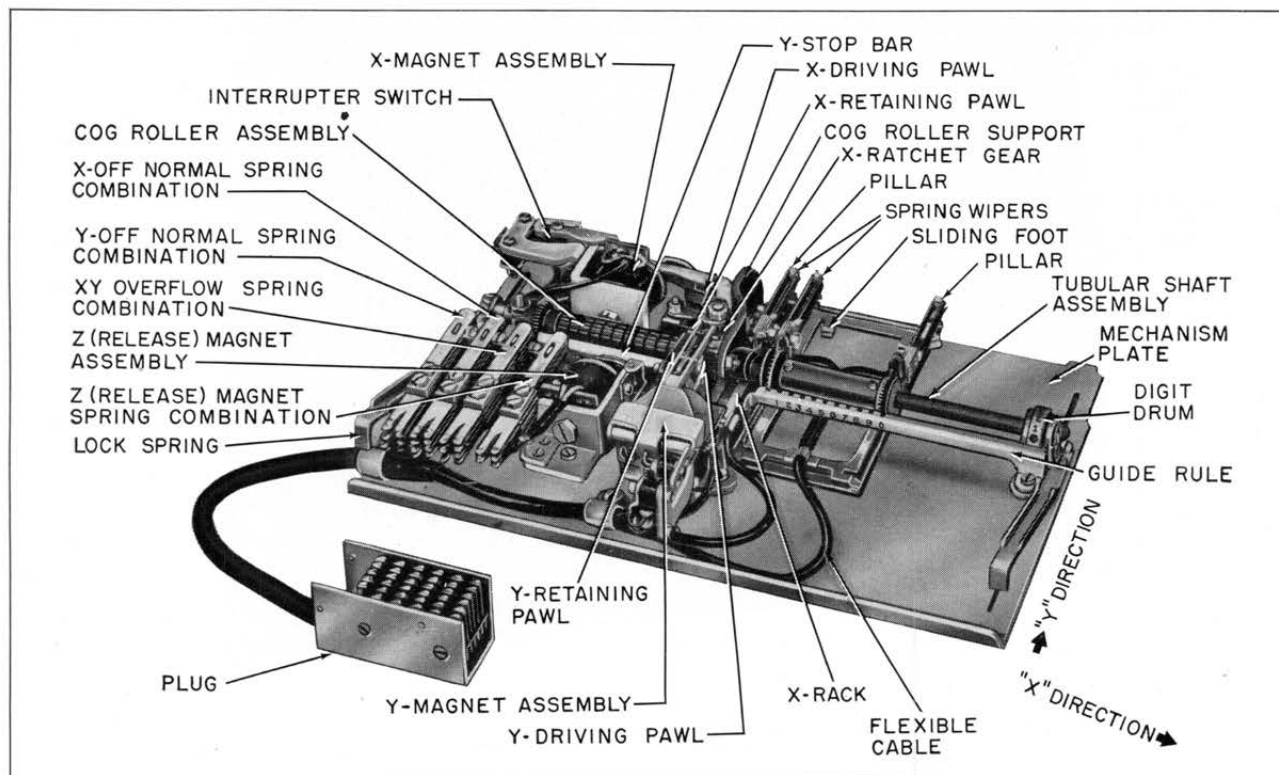
the switching lever is moved to the right hand limit of its travel, operating the toggle previously mentioned. This depresses the pusher spring of the overflow pile-up. This pusher spring may also be actuated by the cam mounted on the tubular shaft in event that the cog roller rotates to the 'Y' overflow 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 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. In the XY switch, Stromberg-Carlson offers a reliable, versatile, thoroughly tested instrument which the company is proud to include in its established line of the finest telephone products.

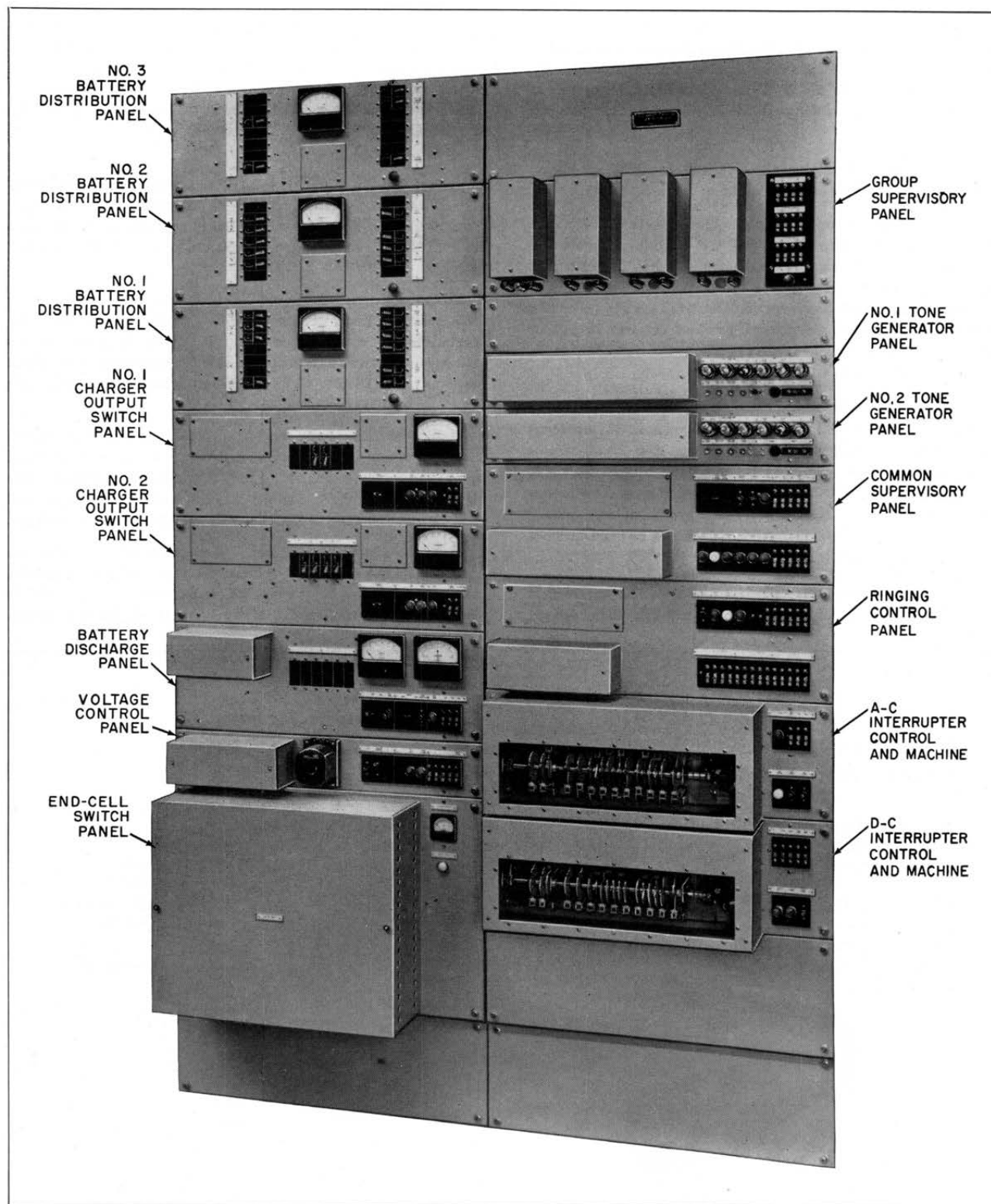


XY Switch Assembly

STROMBERG-CARLSON

8b • CENTRAL OFFICE EQUIPMENT

Revised 1-3-55



A Typical Power and Supervisory Panel

STROMBERG-CARLSON

POWER AND SUPERVISORY EQUIPMENT

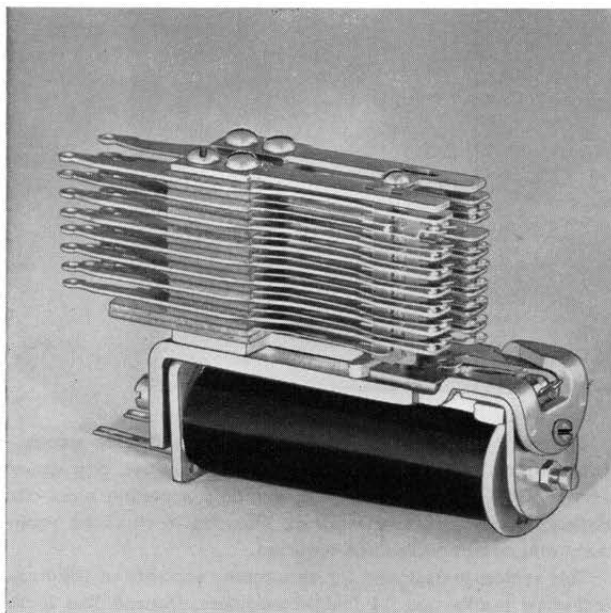
Stromberg-Carlson Power Boards match the switching equipment in appearance and complete flexibility. All controls are placed where they can be easily identified and operated. Panel wiring separates outside power source from local power. All connections between panels are by means of cable.

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.

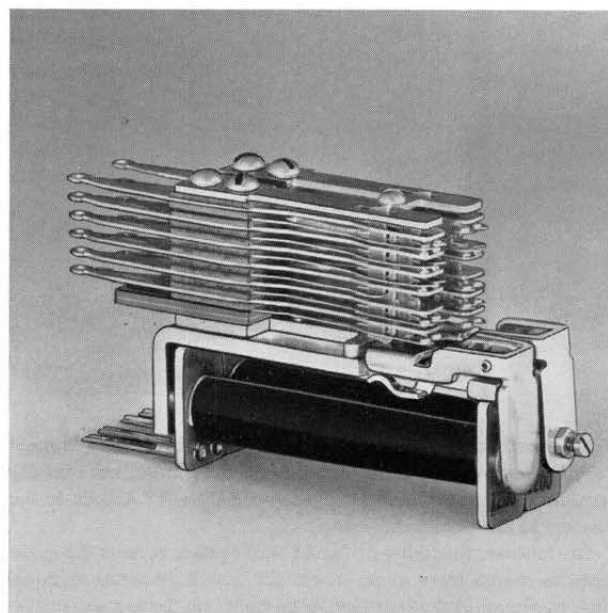
A AND C TYPE RELAYS



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

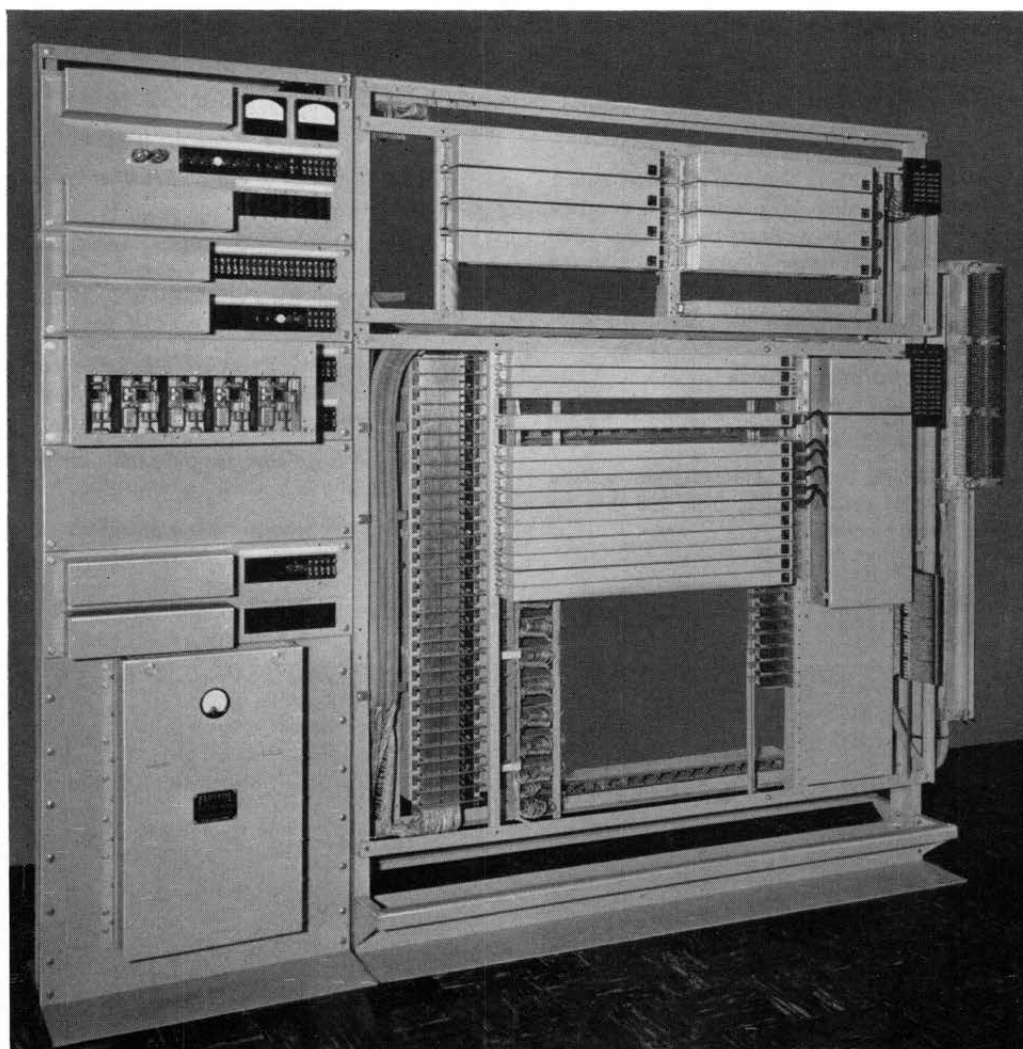
permits each moving spring to operate individually, assuring long life with very little spring adjustment. The spring combination can be unscrewed as a unit. Coils, with integral terminals, are easily removed.

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

Revised 1-3-55

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

XY TOLL TICKETING

XY Toll Ticketing can be tailored to specific problems of convenience and finance, and will be engineered for each specific application to yield the maximum operating economies. XY Toll Ticketing is automatic not only in its recording functions, but also in every step thereafter.

Stromberg-Carlson has two types of toll ticketing systems—the Verification Identifying "VID" and the Line Identifying "LID" systems. Both systems are compatible with any direct response dialing system. When desired, they will also conform with the 2-5 Numbering scheme established by the telephone operating companies to facilitate nation-wide toll dialing. In the "LID" system, line identification is automatically accomplished. Neither system is limited as to the type of permanent record that can be printed or punched. Both systems are able to store information on many calls and automatically play them back at a time when traffic is low, thus busy hour traffic is not affected.

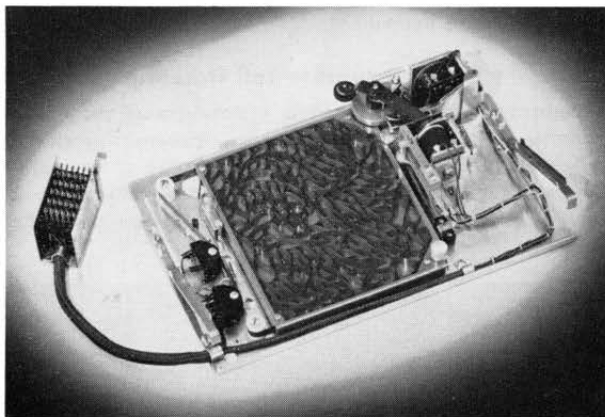
Both systems are high speed in operation thereby eliminating the need for duplication of many pieces of equipment. The recording, verifying or identifying, playback and ticketing equipment are completely flexible and can be arranged for the most economical means of equipping remote or central offices.

Types of Systems

The two systems, designated "VID," and "LID," differ largely in the manner by which the identity of the calling subscriber is determined. In the "VID" system which is the most economical to install, the calling subscriber identifies himself by dialing his own complete number in addition to the number of the desired station. In the "LID" system, part of the identification process is automatic and the subscriber dials only a single extra digit which distinguishes the station on a party line.

These two systems have been carefully engineered to permit conversion from one type to another, thus lessening the danger of obsolescence because of changing needs or conditions.

The Magnetic Tape Recorder



One of the important functions which must be performed automatically is the recording of pertinent call data so that charges can be made. The XY Trunk Recorder, shown above, is the mechanism which records this information. The Recorder looks very much like an XY Switch, mounts in the same manner, and uses many of the same parts.

The data is recorded on a magnetic tape which is in the form of an endless loop, approximately 35 feet long. Magnetic recording 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.

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

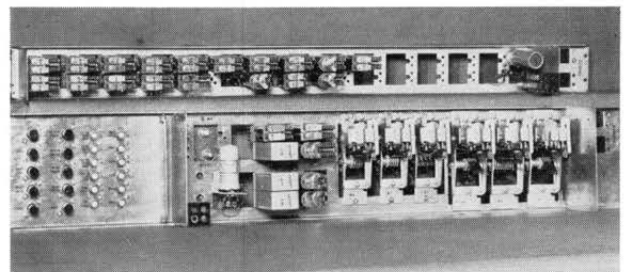
The lower half of the same head becomes energized upon release of the inter-digit relay. Magnetic impressions are made on the lower half of the tape, serving to separate the groups of "mark" pulses, and thus they are called "space" pulses.

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

Identification of Calling Party

In the "VID" system, once the subscriber has seized a trunk, he also seizes a Verification Selector. Under control of the dialed digits, this will seize a verifying Connector. The subscriber must dial his own number first, which is recorded. This number is checked through a verification train. If the call is verified, the subscriber is permitted to continue dialing. If the call is not verified, further dialing is blocked and a tone is returned to the calling subscriber.

In the "LID" system, the subscriber first dials his party digit and then the desired station number. Later, when the call is connected, identification takes place and the information recorded on the magnetic tape.



The Clock-Calendar Unit.

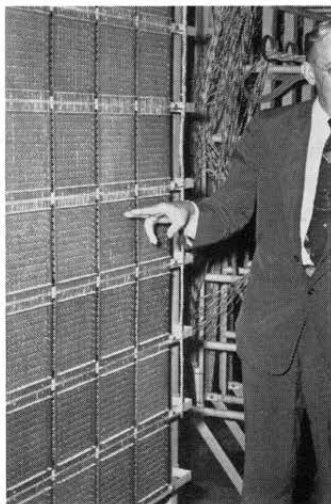
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XY TOLL TICKETING (Cont.)

The Playback Operation

It is unnecessary to produce tickets individually as each call is completed because of the large storage capacity of the XY Trunk Recorder. Under normal circumstances, the playback process will be initiated automatically at a time when trunk traffic is low. However, if traffic has been unusually high and the capacity of the recorder has been reached, playback will begin immediately in order to clear that trunk and restore it to service with a minimum of delay.

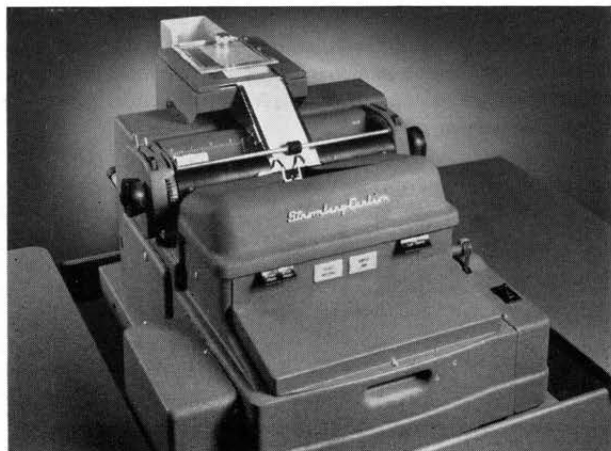


The Matrix Panel.

When initiated, the Playback Control Circuit will seize each idle trunk in rotation. The tapes are advanced by the common motor at a rate of speed that plays back one trunk in approximately 10 minutes. The information stored on the tape is printed on individual tickets, one at a time, under the direction of the Readout Control circuit. 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. With the tubes cleared, the tape advances and the process is repeated until all information on the tape is used. The tape is then erased.

The Ticket Printer

The apparatus that produces the printed tickets is similar to a standard electric typewriter. The tickets are printed on strip paper supplied by a spool having a 10,000 ticket capacity. A cutting and stacking unit forms part of the printer; this cuts the strip into standard-sized tickets and stacks them neatly in a bin.



The Ticket Printer.

Remote Operation

The XY trunk recorder is admirably suited to remote operation in unattended offices since no periodic attendance is required. At the same time, 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 ticketing 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 channels on an interrupted tone basis, thus making it unnecessary to provide any special circuits in most cases. Carrier transmission may be used where conditions warrant.

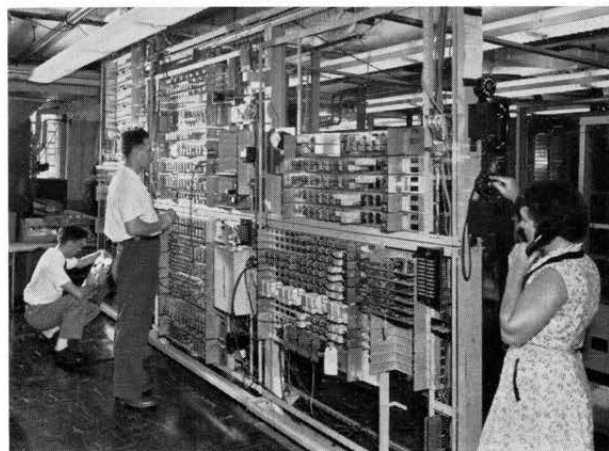
If the system trunking diagram permits all recorders to be located in a central tandem point, the remote offices need contain only the verifying or identifying equipment.

Not Limited to AB Toll Calls

The "VID," "LID," toll ticketing systems described have so far found their greatest application in "AB" or short-haul toll traffic. It is expected that the immediate future will necessitate the application of such systems to long distance operation so that subscribers can dial their own calls throughout the length and breadth of the country. The "VID," and "LID," systems are convertible to long distance dialing and the additions of common-register senders may be required in some instances to convert the digits dialed by the subscriber into proper routing codes required by intertoll routes. It would also be necessary to change the rate computer in order to handle the greatly increased number of rates to be figured.

Developments in Toll Ticketing

Stromberg-Carlson is engaged in a development program on variations of their existing toll ticketing systems to provide for fully identifying equipment, omitting the dialing of extra digits by the subscriber, and operator identifying which requires the services of a toll or special operator to identify the calling subscriber.



Testing Toll Ticketing in the Laboratory.

STROMBERG-CARLSON

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 1-3-55

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

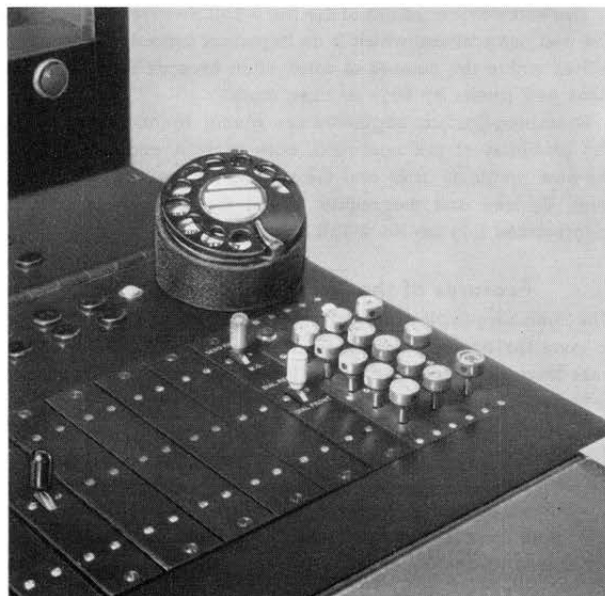
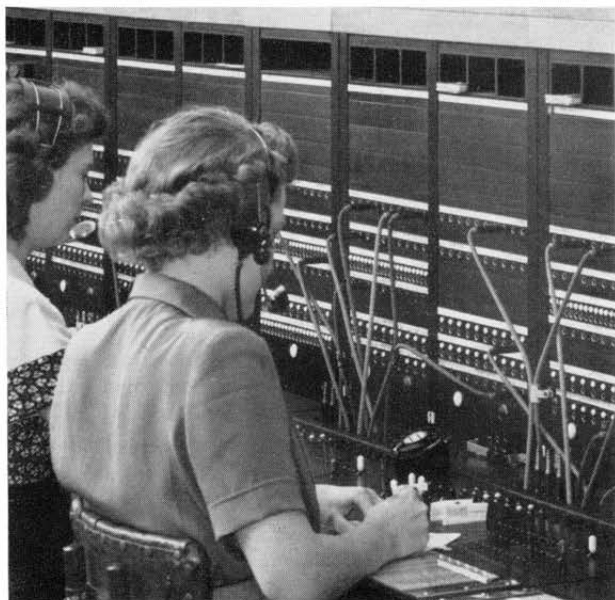
Switchboard multiple cables are terminated on the horizontal side of the IDF and the relay equipments are terminated on the vertical side, so that all circuit assignments are made with jumpers at the frame. Jack circuits and composite equipments for toll testing are terminated at the IDF, thus providing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

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 1-3-55

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.

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.

In addition to the obvious advantages of common battery operation over magneto operation, Stromberg-Carlson Non-Multiple Switchboards also:

1. Assure speed and accuracy by using double lamp supervision.
2. Provide the operator with position supervision on all connections.
3. Reduce operator's reach by use of compact lamp signal and jack on local lines.
4. Allow the use of present magneto telephone (by adding a capacitor in the ringer circuit) until it is convenient to install standard common battery telephones.

NOTE: The battery sizes are estimated on the average of 15 calls per line per day, with an average holding time of 1½ minutes. These sizes will carry the load for 24 hours when batteries are fully charged.

Dimensions and Capacities

Dimensions of a single section are:

- Height—51 inches
- Width—25¼ inches
- Depth—20 inches (on floor)
- Depth—38½ inches (at keyboard)

A two-position board has a width of 48¾ inches.

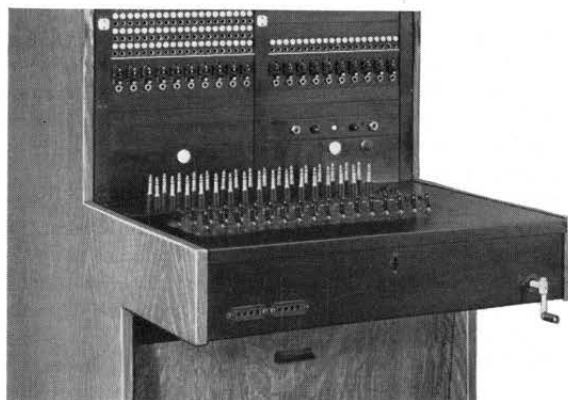
The Non-Multiple Switchboard is placed in stock wired for 200 local lines, 30 drop or lamp ended toll or rural lines, 16 manual ringing cord circuits, and 5 dial trunks either jack or key ended. Common battery lines should always be ordered in groups of 20, and ringdown lines in groups of 10.

Power Recommendations Single Position

- 11 Cells of 10 Ampere Hours Battery
- 1 Battery Charger, 3 Ampere Hour
- 1 Type "S" Sub-Cycle Set
- 1 Type "D" D.P.S.T. Switch
- 2 15-Ampere Fuses

Two Position

- 11 Cells 30 Ampere Hours Battery
- 1 Battery Charger, 3 Ampere Hour
- 1 Model "S" Sub-Cycle Set
- 1 Type "D" D.P.S.T. Switch
- 2 25-Ampere Fuses

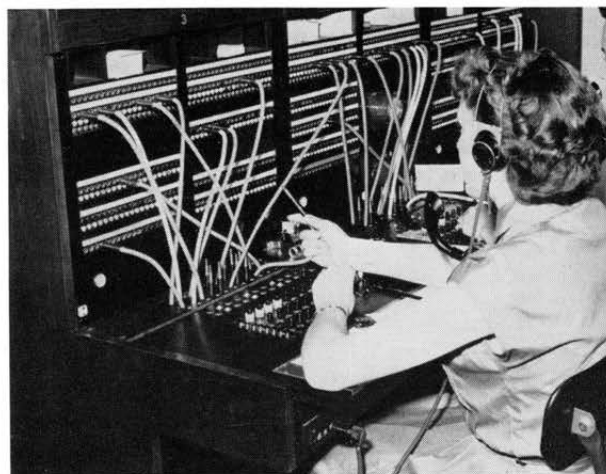


Keysheff showing Non-Multiple Switchboard, Drop Signal Magneto and Signal Common Battery Lines.

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 22-11/32" wide, 5'-4½" high, 3'-6¾" deep, 2'-10⅞" from floor to keyshelf, and has a 20" jack face opening. The No. 18 Section is wider—25½", higher—5'-10⅞", and has a larger jack face opening—24¼"; other dimensions and all construction features are the same.



Recent installation of Multiple Switchboard.

STROMBERG-CARLSON

NO. 125 MAGNETO SWITCHBOARD

There are many reasons for the continued popularity of the Stromberg-Carlson No. 125 Magneto Switchboard for those offices where magneto service is to be retained. Standardization on one model permits volume manufacture, and brings the switchboard to you in a shorter time at lower cost.

Features of The No. 125 Switchboard

1. **DOUBLE CUT-OFF CONTACTS** on each line jack sever both sides of the drop coil from the line.
2. **UNIT TYPE DROP MOUNTINGS**, each containing groups of drops, make it easier to add extensions.
3. **DOUBLE RING-OFF SIGNALS** that increase the efficiency of operating by designating to the operator just which party to a connection has rung off.
4. **NON-RING-THROUGH AND REPEATING COIL TYPE CORD CIRCUITS**. Eliminates confusion between operators and subscribers; minimizes noises from inductive disturbances.
5. **MODERN, LONG-LIFE OAK CABINET** looks well in any office. Hand-rubbed in limed-oak finish.
6. **LINE DROPS** operate on unusually small amount of current.
7. **THIMBLE OF JACK** separately removable from the front of the switchboard to enable easy replacement of the part most subject to wear.
8. **RING BACK KEY ON EACH CORD CIRCUIT** permits ringing on the answering cord without reversing cord connection.
9. **PLUG-RESTORED DROP SHUTTERS** promote speed in operating.
10. **CONTRASTING COLOR OF SHUTTER**, when operated, provides easy visibility and increases efficiency.
11. **REMOVABLE NUMBER PLATES** make it convenient to properly designate lines to conform with directory listings.
12. **REMOVABLE DROP COILS** permit economical repairs.
13. **CODE ALARM** provided on any line, when specified, by the use of a drop equipped with code alarm contacts.
14. **MANUALLY RESTORED RING-OFF SHUTTERS** designate which subscriber to a connection is ringing off.
15. **ZERO-LOSS CORD CIRCUIT**. The first two cord circuits on the left are wired for this feature. Repeating coil cut-out keys are required for this service.

Line Equipment

Each equipped line circuit of the No. 125 Switchboard includes:

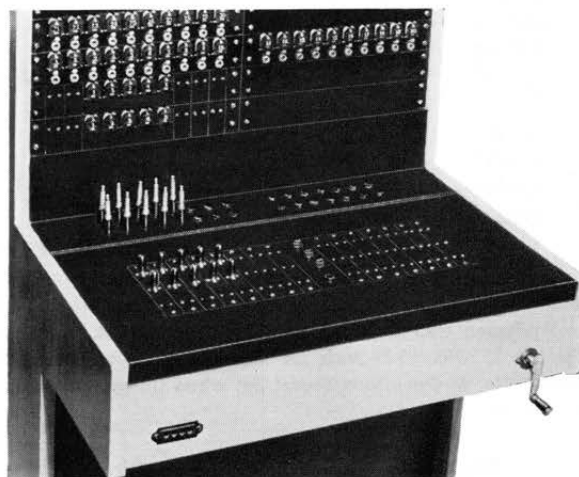
Stock No.	Code	Description
801789	(No. 18-B)	Drop, less Code Alarm or
801798	(No. 23-B)	Drop, with Code Alarm
		Mounted on
37197	(No. 147)	Drop Mounting, 10 per strip

See Coded Parts Section for codes covering 10 drops on one strip.

FULL METALLIC LINE CIRCUIT WIRING with looped-in wire for connecting ground to drop as required, provides facilities so that any signal in the switchboard may be associated with a grounded line, a metallic line, a common return line, or a central checking line.

CODE ALARM provided on any line, when specified, by the use of a drop equipped with code alarm contacts. The code alarm contacts may be purchased separately and added to any line drop signal originally furnished without this feature.

LINE CABLE, which may be extended 12 feet from either the top or bottom of the switchboard, affords ample length for connecting to a standard Stromberg-Carlson No. 1 Protector Frame.



Keyboard of No. 125 Switchboard.

Cord Circuit Equipment

Each circuit includes the following equipment:

Stock No.	Code	Description
42623		Cord and Plug Assembly (consists of one S-22-F Cord and one 56-X Plug)
800707	(No. 6)	Cord Weight
*802994	(No. 172-U)	Key
802627	(No. 171-D)	Key
	on	
207332	(No. 89)	Key Mounting
801794	(No. 21-B)	Drops (2)
37198	(No. 148)	Drop Mounting, 10 per (2)
800440	(No. 13-AL)	Repeating Coil
42375	(No. 61)	Condenser

*Specify 803021 (No. 172-B) Key when repeating coil cut-out key is desired in first two cord circuits only.

Dial Trunks

When connected with a Dial Exchange, it is necessary to provide for dial trunks. Wiring is provided in each switchboard for dial, dial cord, dial jack, and wipe-out key. These items can be installed in standard switchboards without major alterations.

Material Required for Dial Cord

Stock No.	Code	Description
42623		Cord and Plug Assembly (consists of one S-22-F Cord and one 56-X Plug)
800707	(No. 6)	Cord Weight
49520	(No. 336-C)	Key Engr. "WO"
42376	(No. 62)	Condenser (Dial as required)

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NO. 125 MAGNETO SWITCHBOARD (Cont.)

Operator's Telephone Equipment

A suspended operator's telephone set is furnished with the No. 125 Switchboard. The following apparatus is included:

Stock No.	Code	Description
801592	(No. 29)	Receiver
201839	(No. 66)	Plug
800646	(No. MO-2-1)	4-ft. Cord
201757	(No. 6)	Dry Cells (4) 45 v. Burgess Battery
801802	(No. 93)	Jack
802527	(No. 15)	Transmitter Arm
800424	(No. 44-A)	Induction Coil
802525	(No. 22)	Transmitter
800632	(No. MO-1-A)	5-ft. Duratex Cords (3)

The following items are furnished only when specified: 802632 (No. 188-A) Key and 800443 (No. 14-AL) Repeating Coil for Monitor Equipment and 66241 (No. 3-A) Varistor for "click" reduction; No. 801083 (No. 93-B) Jack for Learner accommodation; and 801453 (No. 4) Operator's Breast Set when transmitting arm is not desired.

Night Alarm and Code Alarm Circuit

THE NIGHT ALARM CIRCUIT. This circuit is arranged to give a continuous ring as long as a drop shutter and the Night Alarm Key are in their operated position.

THE CODE ALARM CIRCUIT. This circuit provides a buzzer which buzzes in unison with the code signals when a subscriber rings on a party line. The operator thus knows whether her services are required when a drop falls, or whether the call is simply for another party on the line.

Equipment Required

Stock No.	Code	Description
Night Alarm		
38346	(No. 571)	20 ohm 2½" Vibr. Bell
49532	(No. 338-C)	Key (Night Alarm)
Code Alarm		
39483	(No. 570)	20 ohm Buzzer
49532	(No. 338-C)	Key (Code Alarm)
803054	(No. 265-A)	Relay
801610	(No. 25)	Relay Casing

Generator and Power Equipment

The apparatus furnished for ringing the subscriber's station instruments consists of:

Stock No.	Code	Description
201678	(No. 64)	Generator
13287		Crank Shaft
201792		Crank
49532	(No. 338-C)	Key (Gen.)
801822	(No. 28-H)	Ringer

POWER RINGING GENERATOR, such as the Type "S" Sub-Cycle Ringing Machine, is recommended for the busy switchboard.

SIGNALING INDICATION is given by means of a buzzer which responds to the flow of current in the generator circuit. This indicates to the operator that she is ringing out on a line and that the line is in proper condition for signaling.

MASTER KEY SPACE on the keyboard affords a means for installing Divided Circuit, Pulsating or Harmonic Ringing.

OPERATOR'S CIRCUIT POWER SUPPLY, such as the 1057-R Rectifier, is recommended, when the building lighting circuit is constant. This type of current supply is equipped with a change of source relay, so that a stand-by set of dry cells may be switched into service in case of city power failure.

Grouping or Position Switching Key

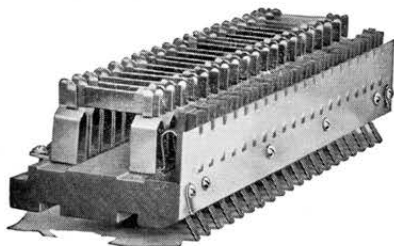
Facilities for switching the operator's set of one position to the cord circuits of an adjacent position is accomplished by means of a "Grouping" or "Position Switching Key." The No. 125 Magneto Switchboard is drilled, blanked and wired for a Position Switching Key which may be installed at any time when needed. The requirements consist of one No. 338-H Key.

No. 125 Switchboard Tools No. 41307 Package Assembly

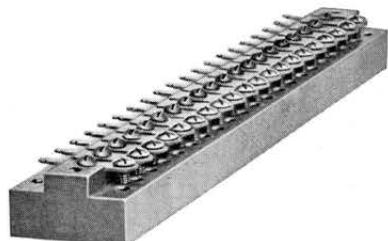
Stock No.	Code	Description
802456	(No. 2)	Socket Wrench
41140		Wrench for Arm. Nut
802485	(No. 56)	Screw Driver
8104		Screw Driver C.A.
2941	(No. 14)	Flat Wrench
12077	(No. 42)	Screw Driver
892713		Yankee Screw Driver, 3" blade
802457	(No. 7)	Spring Adjuster

MAGNETO SWITCHBOARDS—PROTECTOR EQUIPMENT

Mica Fuse and Carbon Block Type



No. 12606 Protector Strip



No. 12607 Protector Strip

No. 69 Type Protector

The Stromberg-Carlson No. 69-A Protector is designed especially for use in Magneto Exchanges. It is of the well-known carbon block and mica-protected fuse type. Mounts 50 pairs high on the Stromberg-Carlson No. 1 Floor Type Protector Frame which should be specified for installations of the No. 125 and No. 115 Magneto Switchboards.

The No. 69-B Wall Mounting Type Protector is recommended for the No. 126 Magneto Switchboard.

Stock No.	Code	Description
801557	(69-A)	Used with Floor Type Frame
801558	(69-B)	Used with Wall Type Frame

Stock No. 801557 (No. 69-A) Protector consists of 1 No. 12606, 10 pair Carbon Block and Mica Fuse Strip and 1 No. 12607, 10 pair Jumper Strip complete with Western Union Type Fuses. Both units mount side by side on the face of No. 1 Protector Frame.

Stock No. 801558 (69-B) Same as No. 69-A except mounts on hard maple sub-base side by side for wall installations.

Protector Parts

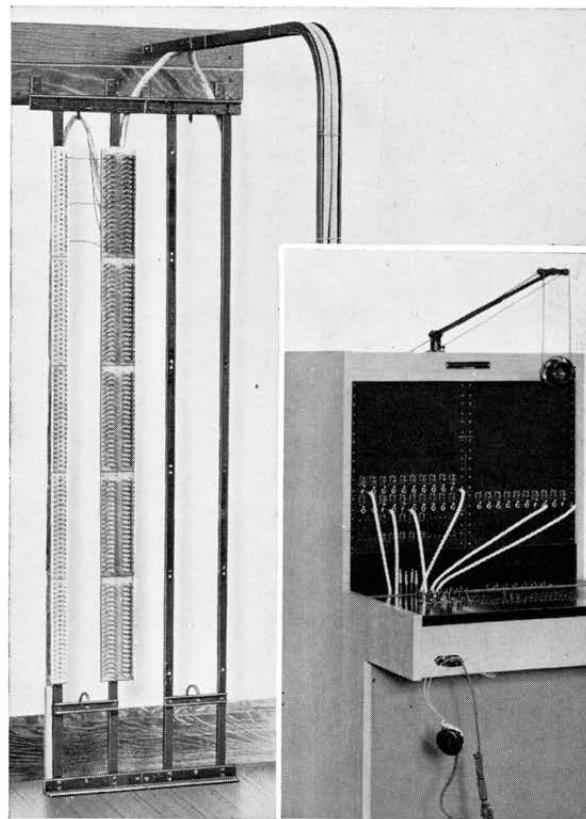
Stock No.	Pairs per Strip	Description
12606	10	Protected Strip less Fuses
12607	10	Jumper Strip
12614		Carbon Blocks
12625		Dielectrics
		1/4 amp. Fuses-quantities of 100

Other Type Frames

Sometimes other than mica fuse protectors are desirable, especially when power circuits are close enough to the central office equipment to cause trouble from "sneak" currents.

Under these conditions a wall or floor type frame with heat coil and carbon block protectors is recommended. The verticals, as well as the switchboard, should be so located that the cable will reach farthest protector without splicing.

Protector Frame—Floor Type



Two No. 1 Protector Frames and No. 1 Cable Rack Installed with No. 125 Switchboard.

The Stromberg-Carlson No. 1 Protector Frame is of the sectional wall type and is therefore of flexible capacity.

It is built for Nos. 125 and 115 Magneto Switchboards, but is adaptable to any Magneto Switchboard installation.

Each Protector Frame Unit mounts 50 pairs of No. 69-A Protectors.

For a 50 line installation order 1 No. 1 Protector Frame. For a 100 line installation order 2 No. 1 Protector Frames, and so on to any desired capacity.

This Protector Frame makes a remarkably neat and practical installation at a very low cost.

Stock No.	Code	Description
801599	(1)	Floor Type Protector Frame

Stock No. 801599 (No. 1) Unit Type Protector Frame 50 lines capacity mounts 5 No. 69-A Protectors.

Protector Frame to Switchboard Cable Rack

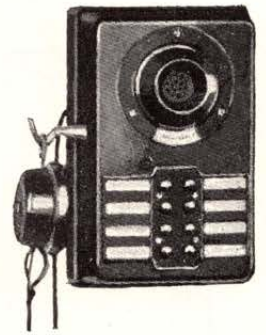
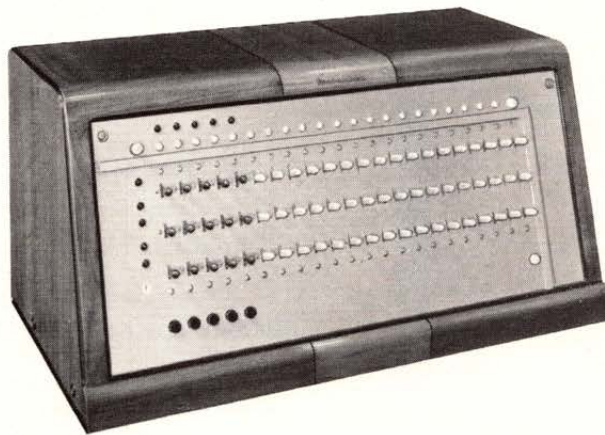
The Stromberg-Carlson No. 1 Cable Rack is designed for carrying overhead the cabling between a No. 125 or No. 115 Switchboard and an associated No. 1 Protector Frame. The Cable Rack is constructed of heavy channel iron, rust proofed, and painted black. It is equipped at the frame end with wall mounting brackets and at the switchboard end with brackets for the roof of the switchboard. One No. 1 Cable Rack is required for each switchboard section.

Stock No.	Code	Description
800152	1	Channel Iron Cable Rack

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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

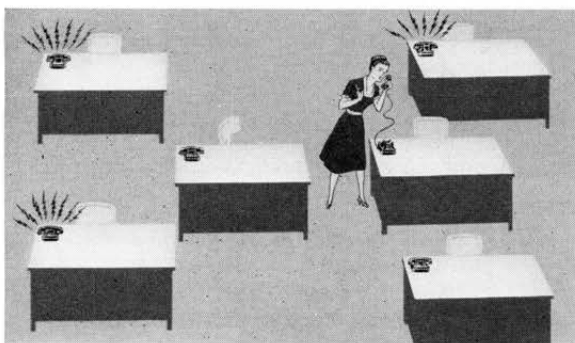
Service to the community is but one of the requisites of good telephone operation. The individual, with his many varying needs, must have available the special type of equipment which fits his own requirements. With this in mind, Stromberg-Carlson has long pioneered in the development of the smaller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

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.

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!"

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

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



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
801420	(12)	Lamp Socket			Casing
801393	(27-B)	Lamp Cap	802888	(222Z-B)	Relay

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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-AYCY)	Relay
	(connect and dial)				
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.

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. 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
202464	(67)	Condenser			Block

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:

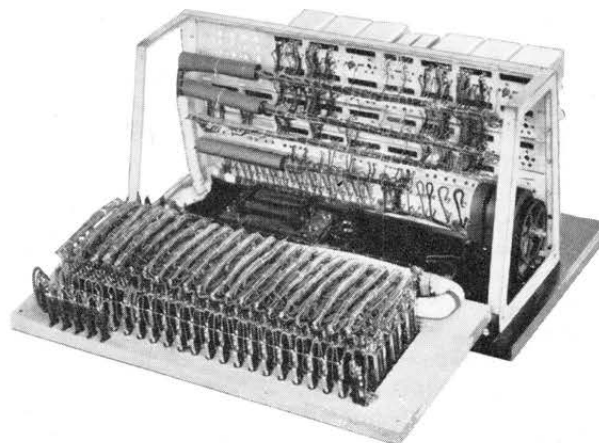
THE REGULAR NIGHT ALARM EQUIPMENT operates off direct current from the battery terminals within the switchboard, and includes noise-suppressing components to prevent disturbances being carried into the talking circuit.

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:

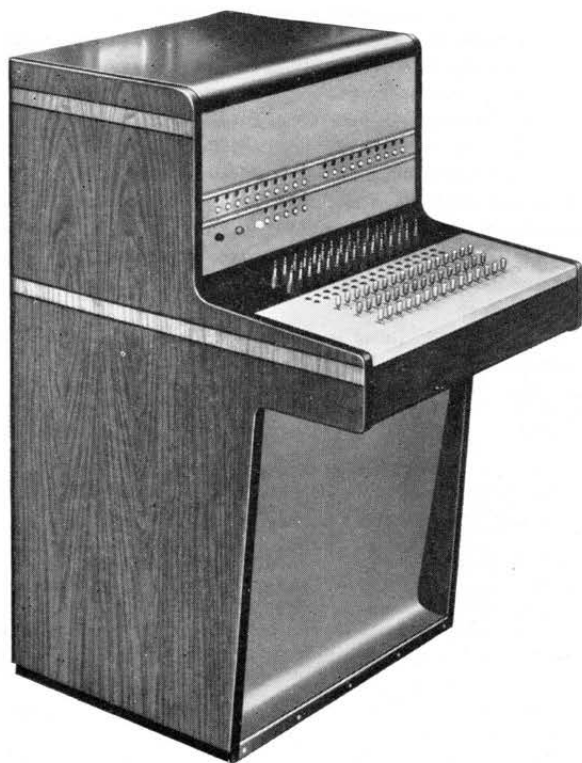
802755	(343-EZ)	Key (Same key as in Connecting Circuit 5)
800289	(202)	Impedance Coil



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

STROMBERG-CARLSON

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 1/8" Height—3'9 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".

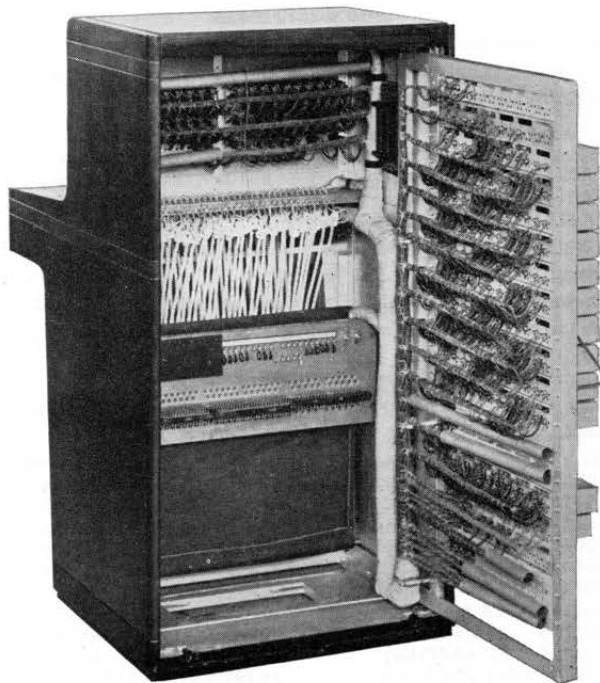
DOUBLE LAMP SUPERVISION gives the operator definite information as to the condition of connections between local stations.

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

STROMBERG-CARLSON

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	(113)	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	(5-32P)	Cords (2)	42487	(293Z-MYNY)	Relay
800707	(6)	Cord Weights (2)	802890	(222Z-AB)	Relay
801421	(113)	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-AAZX)	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	(113)	Lamp Socket	803009	(257ZW-AA)	Relay
801412	(31-A)	Lamp Cap	28153		Resistor
801369	(24-B-2)	Lamp	42375	(61)	Condenser

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
803032	(263Z-BL)	Relay (2)			for No. 120 Swbd.
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.	Code	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:

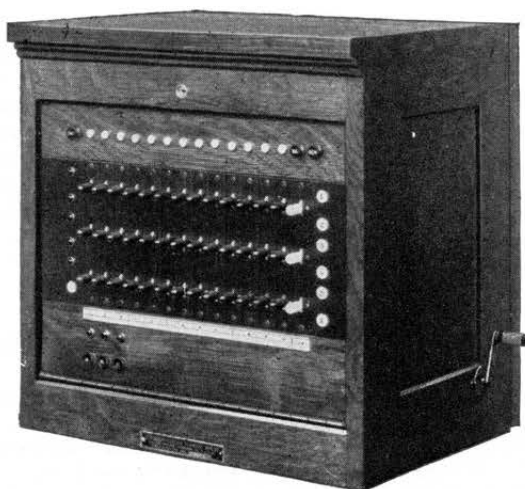
Stock No.	Code	Description
802600	(160)	Jack For trunk or originating line
802600	(160)	Jack For each conference station
200968	(95)	Mounting For above Jacks
800293	(206)	Impedance Coil
41578	(206Z-AA)	Relay For each conference station
42375	(61)	Condenser For each conference station

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
801413	(31-B)	Lamp Cap			

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			

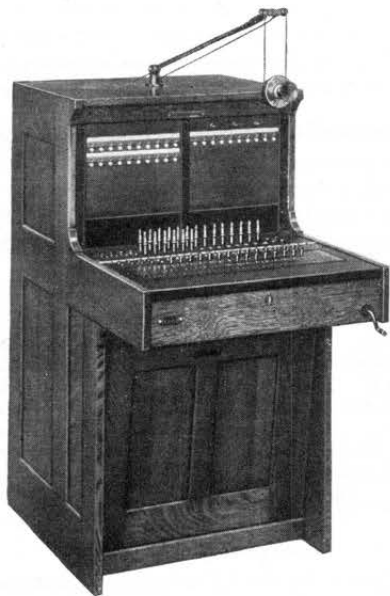
Night Alarm Equipment

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			

STROMBERG-CARLSON

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 wood-work 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	(222Z-B)	Relays (2)
801421	(13)	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 through 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	(16)	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.

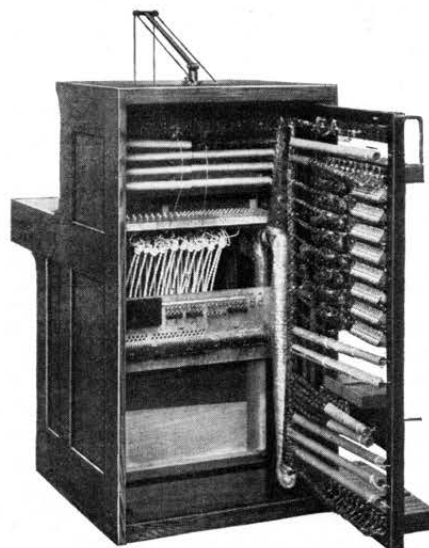
Common to all these trunks on each PBX switchboard, there will be required one dial.

(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

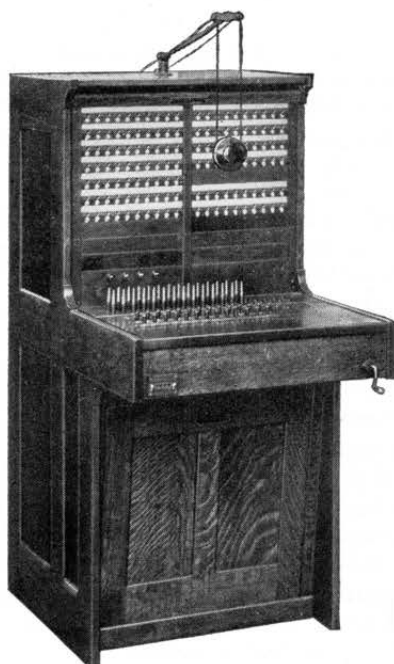
No. 16-L			No. 17-L		
Stock No.	Code	Description	Stock No.	Code	Description
800249	(16-L)	Circuit Plate	800250	(17-L)	
801700	(119-L)	Relay Mtg. Strip	801700	(119-L)	
802839	(207Z-BC)	Relay	802839	(207Z-BC)	
803039	(263Z-XCAC)	Relay	803039	(263Z-XCAC)	
803088	(306-X)	Relay	803088	(306-X)	
12706		Terminal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



Rear Perspective of No. 102 Switchboard

STROMBERG-CARLSON

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,
801861	(50-LL)	Buzzer			Engraved N. A.

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.

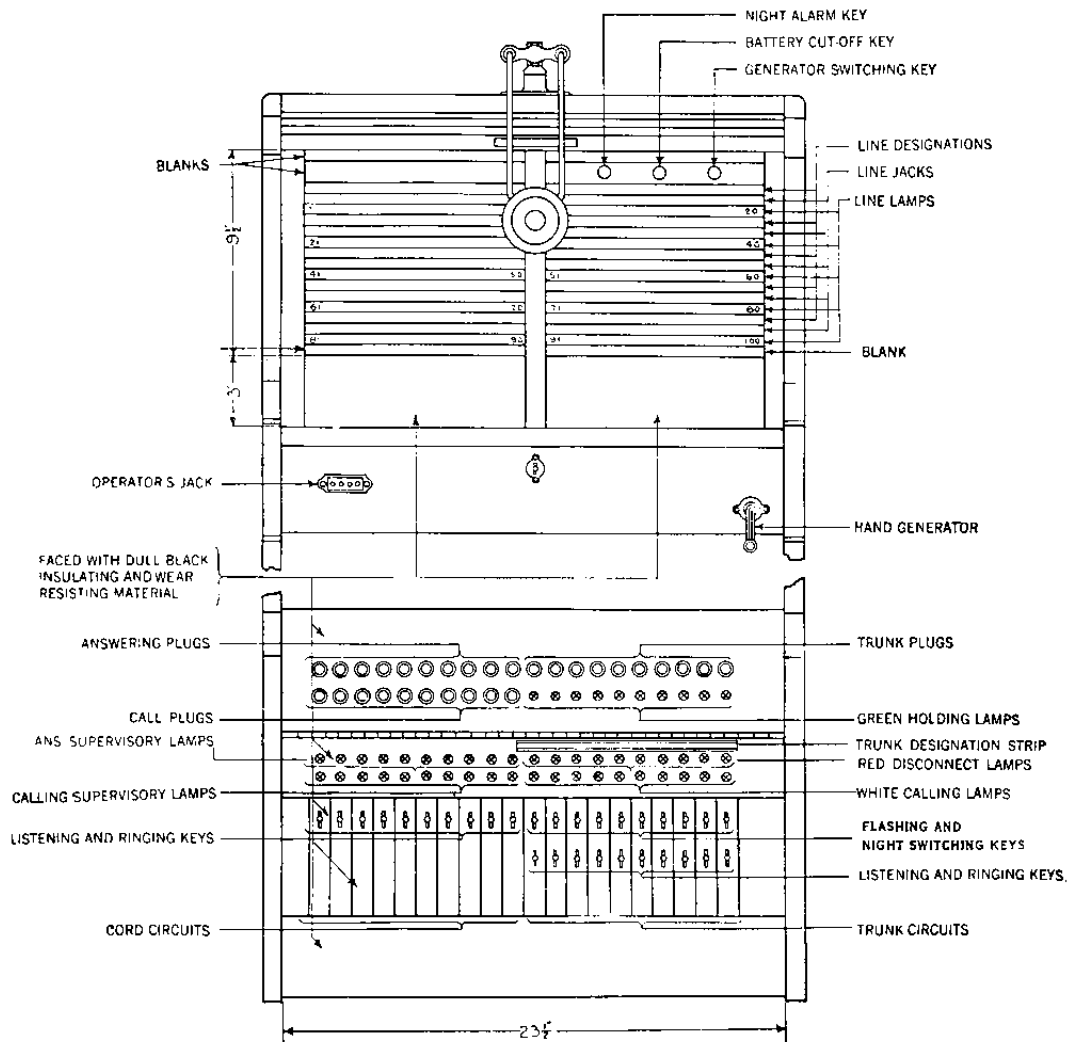
The following two types of night alarm circuits are available: **THE REGULAR NIGHT ALARM EQUIPMENT** which is arranged to operate from the switchboard's source of power ringing current. This type of night alarm will be furnished unless the Special Night Alarm Equipment is requested.

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

STROMBERG-CARLSON

NOS. 102 AND 106 PBX SWITCHBOARDS (Cont.)



Face and Keyboard Equipment—No. 102 PBX Switchboard

No. 102 Type PBX

Line Jacks 10 per Strip with Associated Designation					
Ultimate Wiring	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

Line Jacks 10 per Strip with Associated Designation					
Ultimate Wiring	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.
Line Jacks 20 per Strip with Associated Designation—Hotel Type					
Ultimate Wiring	Code Letter	Lines Equip'd	Cords Equip'd	Trunks Equip'd	Shipping Weight
300 Lines 8 Cord Prs. 7 Trunks	D	200	6	5	560 lbs.
	E	240	7	6	600 lbs.
	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.

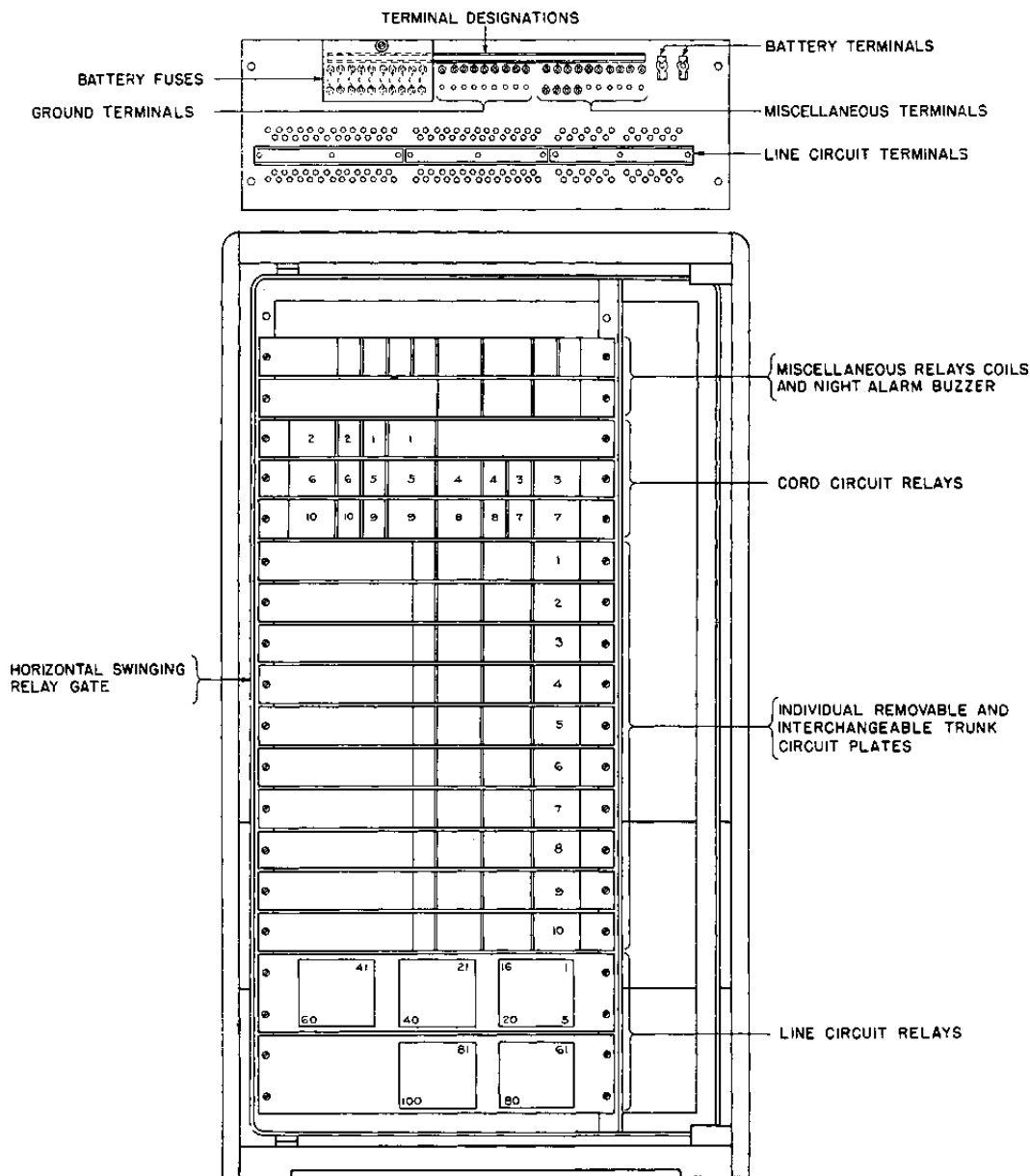
NOS. 102 AND 106 PBX SWITCHBOARDS (Cont.)

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.

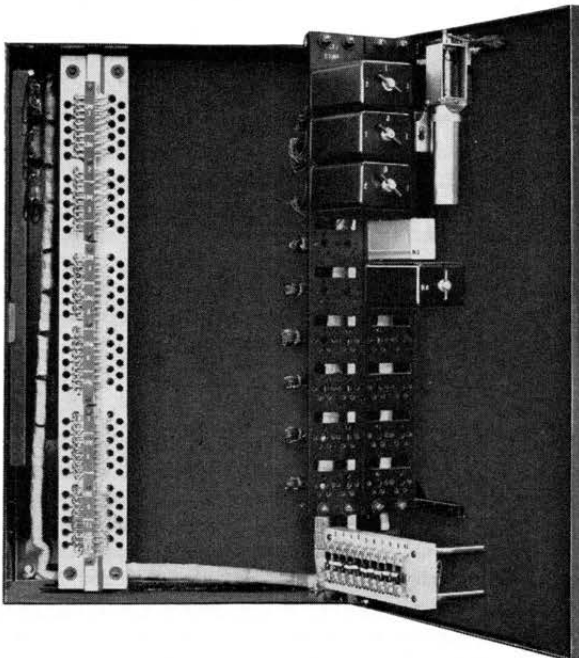
The 2-6 System provides common talking, selective ringing service for an ultimate of six local lines and has a capacity of two trunk lines. These trunks are available to all telephones for connection to any central office exchange, manual or dial, without the services of regular operator.

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

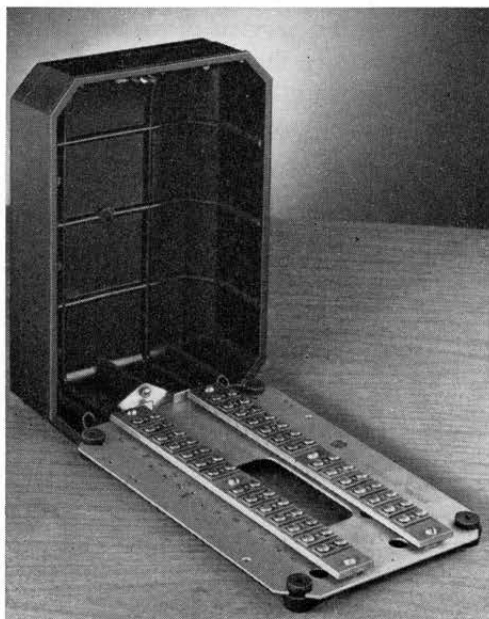
They are described in more detail in connection with the various systems where they are used.

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.

STROMBERG-CARLSON

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.

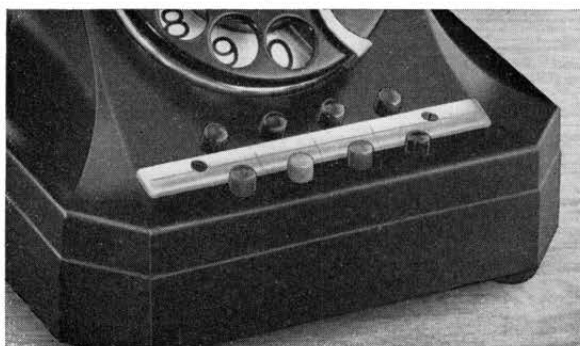
The No. 90-A Terminal Box replaces the No. 89-A and 89-B Terminal Boxes which were used with the old style Nos. 1195, 1196, 1215 and 1216 Telephones for Convenience Systems.

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.

STROMBERG-CARLSON

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 telephone 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.

STROMBERG-CARLSON

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, 32 1/2" 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.

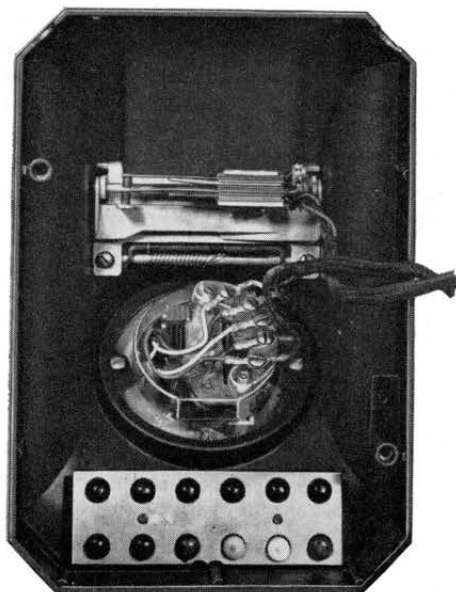
SECRET SERVICE. When used with dial central offices, all trunk wiring is arranged for secret service, so that an established trunk call cannot be mutilated by another station if it attempts to use the same trunk. A slight change in wiring, however, allows systems used with manually operated central offices 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.

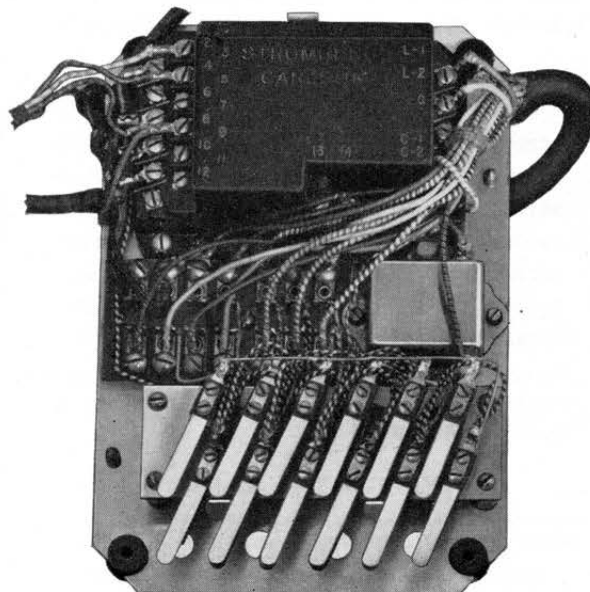
The Nos. 1271 and 1272 Telephones are used in connection with these systems in a manner similar to the No. 2-10 and No. 3-9 Systems.



View into Housing—No. 1271 Telephone

No. 2-M-10 ST and No. 3-M-9 ST 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.

STROMBERG-CARLSON

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 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, 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

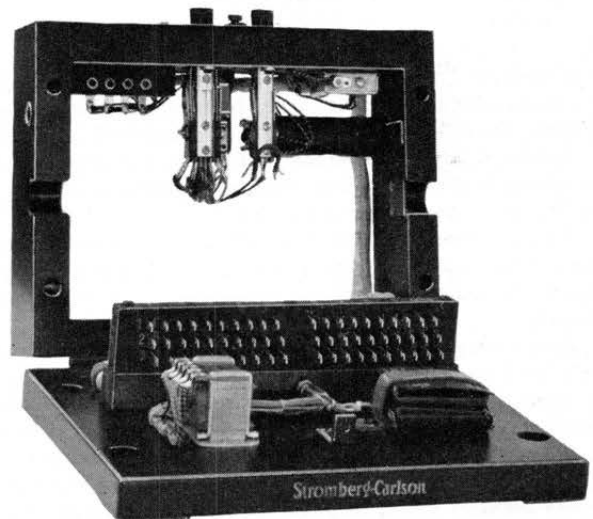
All parts—bases, key sections and tops—are carried in stock and shipped separately. The key sections and the bases are completely wired with local cable forms, permitting the customer to assemble and connect the turret assemblies to meet installation requirements.



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

STROMBERG-CARLSON

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.

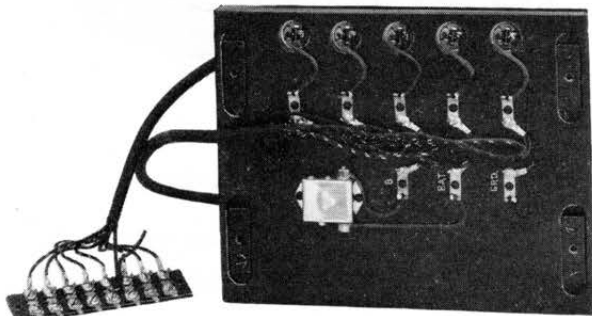
Turret Signalling Top

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.

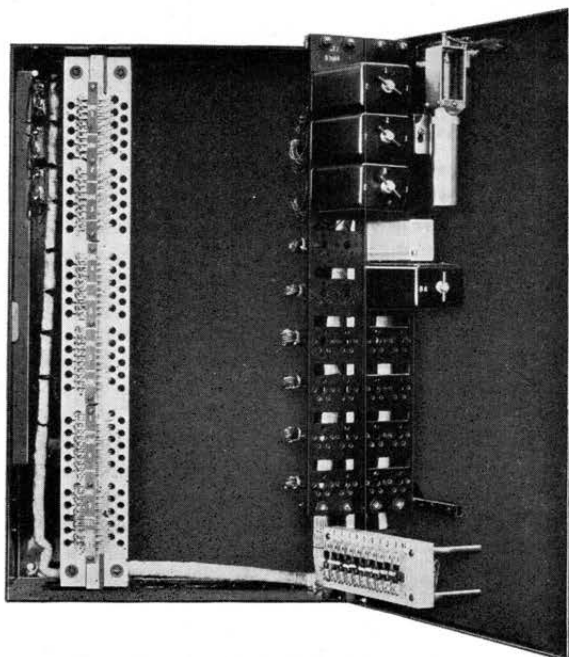
Each additional line equipment requires the following:

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

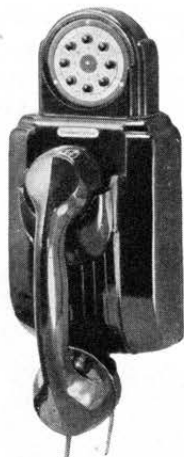


No. 2527-C8 Wall Telephone

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.

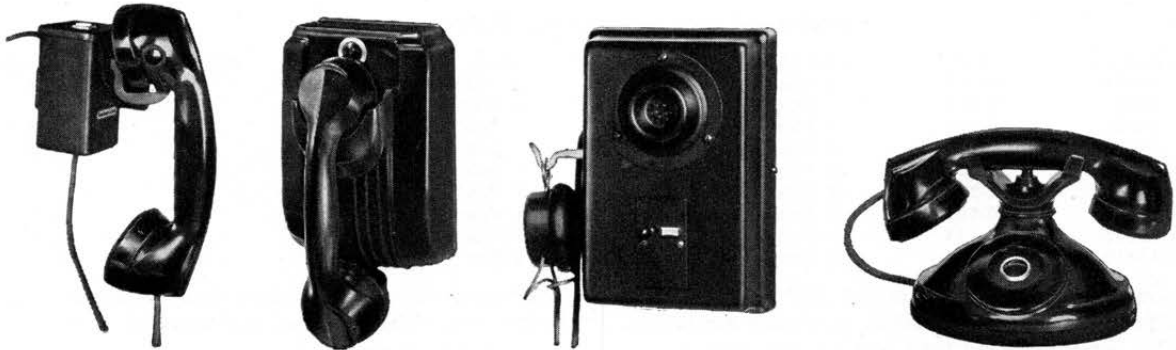


No. 2527-C8 Wall Telephone

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.

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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.

- 1 NO. 51-H RETARD COIL**, to be installed near the battery of each system.
- 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.

- CABLE TERMINALS**—Terminals are desirable at junction points and distribution centers.

- 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.

- 1 NO. 51-H RETARD COIL** to be installed near the battery of each system.
- THREE WIRES** are required for connecting the Inter-phones.
- 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

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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 Depth Height	Wt. lbs.
RFR-1024	6	0.5	50/60	115	6-12-18-24	7	6 1/4 10 1/2	12
RFR-1026	12	0.5	50/60	115	6-12-18-24	7	6 1/4 10 1/2	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 5 7/8 x 2 1/2 in.
800778	19BC	27	2	14 x 5 7/8 x 2 1/2 in.
46769	IB-30	15	2	9 3/4 x 5 1/2 x 1 1/4 in.
46770	IB-45	22	2	9 3/4 x 5 1/2 x 1 1/4 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.

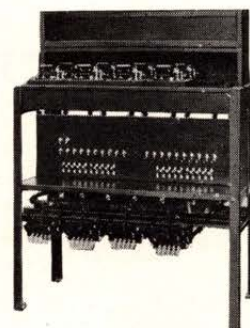
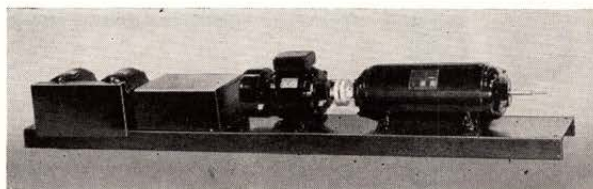
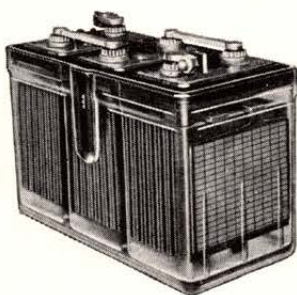
Wire and Miscellaneous Equipment

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

Accessories



**Stromberg-Carlson has checked and approved the accessories
which are listed here for your convenience in ordering.**

CONTENTS

SECTION E

ACCESSORIES

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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.

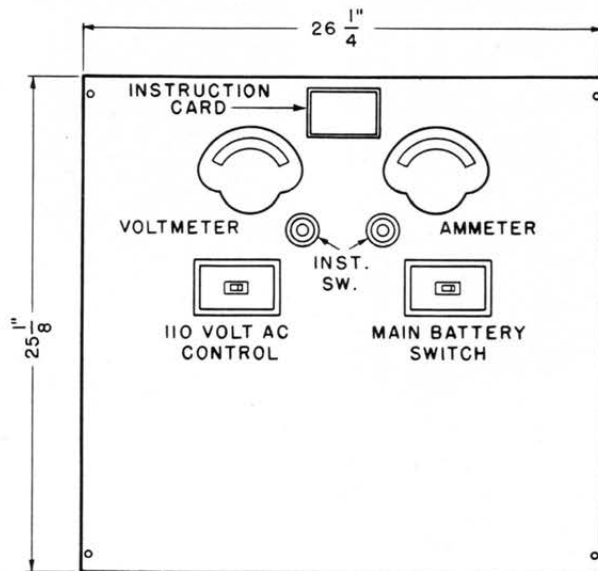
POWER EQUIPMENT FOR MANUAL OFFICES

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.

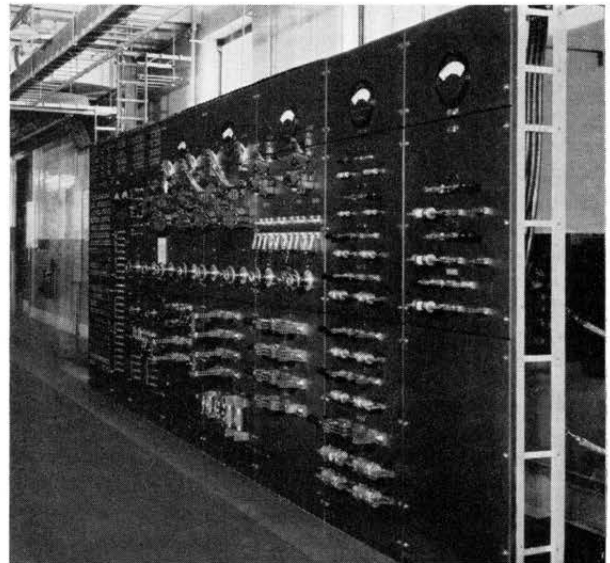
The panel itself is faced with black formica at front and rear providing a mounting with high insulation characteristics entirely free from metallic veins and unaffected by chemicals. The finish is durable, not easily scratched or marred. Standard meters are used, serving to indicate accurately the condition 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.



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.

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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.

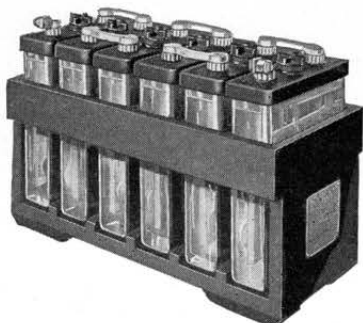
Two-Plate Types

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

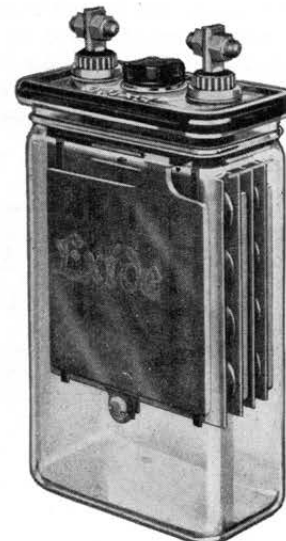
Specifications		BTMH-2	CTMH-2	PTMH-2	ETMH-2
11 cells 1 Row	Cat. Nos.	21312	21302	21368	—
11 cells 2 Rows	Cat. Nos.	21295	21346	21373	21361
Amp. Hr. Cap. at 72 Hr. rate		8.4	16.8	33.6	50.4
Amp. Hr. Cap. at 8 Hr. rate		6.0	12.0	24.0	36.0
Amp. Hr. Cap. at 3 Hr. rate		4.4	8.7	16.8	24.0
8 hr. charge rate		.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 5/8	29 7/16	34 5/8	—
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 5/8
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 5/8	8 1/8
Width	10 3/4	10 3/4	10 3/4
Height	17 3/8	17 3/8	17 3/8
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 5/8
Width	10 3/4	10 3/4	10 3/4
Height	17 3/8	17 3/8	17 3/8
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 1/4	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	

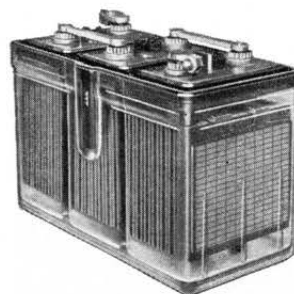
Overall Dimensions per Cell in Inches

	FM-15	FM-17
Length	13 3/4	14 5/8
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

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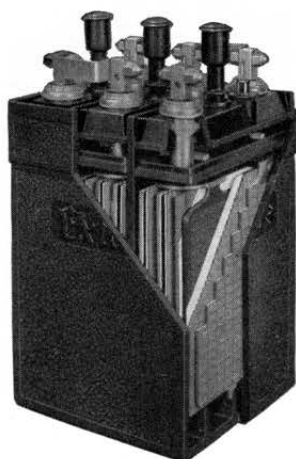
POWER EQUIPMENT (Cont.)

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

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	360	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 3/4	19 1/8
EB-23	990	660	478	32 1/2 Lbs.	12 3/16	10 3/4	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 1/8	23 3/4
FB-19	1620	1080	783	51 1/4 Lbs.	10 8/16	14 1/8	23 3/4
FB-23	1980	1320	957	62 1/4 Lbs.	12 7/16	14 1/8	23 3/4
FB-29	2520	1680	1218	70 Lbs.	15 1/4	14 1/8	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.

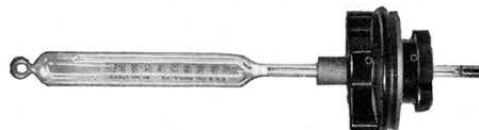
Storage Battery Accessories

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.



Vent Hole Thermometer with vent plug.

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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.

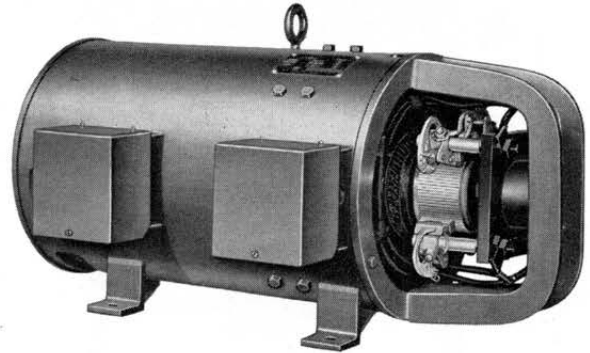
The use of these motor-generators as a power source in the floating charge of storage batteries provides a constant, dependable voltage in the conversion of A.C. to D.C. communication requirements.

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.

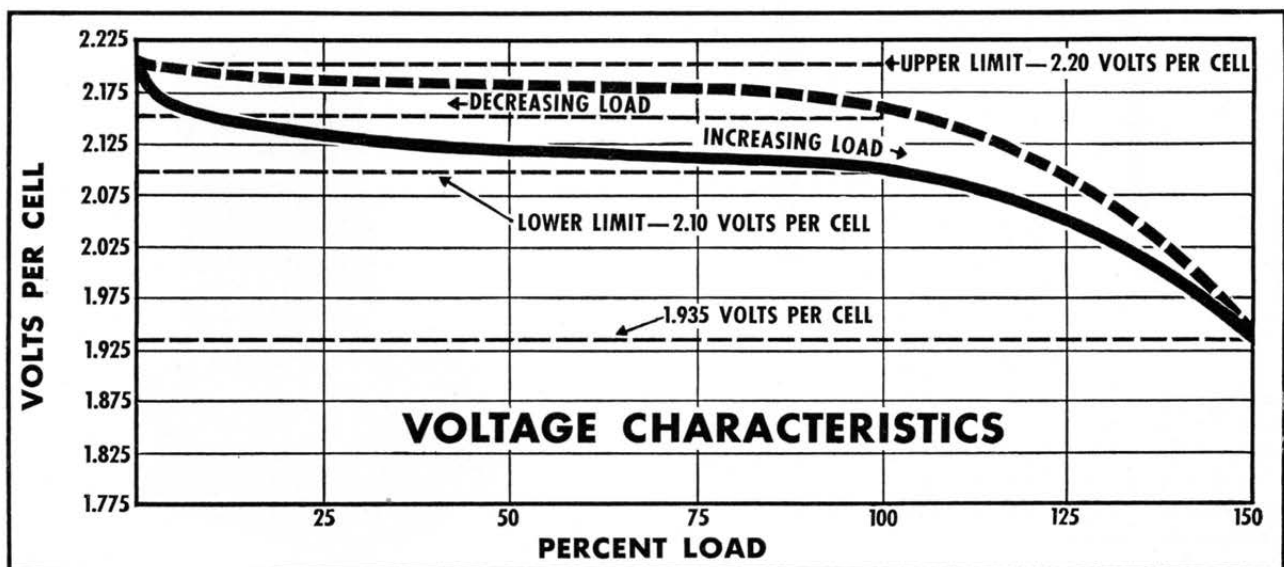
The following advantages are assured to the users of Diverter Pole Motor-Generator Sets:

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

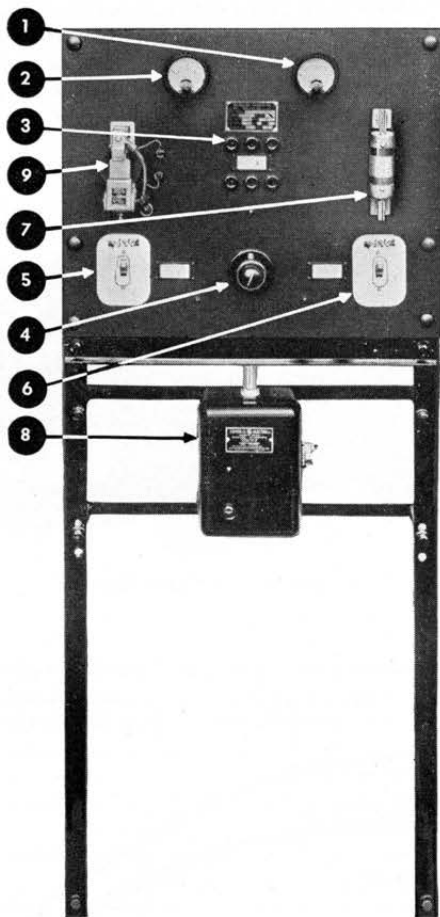
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BATTERY CHARGING EQUIPMENT (Cont.)

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.)

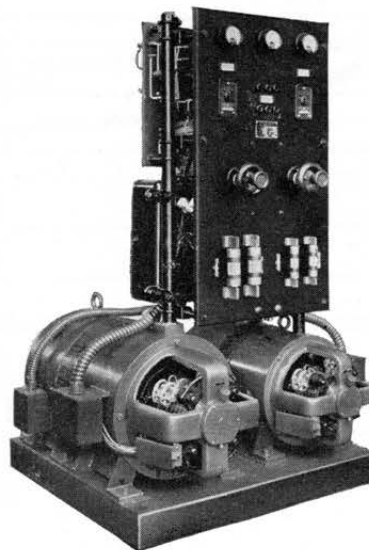
3. Voltmeter Plug to permit reading either the generator or the voltage.
4. Generator Field Rheostat is vernier type which provides exceedingly close adjustment of the generator voltage. Has a 10% tap for field forcing.
5. Motor Starter Control Switch.
6. D-C Contactor Control Switch.
7. Generator Fuse. (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

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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	14½
RCR-1073	11-12	2.0	14½	9½	14½
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	14½
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	20¾	16 29/32	15 3/16
RCR-2016-A	11-12	24.0	27¾	16 29/32	15 3/16
RCR-2013-B	22-24	6.0	20¾	16 29/32	15 3/16
RCR-2016-B	22-24	12.0	27¾	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

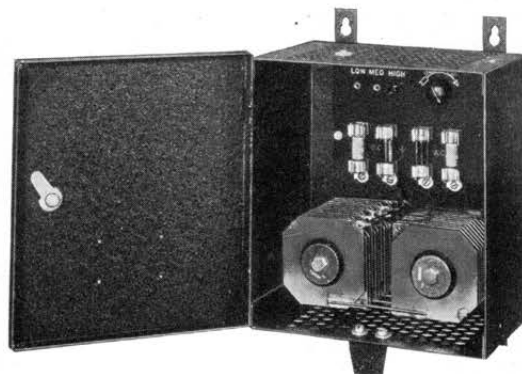
The above Constant Voltage Chargers and Constant Current Chargers which mount on XY System frames may be combined as follows:

Output Required	Constant Voltage Charger	Constant Current Charger
12 Amperes	W-6158	with W-6156
18 Amperes	W-6166	with W-6156 Modified

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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 $\frac{1}{8}$ 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 $\frac{7}{8}$ 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 $\frac{1}{8}$ 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 $\frac{7}{8}$ 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.

STROMBERG-CARLSON

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.

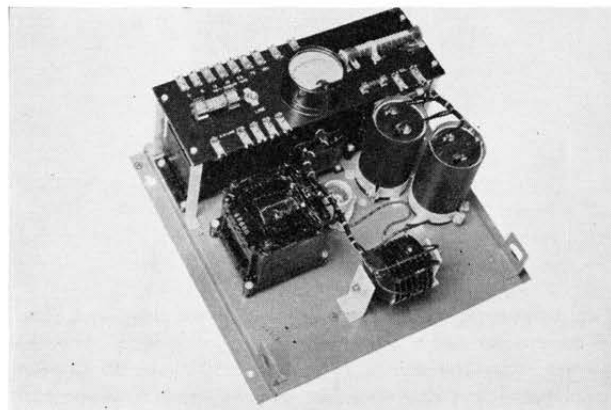
- A. Outlasts many sets of batteries.
- B. Eliminates the trouble and expense of routine service for battery inspection.
- C. Releases conductors carrying charging current or supplying power between central office and PBX Switchboards, for revenue producing purposes.
- D. Minimizes power cost because 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.

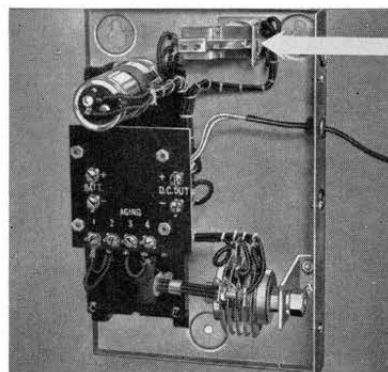
Output power ratings indicated in the following table are conservative and it will not be necessary to derate any of them by adding a safety factor. Ratings are based upon two assumptions; first, the Rectifiers must be installed in live air and second, they must be placed where the maximum ambient temperature 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	6¼	10½	13
RFR-1024	6	0.5	8.5	5.5	50/60	6-12-18-24AC	4.0	7	6¼	10½	12
RFR-1028-A	6	1.0	8.5	5.5	50/60	6-12-18-24AC	4.0	7	6¼	10½	14
RFR-1026	12	0.5	15.5	11.5	50/60	6-12-18-24AC	4.0	7	6¼	10½	14
RFR-1027	24	0.5	28	20	50/60	6-12-18-24AC	4.0	7	6¼	10½	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	14½	7⅞	14⅞	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	14⅞	142
RFR-1042	24	6.0	26	24	60	24vDC	—	19	12	21½	179
RFR-1082	48	3.0	52	48	60	48vDC	—	19	12	21½	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

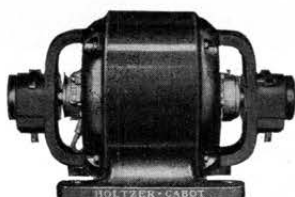


Holtzer-Cabot
MG-125 Magneto Ringing Set

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.

Ringing Dynamotor HD Type



Holtzer-Cabot
HD-13 Ringing Dynamotor

Ringing 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

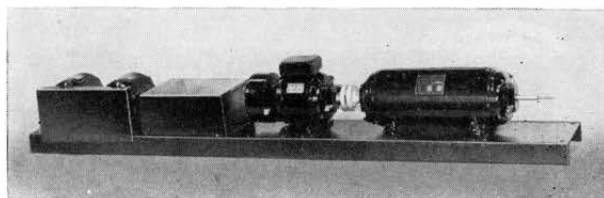
These ringing motor-generator sets supply constant frequency ringing current for harmonic party line installations, and are trouble-free in operation. A speed governor is used for both AC and DC motor driven sets, holding the ringing frequencies constant.

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.



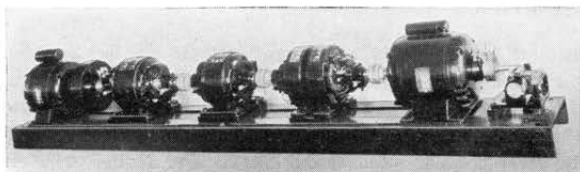
Holtzer-Cabot 5-Frequency Harmonic
Ringing Motor-Generator 25 Watt, AC Driven

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.

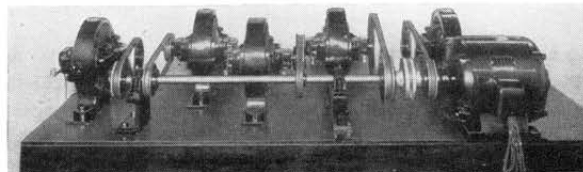
Cat. Listing	Watt Output	Motor	Floor Space	Shipping Weight
Item 1	50 48 volts, DC		89" x 12"	675
Item 2	50 115 V., 60 cycle, single phase		89" x 12"	675
Item 3	50 230 V., 60 cycle, three phase		89" x 12"	675
Subscript F	Same as above plus fifth frequency		103" x 12"	1150
Subscript I	Interrupter—Specify 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.

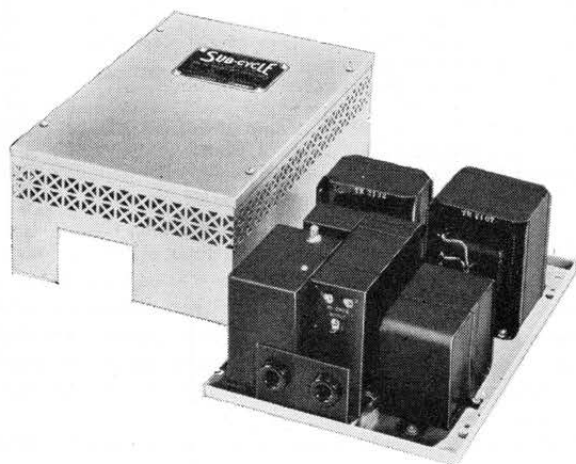
*Output of VR-1-A and VR-107-A is 6.0 or 7.5 volts plus or minus 1/2 %.

STROMBERG-CARLSON

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 High Wide Long	Shipping Weight in Lbs.	Finish
				No load Volts	Full load	Watts			
M-7.5-60	100	Light	105-125	90	75	7 1/2	6 3/8 x 5 1/8 x 11 1/4	18	Black Wrinkle
S-60	1600	Regular	105-125	90	75	15-20	5 3/4 x 9 3/8 x 14 1/8	35	Black Wrinkle
SP-60	1600	Pulsating	105-125	110 peak	— peak	15-20	5 3/4 x 9 3/8 x 14 1/8	36	Black Wrinkle
BX-60	1600	Regular	105-125	90	75	15-20	5 3/4 x 9 3/8 x 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 x 9 3/8 x 14 1/8	42	Black Wrinkle
			105-125 or 210-250	90 or 130	75 or 100	45	6 1/8 x 10 1/8 x 16 3/8	68	Black Wrinkle
CC-60	4000	Heavy	105-125 or 210-250	160 peak	— peak	45	6 1/8 x 10 1/8 x 16 3/8	70	Black Wrinkle
CCP-60	4000	Pulsating	105-125 or 210-250	90 or 115	75 or 100	45	5 3/4 front, 5 1/2 rear 12 7/32 x 1 x 23 1/16	115	Gray Lacquer

Sub-Cycles for Operation from 50 Cycle Single Phase Supply

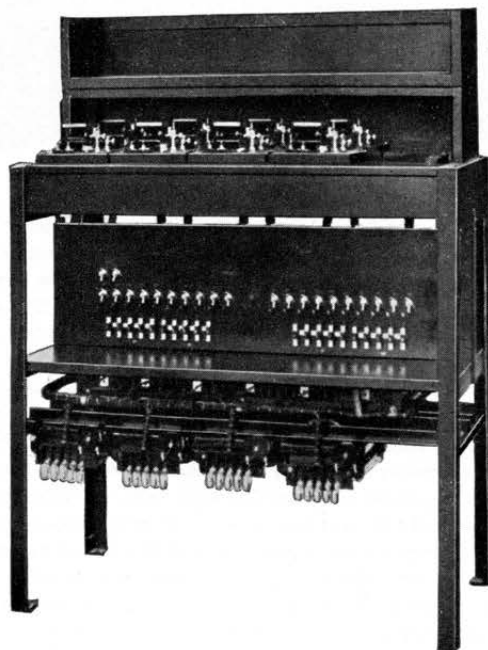
M 7.5-50	100	Light	105-125	90	75	7 1/2	6 3/8 x 5 1/8 x 11 1/4	20	Black Wrinkle
M GB-50	100	Light	210-250	90	75	7 1/2	6 3/8 x 5 1/8 x 11 1/4	20	Black Wrinkle
S-50	1600	Regular	105-125	90	75	15-20	5 3/4 x 9 3/8 x 14 1/8	40	Black Wrinkle
SP-50	1600	Regular Pulsating	105-125	110 peak	— peak	15-20	5 3/4 x 9 3/8 x 14 1/8	40	Black Wrinkle
BX-50	1600	Regular	105-125	90	75	15-20	5 3/4 x 9 3/8 x 14 1/8	41	Gray Lacquer
SGB-50	1600	Regular	210-250	90	75	15-20	5 3/4 x 9 3/8 x 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 x 10 1/8 x 16 3/8	75	Black Wrinkle
CCP-50	4000	Heavy Pulsating	105-125 or 210-250	160 peak	— peak	45	6 1/8 x 10 1/8 x 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

24 Hour reserve battery capacity			
No. of Lines	Type of Battery	Type of Charger	Charging Rate
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

24 Hour reserve battery capacity			
No. of Lines	Type of Battery	Type of Charger	Charging Rate
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
302507	(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

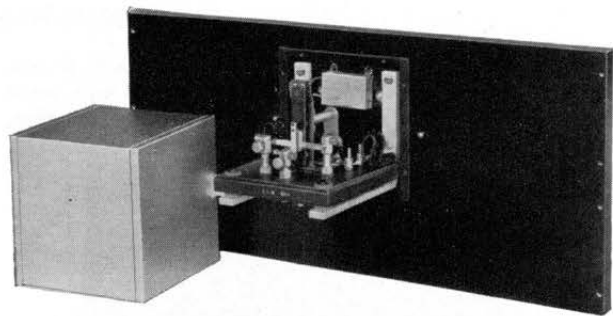
The No. 1 Type Converter is a single frequency ringing machine and operates from storage batteries only. The vibrating and transformer units are constructed similarly to the No. 6 and No. 7 Converters described in more detail on accompanying pages. It is suitable for exchanges up to 2000 subscribers. 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

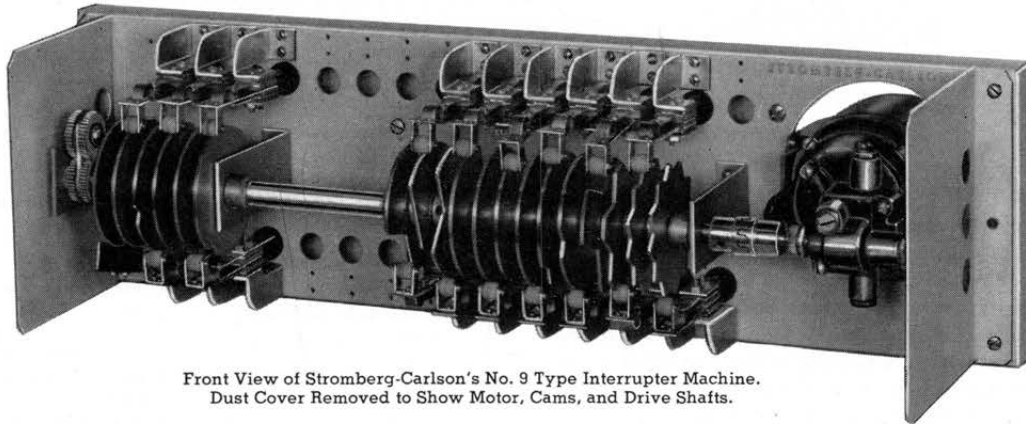
Parts of No. 9-A and No. 9-B Converters

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

STROMBERG-CARLSON INTERRUPTER MACHINE
New Multiple-Use, High-Low Motor Driven Unit

File



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.



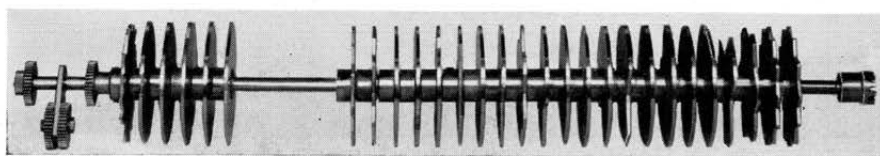
Interchangeable Motor Unit, furnished in DC, and 50 or 60 cycle AC, showing coupling to shaft.



Removable Snap-Action Switch, showing jack-in feature and mounting screws which also control adjustment.

STROMBERG-CARLSON

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

In order to keep production abreast with demand, Stromberg-Carlson Interrupters are made up for immediate sale as follows:

Stock No.	Code No.	Motor	Description
480486	9-A	60 cycle AC	6 second cycle St. line or harmonic 1 ring, interrupted ground for operating ringing relays. Pulses for permanent timing and conversation timing.
480488	9-C	DC	60 and 120 IPM busy tone and flash pulses; 30 and 10 IPM for reverting call switches.
480492	11-A	60 cycle AC	8 second cycle 10 code interrupter generator. 60 and 120 IPM busy tone and flash pulses. Pick-up pulses.
480494	11-C	DC	Pulses for permanent timing and conversation timing. 30 IPM also provided.

Because of the complete interchangeability of motor, cams, and switches, Stromberg-Carlson Interrupters can also be made up in the following variations:

With 50 cycle AC motors for any circuit.

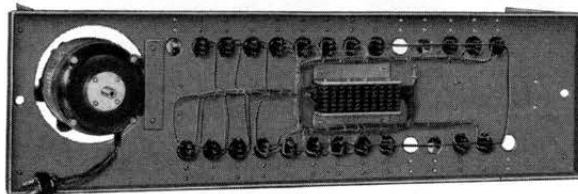
For Harmonic 1 and 2 ring, 6 second cycle, interrupted ground.

For 10 and 20 Code, 8 second cycle, interrupted generator.

For 5 Frequency, 1 and 2 ring, 6 second cycle, interrupted generator.

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 showing base-mounted plugs to accommodate the jack-in contact switches, and main jack.

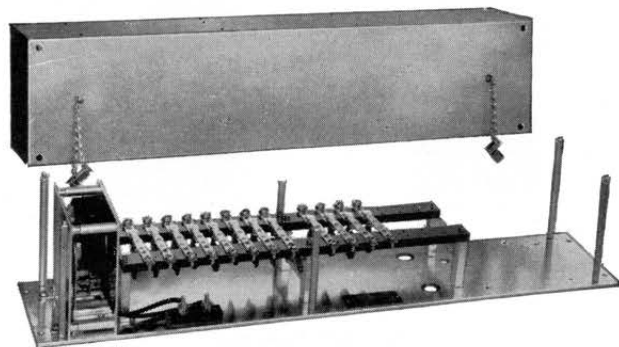
STROMBERG-CARLSON

INTERRUPTER MACHINES (Cont.) (Former Models)

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 25½ inch centers and is 26 inches long, by 5¾ 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 tying of the actuating springs the "break-make" contacts, necessary for ringing current interruption, is produced.

Standard timing of each ringing circuit is 1½ seconds "On," 4½ 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.



No. 1 Interrupter with dust cover removed

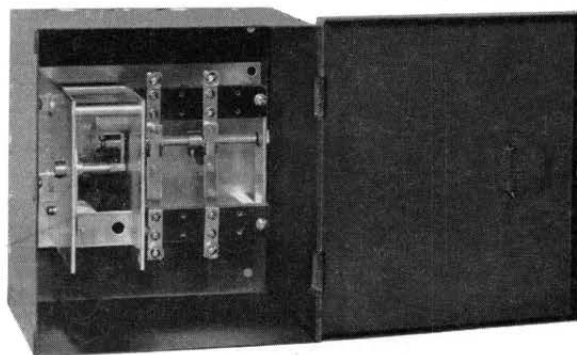
Contacts of the interrupter springs are made of heavy precious metal capable of carrying 15 amperes per contact. The complete machine assembly is mounted on a base of ½" sheet steel and the springs are securely fastened on 3/16" sturdy phenolic bars having high insulation. A sheet steel, light finished, 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. 2 Interrupter with open door

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.

PROTECTORS—CENTRAL OFFICE

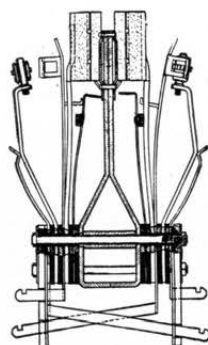
Cook Type

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.

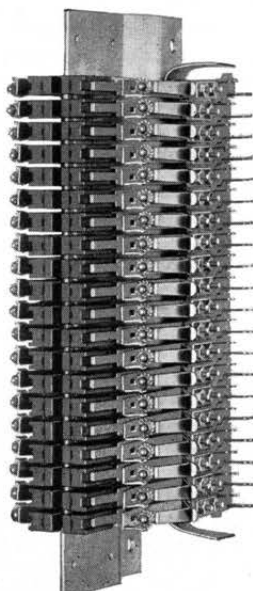
When operated, the modern protector opens the circuit, grounds the line and operates an alarm signal. To reset, the operating spring is relatched over the heat coil ratchet. No coil to change, turn or resolder.

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.

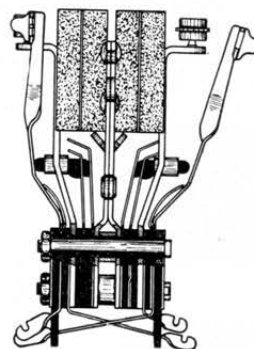
Low resistance heat coils, approximately $3\frac{1}{2}$ ohms, will carry .35 amperes for three hours, and will operate within 210 seconds on .5 ampere in an ambient temperature of 68° F.



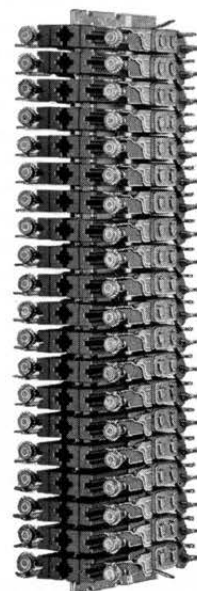
Line Swbd.
Cross Section of No. 3800 Protector



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.

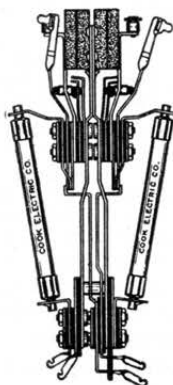
No. 100 Type Cook Protector Cat. No.	Description	Dimensions (Inches)		
		Length	Width	Depth
360-1210	10 Pair bank complete	5 $\frac{1}{2}$	2	3 $\frac{1}{2}$
360-1220	20 Pair bank complete	10 $\frac{1}{2}$	2	3 $\frac{1}{2}$
360-70	No. 100 Heat Coil			
370-10	No. 100 Test Plug			
41-11	Acetate Dielectric .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, $4\frac{3}{4}$ " 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	5½	3	7
392-1520	20 Pair bank complete	10½	3	7
360-70	No. 105 Heat Coil			
370-10	No. 105 Test Plug			
41-1281	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.

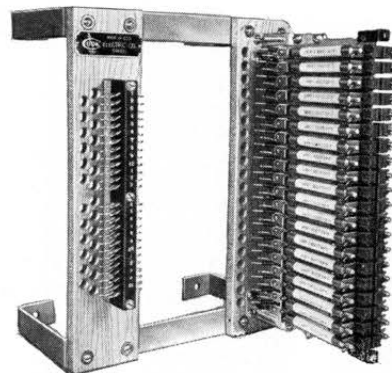
No. H-36 Type Cook Protector Cat. No.	Description	Dimensions (Inches)		
		Length	Width	Depth
296-3610	10 Pair bank complete	5½	1½	5½
296-3620	20 Pair bank complete	10½	1½	5½
306-4501	A-45 Composition Fuse — 1 ampere			
307-4601	A-46 Wood Fuse — 1 ampere			
41-2001	Grooved Carbon			
41-3001	Plain Carbon			
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

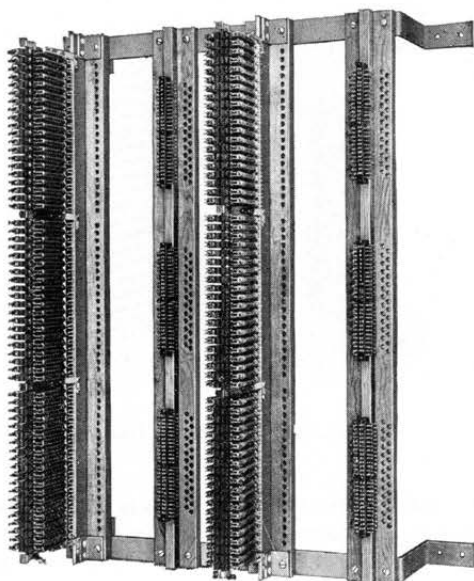
Cat No.	Line Terminals	Protectors	Height	Net Wgt. Pounds
361-1050	20 Pairs	None	1' 1"	10
361-1052	40 Pairs	None	1' 11½"	18
361-1054	60 Pairs	None	2' 10"	32
361-1056	80 Pairs	None	3' 8½"	46
361-1058	100 Pairs	None	4' 7"	60

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.

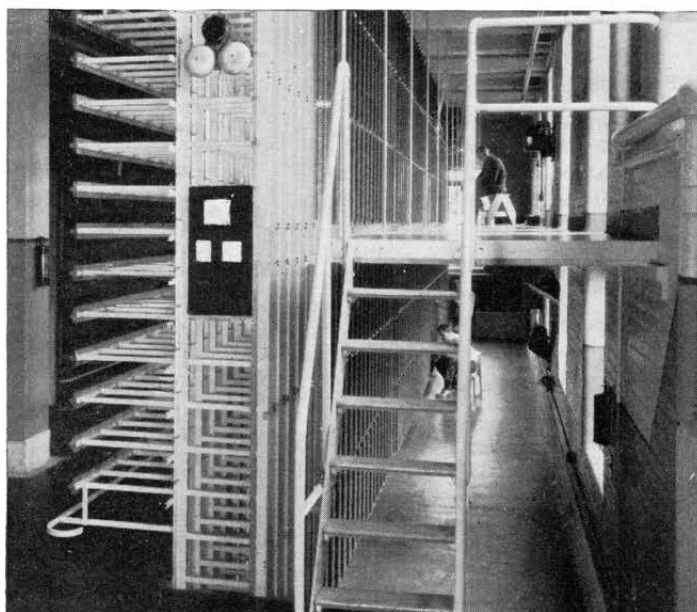
The new Reliable 112-F type line terminal strips are made of high grade precision molded phenolic plastic.

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.

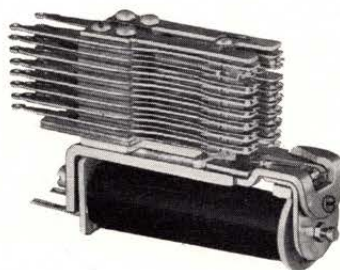
Catalog numbers carry number of rows and number of terminals per row: e.g. 112F 4x26. The top of the terminal block will be numbered as specified.



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. A Stromberg-Carlson Code covers the ordering unit. Cords are now included in this section.

CONTENTS

SECTION F

CODED PARTS

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Distributing Bars	15f
Drops	17f
Fuses	20f
Gongs	20f
Hand Generators	21f
Holly Strips	22f
Hookswitches and Hooks	22f
Jacks	23f
Keys	30f
Key Box	45f
Lamps — Switchboard	47f
Lamp Caps	48f
Lamp Sockets	49f
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Plugs	52f
Receivers	55f
Relays and Relay Coils	57f
Ringers	71f
Terminal Equipment	77f
Tools, Switchboard and Telephone	79f
Transmitters	81f
Visual Signals	82f

STROMBERG-CARLSON CODED PARTS

The Right Part

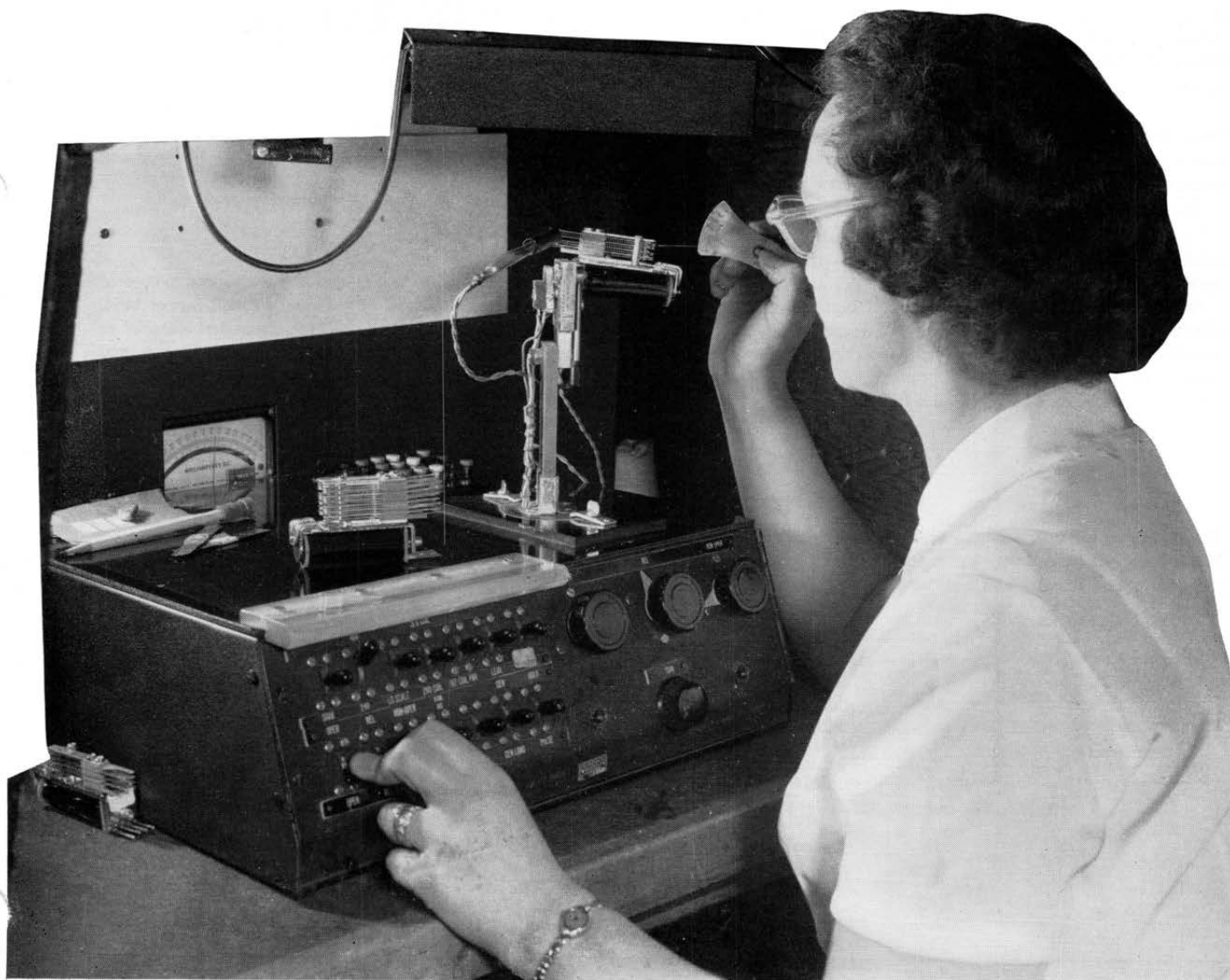
Whether for additions or replacement, only the correct part will perform its proper function in the apparatus. Every effort is made to present in this section complete descriptions of parts so that correct ordering will be easy.

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

Stromberg-Carlson 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 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 catalogue. 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.

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.)

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.)



A Typical Key Blank assembled

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.)

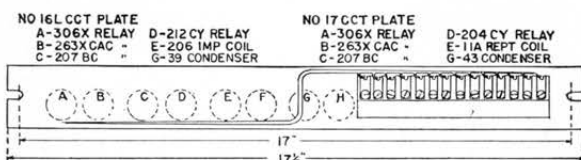
PLUG HOLE BLANKS to fill the space of switchboard plugs, of individual lamp sockets, and of individual round barrel keys.

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	(1 AL)	PBX Trunk, Impedance Coil
800220	(2 BL)	PBX Trunk, Repeating Coil
800227	(6 AL)	PBX Dial Trunk, Impedance Coil
800249	(16-L)	PBX Impedance Coil (short)
800250	(17-L)	PBX Repeating Coil (long)

(The No. 17-L replaces No. 2 AL)

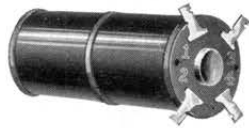
†800252	(19-L)	PBX Impedance Coil (short)
201763	(20)	PBX Impedance Coil (short)
201764	(21)	PBX Repeating Coil (long)
201021	(25)	PBX Impedance Coil (short)
201022	(26)	PBX Repeating Coil (long)

†Same as No. 17-L, but will mount an extra condenser.

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.

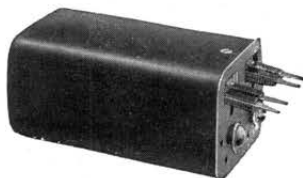
Stock No.	Code	Approximate Resistance
800265	(10-A)	35 x 35 Ohms
800266	(10-B)	100 x 100 Ohms

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 R.H.I.W. screws.

Stock No.	Code	Approx. Resistance	Overall Dimensions
800268	(13-A)	35 x 35 Ohms	1 3/8" x 2 7/8" x 1 11/32"

No. 17 and 20 Type



Nos. 17 and 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
800270	(17-AL)	Closed Mag. Cct.	40 x 40
800272	(17-CL)	Closed Mag. Cct.	200 x 200
800274	(17-DL)	Closed Mag. Cct.	85 x 85
800276	(17-FL)	Broken Mag. Cct.	440
800280	(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	(21-A)	140	PBX Operator's Circuit

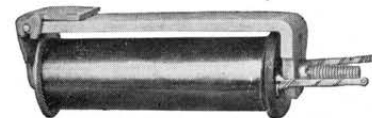
No. 24 Type

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	24	Composite Coil	105

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	(201)	5	12276
800289	(202)	15	12277
800290	(203)	70	12278
800291	(204)	100	15491
800292	(205)	200	12280
800293	(206)	500	12266
800294	(207)	1000	12267
40715	(208)	800	12281
800295	(209)	1500	12282
800296	(213)	320	15435
800297	(214)	2000	15436

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	(221)	65 x 65	12286
800300	(222)	100 x 100	12287
800301	(223)	200 x 200	12288
800302	(224)	500 x 500	12289
800303	(225)	1000 x 1000	12290
40716	(226)	75 x 75	12293
800304	(228)	8 x 8	12279

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COILS—IMPEDANCE (Cont.)

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	(243)	100 x 350 N.I.	15197
201126	(245)	500 x 2000 N.I.	15199
800307	(249)	500 x 5000 N.I.	28268

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	(303)	50	Single	28725
800310	(304)	100	Single	15491
800311	(306)	500	Single	12266
800313	(321)	25 x 25	Tandem	28814
800314	(322)	100 x 100	Tandem	12287
800315	(323)	200 x 200	Tandem	12288
800316	(325)	1000 x 1000	Tandem	12290
800317	(326)	50 x 50	Tandem	12291
800318	(352-L)	100 x 100	Parallel	34430

"A" Relay Type Impedance Coil



"A" Type Impedance Coil

These impedance coils mount like "A" Type Relays. They are used in XY Systems with No. 36676 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	Coil Wound Stock No.
36298	1350	36817
36299	560	36815
36300	350	36814

Complete Coil Stock No.	Ohms Resistance	Coil Wound Stock No.
36302	2120	(single) 36818
36304	27	36808
36307	220	36813
36309	2700	36851
36310	214	36873
205350	100	36811
205351	850	36816
205353	140	36812
205354	67	36810
205355	1310	36875
205357	5500	36820
205358	250	36847
205360	8600	36821
205361	220	36813
205364	514	36871
205366	500	36848
205367	10	208529
205369	140	208530
205370	7	36805

Concentric Wound Coil Two Inductive Windings

Complete Coil Stock No.	Ohms Resistance	Coil Wound Stock No.
36308	514 x 2020	36887
36291	2.5 x 130	36889
36292	38.7 x 38.4	36890
36295	0.10 x 200	36898
36305	200 x 200	36954
36301	1310 x 2020 (concentric)	36884
36303	79 x 2020 (concentric)	36893
205352	200 x 200	36976
205356	3 x 490	36925
205359	200 x 200	36977
205362	1000 x 1000	36958
205365	332 x 470	36205
205368	332 x 1200	36886
*205363	100 x 100	36985

*Equipped with armatures

Parallel Wound Coil Two Inductive Windings

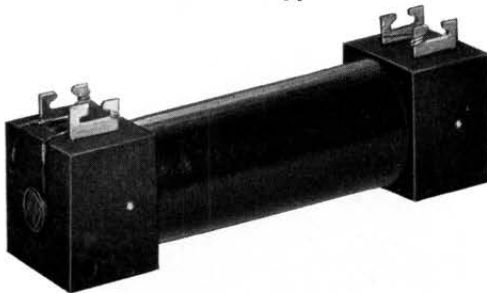
Complete Coil Stock No.	Ohms Resistance	Coil Wound Stock No.
36293	175 x 175	36961
36296	1200 x 1200	36969
36297	280 x 280	36963
36306	1060 x 1060	36954

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—INDUCTION

No. 44 Type

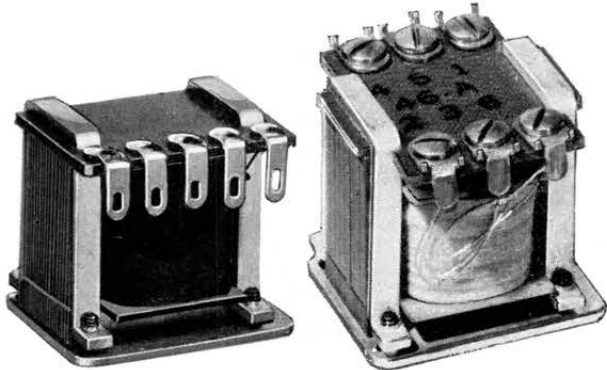


No. 44 Type Induction Coil

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 3/16" x 1 7/16" x 1 1/8".

Stock No.	Code	Windings	Approximate Resistance		
			Primary	Secondary	Tertiary
800424	(44-A)	2	2.2 Ohms	12.9 Ohms	None
800425	(44-B)	2	14.3 Ohms	8.9 Ohms	None
800427	(44-D)	3	11.3 Ohms	62.0 Ohms	56.0 Ohms
800428	(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) Induction Coil is used in the anti-side-tone circuits of Nos. 1210, 1211, 1212 and No. 1191 Telephones.

The No. 45-B (25677) Induction Coil is used in the circuit of the magneto telephone No. 1207.

The No. 46-A (32943) Induction Coil is used in the anti-side-tone circuits of Nos. 1222 and 1223 Telephones.

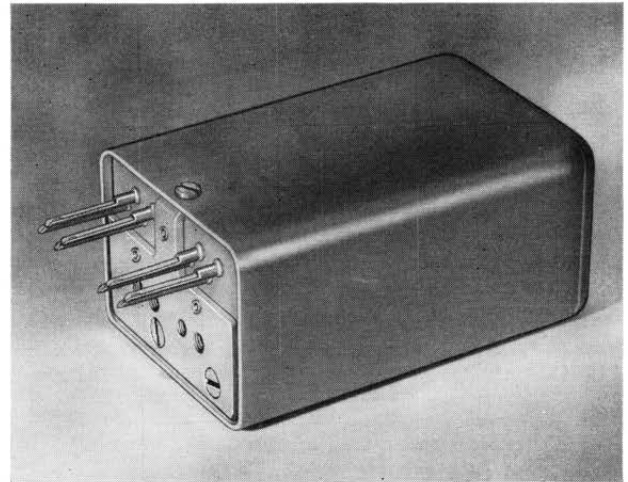
The No. 46-B Induction Coil is used in magneto telephones or in telephones with local battery talking and common battery signalling.

Stock No.	Code	Windings	Primary	Secondary	Tertiary
23124	(45-A)	3	8.0 Ohms 296 Turns	29.0 Ohms 579 Turns	44 Ohms 405 Turns
			No. 32 AWG	No. 34 AWG	No. 36 AWG
			Turns Ratio, Coils 1-2:3-4 as 1:1.9		
25677	(45-B)	2	.74 Ohms 87 Turns	9.5 Ohms 375 Turns	None
			No. 26 AWG	No. 30 AWG	
			Turns Ratio, Coils 1-2:3-4 as 1:4.3		
32943	(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		
			Primary	Secondary	Tertiary
800432	(46-B)	4	70 Turns No. 30 AWG	296 Turns No. 34 AWG	157 Turns No. 36 AWG
800434	(47-B)		2.03 Ohms 523 Turns No. 25 S.E.	450 Ohms 1247 Turns No. 36 D.E.	28.4 Ohms 2180 Turns No. 28 S.E.
			Monitor	Test	
			73.8 Ohms	77 Ohms	
			686 Turns	686 Turns	
			No. 36 D.E.	No. 36 D.E.	

Turns Ratio, Coils 1-2:3-4:5-6:7-8:9-10 as 1:2.4:4.1:1.3:1.3

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.

Stock No. (207866)		
Terminals	Windings	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

Revised 6-1-55

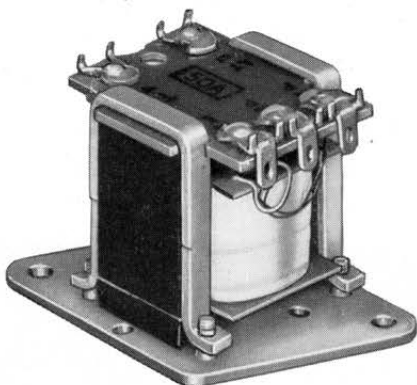
COILS—INDUCTION (Cont.)

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	(49-A)	150 Turns 4 Ohms	1,000 Turns Non Inductive
208106	(49-B)	150 Turns 4 Ohms	1,000 Turns Non Inductive

No. 50 Type

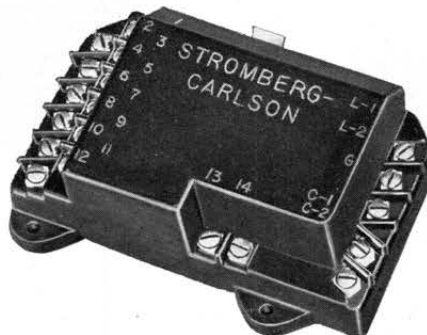


The No. 50-A Type Induction Coils are used in PBX and Multiple Switchboard circuits, replacing the former No. 47-A Induction Coil. The windings on the No. 50-A are electrically equivalent to those in the former No. 47-A, but the difference lies in the fact that the line and receiver windings are unbalanced.

Stock No.	Code	First Winding	Second Winding	Third Winding
212463	(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.

No. 200595 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

No. 208359 Assembly is used as follows:

Common battery	1443, 1447	1450	1460
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No. 210558 Assembly is used as follows:

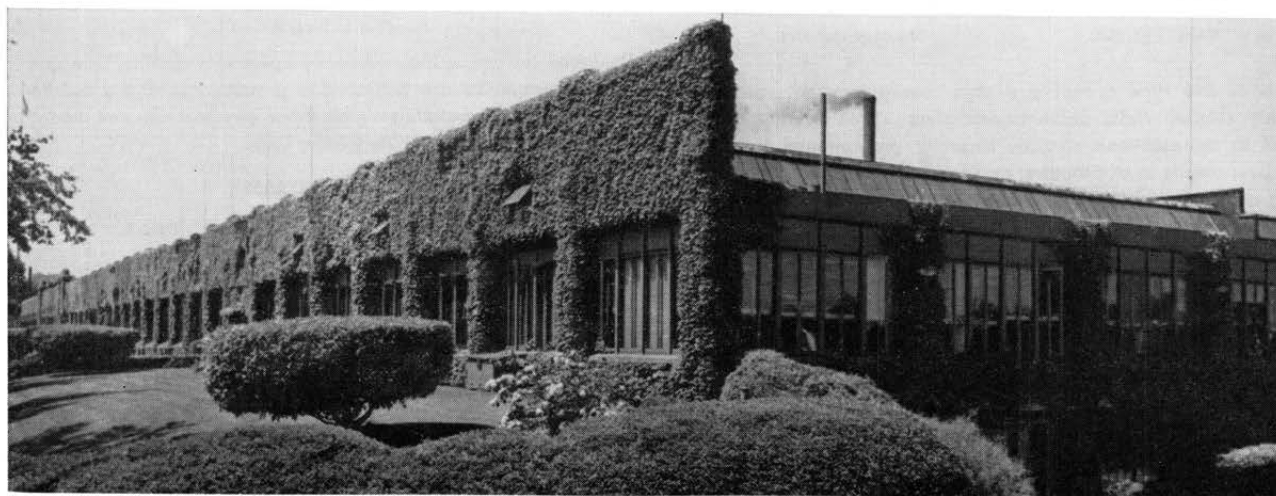
Common Battery	1543, 1573	—	1560
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No. 211155 Assembly is used as follows:

Common Battery	1575	—	—
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No. 210640 Assembly is used as follows:

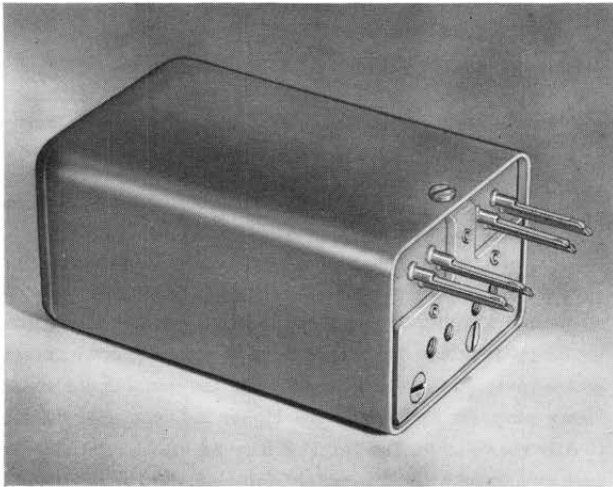
Common Battery	1543W	—	—
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STROMBERG-CARLSON

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 25/32"; width, 2 27/64"; height, 1 55/64".

Stock No.	Code	Use	Resistance Between Terminals
800436	(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-A 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 25/32"; width, 2 27/64"; height, 1 55/64".

Stock No.	Code	Use	Resistance Between Terminals
800440	(13-AL)	On universal Cord	Ter. 1 and 2—15.6 Ohms
		Circuits and on	Ter. 3 and 4—16.5 Ohms
		Magneto Switch-	Ter. 5 and 6—19.4 Ohms
		boards.	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	

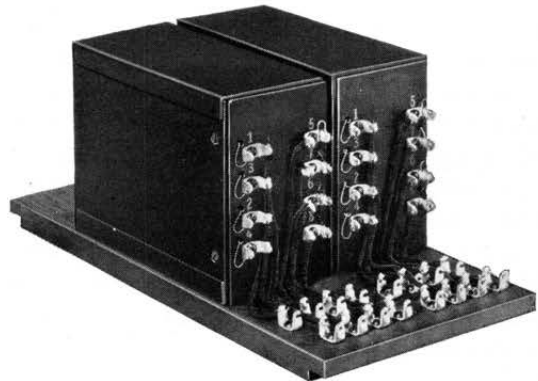
No. 14-A Repeating Coil

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	(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	(15-BL)	Same as No. 18-A except mounts on flat surface. Designed for outdoor use.
800449	(15-BYL)	Uses 1 No. 15-BL Coil mounted on wood sub-base for Phantom use. Length, 8 3/4"; width, 2 1/2"; height, 4 17/64".
800448	(15-BXL)	2 No. 15-BL Coils mounted on wood sub-base for Phantom use. Length 10 3/4"; width, 4 7/8"; height 4 17/64".

No. 16 Type Repeating Coil

Stock No.	Code	Description
800450	(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.

For use of No. 16-AL Repeating Coil in connection with common battery see Switchboard Section of Catalogue.

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	(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 3/8"; width, 2 27/64"; height, 3 13/16".

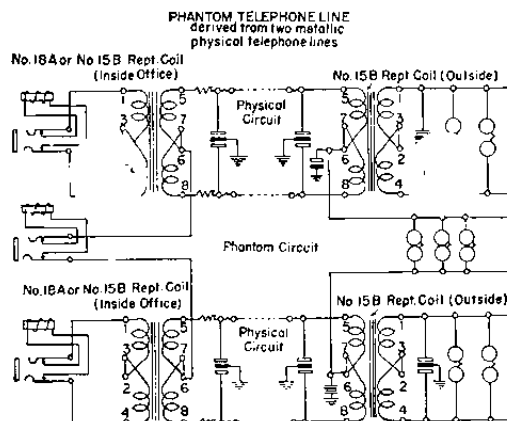
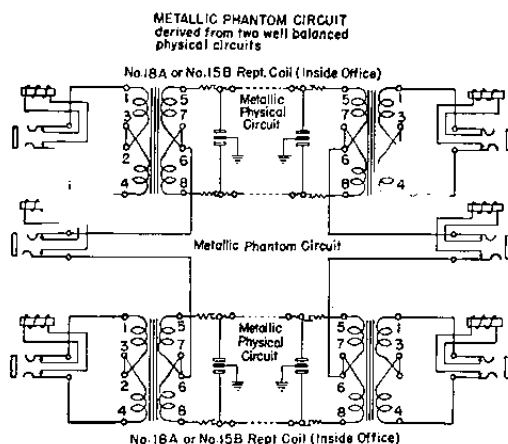
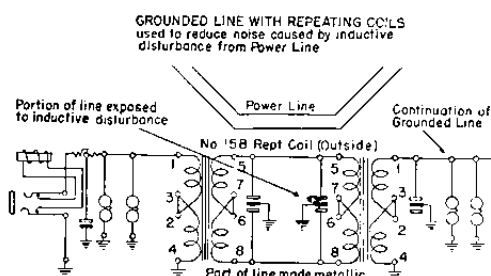
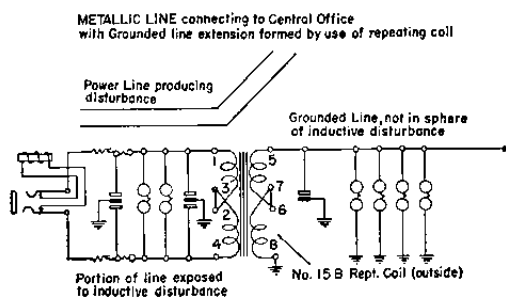
Type 18 Repeating Coils are made in two impedance ratios. The No. 18-A is a 1:1 ratio coil and is designed for use between terminations 600 Ohms and 600 Ohms or between 900 Ohms and 900 Ohms. The No. 18-B is a 1:1.5 ratio coil and is designed for use between 600 Ohm office and 900 Ohm line or between 900 Ohm office and 1350 Ohm line.

Stock No.	Code	Balanced Windings	Approximate Resistance between Terminals	
800453	(18-A)	5-6, 7-8	1-2,—14 Ohms	5-6,—15 Ohms
			3-4,—14 Ohms	7-8,—15 Ohms
800454	(18-B)	5-6, 7-8	1-2,—14 Ohms	5-6,—20 Ohms
			3-4,—14 Ohms	7-8,—20 Ohms
800455	(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.

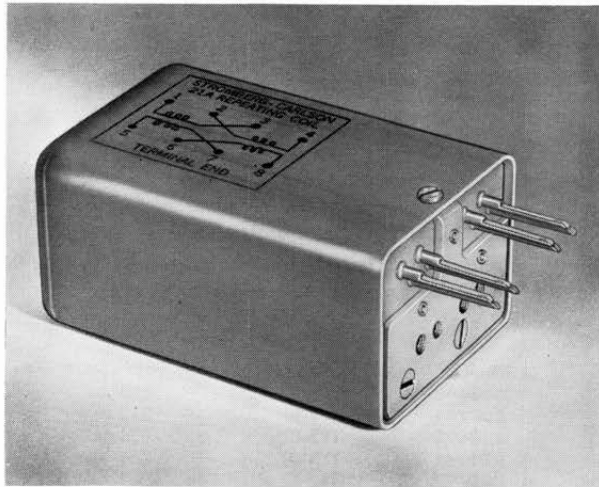
Stock No.	Code	Balanced Windings	Approximate Resistance between Terminals
200934	(18-F)	5-6, 7-8	Same as 18-A

Typical Circuit Diagrams, showing Use of No. 15, No. 18 and No. 21 Type Repeating Coils.



REPEATING COILS (Cont.)

No. 21 and No. 22 Type



The No. 21 Repeating Coil

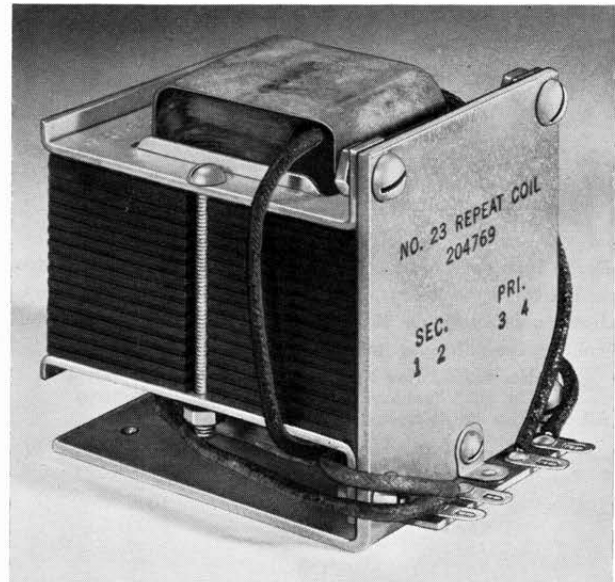
The No. 21 Repeating Coils are a new series of low loss repeating coils designed particularly for talk through service in Phantom, Simplex and Composite circuits. These coils replace the No. 18 Type Coils in all applications where 20 c.p.s. ring through is not required; the advantages are lower transmission 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.

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
Primary, 3-4
Secondary, 1-2
Stock No.
204769

Nominal Secondary
Resistance (Ohms)
50
Code
23

Stock No.	Code	Impedance Ratio	
		5-7,6-8/1-3,2-4	
203925	21-A	1:1	
203926	21-B	1.5:1	
203927	21-C	1:1.5	
207065	21-AS	1:1	
207066	21-BS	1.5:1	
207067	21-CS	1:1.5	
207649	22-A	1:1	
207650	22-B	1.5:1	
207651	22-C	1:1.5	
207632	22-AS	1:1	
207648	22-BS	1.5:1	
207633	22-CS	1:1.5	

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

STROMBERG-CARLSON

Revised 6-1-55

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

No. 10 Resistance Coil

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 No. 203539 Package Assembly which includes the following items:

- 1—No. 525063 Hex Nut 1—No. 525643 Washer
1—No. 1096 Bushing 1—No. 6019 Washer

All coils are single-wound, non-inductive.

No. 10—Single Wound

*Coil Only Stock No.	Code	Resistance Ohms
15710	(10-A)	1000
15711	(10-B)	3000
15714	(10-C)	100
15715	(10-D)	200
15712	(10-E)	50
15713	(10-F)	2000
49994	(10-G)	375
49993	(10-H)	500
49995	(10-I)	140
41172	(10-J)	5000
40719	(10-K)	400

*Does not include parts for mounting.

No. 11 Resistance Coil

Similar to the No. 10 Type in design and method of mounting but with two non-inductive concentric wound coils. Package Assembly No. 203539 should be ordered separately for mounting parts which are the same as for No. 10 Type Resistance Coil.

No. 11—Double Wound

*Coil Only Stock No.	Code	Concentric Wound Ohms Resistance	
		Inner	Outer
202252	(11-A)	1100	15000
202253	(11-B)	500	1000
202254	(11-C)	50	250
202255	(11-D)	100	500
15716	(11-E)	1000	10000
202256	(11-F)	200	600
202257	(11-G)	600	600
15717	(11-H)	50	50
202258	(11-I)	1500	1500
202259	(11-J)	1000	1500
202260	(11-K)	200	400
202261	(11-L)	25	1500
202262	(11-M)	50	1500
202263	(11-N)	1500	350
15718	(11-O)	200	1000
202264	(11-P)	300	1000
202265	(11-R)	240	240
201116	(11-S)	400	400
33756	(11-T)	10	1000
35035	(11-U)	500	10000
41652	(11-W)	250	250
40718	(11-X)	200	200
41173	(11-Y)	240	240, 140
41817	(11-Z)	15	600
41818	(11-AA)	1000	2000
41819	(11-AB)	1000	1000
42529	(11-AC)	500	350
42530	(11-AD)	750	10000
49972	(11-AE)	400	10000
205898	(11-AF)	300	300,300

*Does not include parts for mounting.



No. 11 Resistance Coil

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.

No. 12—Single Wound

Stock No.	Code	Winding Data—Ohms Res.	
		Primary	Secondary
800493	(12-A)	320	
800494	(12-B)	350	
800495	(12-C)	500	
800496	(12-D)	750	
800497	(12-E)	1000	
800498	(12-F)	1500	
800499	(12-G)	2000	
800500	(12-H)	200	
800501	(12-I)	100	
800502	(12-J)	50	
800503	(12-K)	25	
42827	(12-L)	4000	
203387	(12-M)	1200	

No. 13—Double Wound

Stock No.	Code	Winding Data, Ohms Res.	
		Primary	Secondary
800504	(13-A)	50	50
800505	(13-B)	200	200
800506	(13-C)	240	240
800507	(13-D)	320	320
800508	(13-E)	400	400
800509	(13-F)	500	500
800510	(13-G)	1000	1000
800511	(13-H)	1500	2000
800512	(13-I)	10000	350
800513	(13-J)	10000	500
800514	(13-K)	10000	750
800515	(13-L)	10000	1000
800516	(13-M)	100	100
200010	(13-N)	18000	18000
202095	(13-O)	10000	10000
203565	(13-P)	500	800

No. 14—Triple Wound

Stock No.	Code	Winding Data, Ohms Res.		
		Primary	Secondary	Tertiary
800517	(14-A)	240	240	140
200402	(14-B)	500	500	500

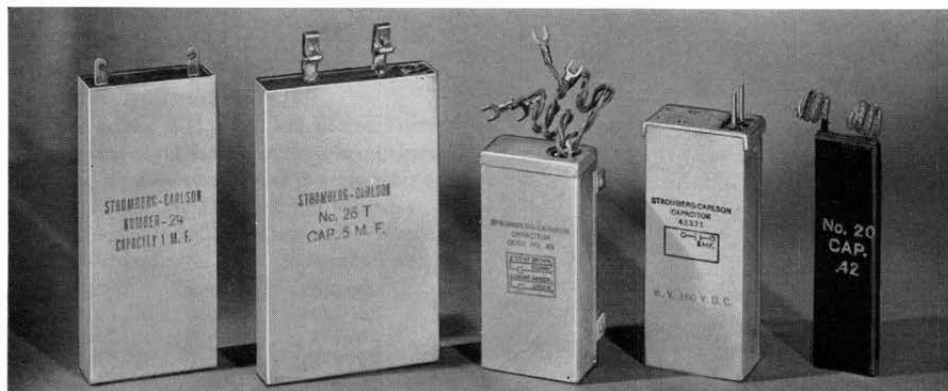
CORDS

Ordering information on Stromberg-Carlson cords for handset, desk set, receiver, operator's switchboard, and miscellaneous uses will be found in Section F at the end of the section.

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 K

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		
	Working	Test	200	350	525
			400	700	1050
					750
					1500
					2000

Style A—Condenser Mounting Plate Type

This is a discontinued switchboard type that mounted on condenser plates designed for this purpose.

These condensers are now used only for additions to switchboards in which they were originally specified as the present practice is to place condensers on the same type of mountings as relays.

Can dimensions: 4 3/4" x 1 7/8" x 3 1/32". Light finish.

Stock No.	Code	Capacity	Use
800518	(18-L)	1 mf.	Swbd.
803076	(19-L)	2 mf.	Swbd.
800528	(28-L)	3 1/2 mf.	Swbd.
800529	(29-L)	1 mf.; 500 N.I.	Swbd.
800530	(34-L)	3 mf.	Swbd.
800532	(35-L)	1 mf. and 2 mf.	Swbd.

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	(21-L)	1 mf.	1155, 1157, 950, Tels. 1156, 1158, Desk Set Box
800522	(22-L)	2 mf.	Misc. Telephones
800524	(24-L)	1 mf.	948 Desk Set Box
800525	(25-L)	1 mf.	Telephone & Radio

Can Dimensions

21-L:	4 7/16 x 2 13/16 x 5/8"	24-L:	4 7/16 x 2 1/32 x 13/16"
22-L:	Same	25-L:	3 5/8 x 2 1/32 x 13/16"

Style C—Unmounted Type

Has insulated wire terminals and black cloth cover.

Stock No.	Code	Capacity	Dimensions
800520	(20)	0.4 mf.	3 1/2" x 1" x 19/64"

Used with Nos. 6, 11 and 19 Handsets (Test Sets)

Style D—Unmounted Type

Has light finished metal case with Fahnestock clips. Dimensions: 4 7/16" x 2 13/16" x 5/8".

Stock No.	Code	Capacity	Use
800526	(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: 4 15/16" x 4 13/32" x 3/4". Mounts with metal clips.

Stock No.	Code	Capacity	Use
800527	(27-L)	5.0 mf.	Ringing 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	(36)	1 mf. and 1 mf.	Ringing Converters
800534	(37)	1 mf. and 2 mf.	1155-A, 1157-A Telephones 1156-A, 1167 Desk Set Box

Can Dimensions: 4 7/16" x 2 13/16" x 5/8"

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: 3 11/32" x 1 9/16" x 7/8".

Stock No.	Code	Capacity	Use
33970	(48)	1.85 & 1 mf.	1222, 1223 Telephones; 1230 D.S. Box
34524	(49)	1.85 & 2 mf.	1233 Telephone
34917	(50)	1.85 mf.	1232 Telephone

STROMBERG-CARLSON

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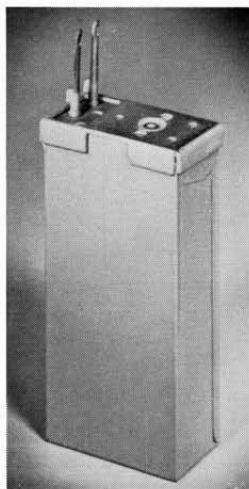
CONDENSERS—CAPACITORS (Cont.)

Style H — Unmounted Type

Metal case with light finish. Dimensions: $2\frac{3}{8}" \times 1\frac{1}{2}" \times \frac{5}{8}"$.

Stock No.	Code	Capacity	Use
800547	(51)	1 mf. & 500 Ohm N.I.	Converter (Rad. Elim.)

Present Style J—Relay Mounting Plate Type



Present Style J condensers, used in current switchboards and for all new work, are listed below. 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. Present Style J 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 hydrolene to reduce surface leakage in high humidities.

Can dimensions: $3\frac{3}{4}" \times 1.665" \times 1"$ —Light Finish.

Stock No.	Code	Capacity
42370	(55)	1 mf.
42373	(59)	1 mf.—1 mf.
42376	(62)	1 mf.—500 Ohms N.I.
49955	(63)	0.5 mf.—600 Ohms N.I.
200765	(64)	0.5 mf.
202466	(65)	.02 mf.—.02 mf.
202463	(66)	0.5 mf.—0.5 mf.
202464	(67)	1 mf.—0.5 mf.
203850	(68)	1 mf.—200 Ohms N.I.
205562	(73)	1 mf.—600 Ohms N.I.
207248	(74)	1 mf.—47 Ohms N.I.
209322	(75)	.5 mf.—150 Ohms N.I.
209323	(76)	.5 mf.—150 Ohms N.I. (2)
211307	(77)	1 mf.—200 Ohms N.I. (2)

Present Style K — Relay Mounting Plate Type

This style condenser uses the same mountings as the Style J condensers. The major difference between the Style J and the Style K condensers is their relative size. The condenser unit is larger in the Style K as is the can that encases the condenser. Exact dimensions of the can are: height— $3\frac{3}{4}"$, width— $1\frac{1}{32}"$, and depth— $\frac{3}{32}"$.

Stock No.	Code	Capacity
42371	(56)	2 mf.
48346	(57)	3 mf.
42372	(58)	4 mf.
42374	(60)	1 mf.—2 mf.
42375	(61)	2 mf.—2 mf.
203863	(69)	2 mf.—22 Ohms N.I.
204410	(70)	2 mf.—33 Ohms N.I.
204710	(71)	2 mf.—39 Ohms N.I.
205524	(72)	2 mf.—2000 Ohms N.I.
213447	(78)	2 mf.—39 Ohms (2)

Former Style J Condensers Relay Mounting Plate Type

Condensers in the 38 to 44-A series are used only in switchboards in which this former style was originally installed. Like the new style J, these condensers mount the same as No. 200 Type Relays but the old style No. 19 Relay Casing is used in which the case proper is $3\frac{3}{4}"$ long.

Can Dimensions: $3\frac{13}{32}" \times 1\frac{11}{16}" \times 31/32"$.

Stock No.	Code	Capacity
800535	(38-A)	1 mf.
800536	(39-A)	2 mf.
800537	(40-A)	4 mf.
800538	(41-A)	1 mf.—1 mf.
800539	(42-A)	1 mf.—2 mf.
802982	(43-A)	2 mf.—2 mf.
800541	(44-A)	1 mf.—500 Ohms N.I.

Miscellaneous Condensers

These are unmounted types designed for use in miscellaneous telephone and desk set boxes.

Stock No.	Capac. (mf.)	Dimensions	Use
25900	1-2	$15/16" \times 9/16" \times 2\frac{19}{32}"$	1209 D.S. Box
28216	1-1.7	$\frac{7}{8}" \times 1\frac{1}{2}" \times 2\frac{1}{2}"$	1210-11 Tels.
28463	1-1.7	$\frac{7}{8}" \times 1\frac{1}{2}" \times 2\frac{1}{2}"$	1212 Telephone
			1217-18-19-20
			Chime D.S. Box
33231	2.25-1	$\frac{7}{8}" \times 1\frac{1}{2}" \times 3\frac{3}{8}"$	W-1218 D.S. Box
35149	1-1	$11/16" \times 19/32" \times 2\frac{1}{8}"$	1191-92-95, 1202, 1215-1216 Tels.

Special Condensers

The Stromberg-Carlson Condensers shown here are in general use for purposes specified. It is standard practice to mount terminal blocks on the covers but special condensers can be furnished with other types of terminals, containers or mounting arrangements.

Special Condensers are not carried in stock but different types can be made in quantity lots to specifications that will meet various requirements.

Condenser Mounting Plates

Condenser mounting plates are not furnished in present standard switchboards as it has become our regular practice to use the same type of plate on which relays are mounted. See Style J Condensers for relay mounting plate type. (Codes 55 to 64.)

Style A Condensers which were designed for the Condenser mounting plates shown below are now used on old switchboards only where this type of mounting was originally specified.

Stock No.	Code	Used on	No. Cond. Mounted	Mtg. Centers
800553	(6)	Relay Racks	24	$25\frac{1}{2}"$
800554	(7)	Switchboards	20	$20\frac{3}{8}"$
800555	(8)	No. 102 PBX Swbds.	16	17"
800556	(9)	PBX Swbds.	4	Angle
800557	(10)	PBX Swbds.	1	Angle
800558	(11)	No. 13 Section	17	$18\frac{3}{8}"$

STROMBERG-CARLSON

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	(2)	109 Jack	Face Length—10 15/32" Width—1/2" Mounting Centers—10 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	(5)	Plug Shelf	Specify	1/2"	Pol. Nickel
800730	(24)	Keyboard	Specify	1/2"	BLK. Japan
33764		Face, 120 Swbd.	10 23/64"	.373"	Brass

†Dull black finishes will be provided when necessary.

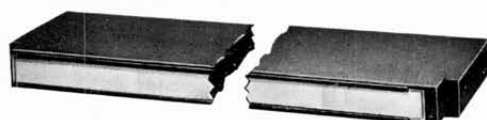
No. 14 Type

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 On	Dimensions
800715	(14)	127 Jack	Face Length—7 15/32" Width—3/8" Mounting Centers—8 3/8"
800717	(16)	130 Jack	Face Length—10 1/8" Width—1/2" Mounting Centers—11 1/16"



No. 15 Designation Strip

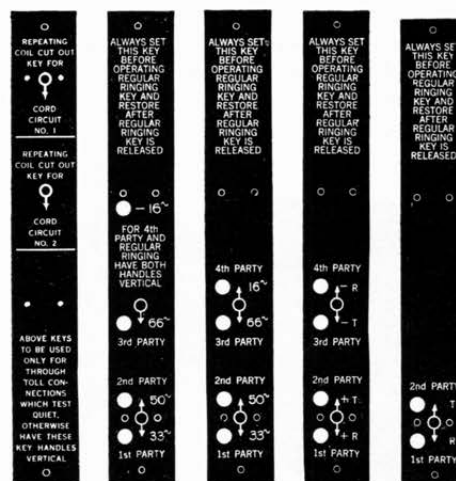
No. 15 Type

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	(15)	127 Jack	Face Length—7 15/32" Width—5/16" Mounting Centers—8 3/8"
800718	(17)	130 Jack	Face Length—10 1/8" Width—1/2" Mounting Centers—11 1/16"
800728	(22)	Same as No. 15, except has slot at rear for sheet metal fire screen.	
800731	(25)	127 Jack	Face Length—7 15/32" Width—1/2" Mounting Centers—8 3/8"
481367	(34)	93-A 94-A Jack Mtg.	Face Length—16 15/16" Width—1/2" Mounting Centers—17 15/16"

No. 19 Type

This type consists of a metal mounting plate with a card 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	(19)	Keyboard of No. 105 Switchboard designating cord circuit operation.	Length—7 1/4" Width—1" Mtg. Centers—6 13/16"
800720	(19-A)	Keyboard of No. 105 Switchboard with Harmonic Master Key.	Same as No. 19
800721	(19-B)	Keyboard of No. 105 Switchboard with Harmonic Master Key.	Same as No. 19
800722	(19-C)	Keyboard of No. 105 Switchboard with Pulsating Master Key.	Same as No. 19
800723	(19-D)	Keyboard of No. 105 Switchboard with divided circuit Master Key.	Same as No. 19

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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	(20)	Manual PBX Trunk	5½" 1"
800725	(20-A)	Dial PBX Trunk	5½" 1"
800726	(20-B)	Magneto PBX Trunk	5½" 1"
800727	(20-C)	PBX Swbd.-Plug Trunk	5½" 1"
800736	(30-A)	PBX—Cords, Jack Trunk	5½" 1"
800737	(30-B)	PBX—Cords, Jack Trunk	5½" 1"
800738	(31-A)	PBX—Cords, Jack Trunk	6½" 1"
47268	(32)	2 Pty. Ringing—No. 125 Swbd.	5½" 1⅞"
47269	(32-A)	4 Pty. with Hand Gen. No. 125 Swbd.	5½" 1"
47270	(32-B)	4 Pty. Harmonic—No. 125 Swbd.	5½" 1"
47271	(32-C)	5 Pty. and Reverse—No. 125 Swbd.	5½" 1⅞"
47272	(32-D)	5 Pty.—No. 125 Switchboard	5½" 1⅞"
201011	(33)	Cord cct. operation—PBX	6½" 1"
205059	(35)	No. 127 PBX Switchboard	

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
800729	(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	(26)	121 L.S.	7½" 31/64"
800733	(27)	20 per	10⅞" 31/64"
800734	(28)	10 per	10⅞" 31/64"
800735	(29)	10 per	7 15/32" 31/64"

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. A complete description and instructions for maintenance are also prepared in an attractive booklet which is available upon request or from your Stromberg-Carlson representative.



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, 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 (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	(1-A)	1	Terminal boards of PBX Switchboard to connect with battery supply.

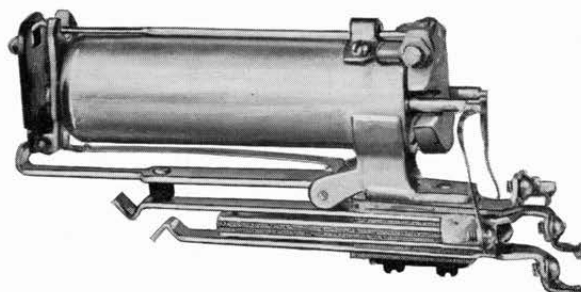
No. 3 Type

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	(3)	4	2⅝"
800743	(5)	6	3⅝"
800745	(7)	8	4⅝"
800746	(8)	10	5⅝"
800749	(11)	16	8⅝"
800750	(12)	20	10⅝"

STROMBERG-CARLSON

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	(18-A)	200	Regular	No. 56-X	10
801789	(18-B)	500	Regular	No. 56-X	10 or 5
801790	(18-C)	600	Regular	No. 56-X	10
*49608	(18-D)	200-200 1500 N.I.	Regular	No. 56-X	10
801798	(23-B)	500	Reg. & Code	No. 56-X	10
*204819	(23-D)	200-200 1500 N.I.	Reg. & Code	No. 56-X	10
202063	(25-B)	500	Regular	No. 53,	10
206392	(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	Metal Sleeve (Jack)
27188	Insulating Sleeve
27297	Washer (Sleeve)
37196	Spacer
37469	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	10—No. 801789 (18-B) Drops (500 Ohms) mounted on 1—No. 37197 (147) Drop Mounting Plate
49612	10—No. 49608 (18-D) Drops (100-100 Ohms) mounted on 1—No. 37197 (147) Drop Mounting Plate
40133	10—No. 801798 (23-B) Drops (500 Ohms) mounted on 1—No. 37197 (147) Drop Mounting Plate
200434	5—No. 200429 (Special No. 18-B) Drops (500 Ohms) mounted on 1—No. 200435 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	(21-A)	200 Ohms	Clear-Out Signal (Less Jack)
801794	(21-B)	500 Ohms	Clear-Out Signal (Less Jack)
801795	(21-C)	600 Ohms	Clear-Out Signal (Less Jack)
*49609	(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 Coil only	200 Ohms	Nos. 18-A, 21-A Drops
49142 Coil only	100-100 Ohms	No. 21-D Drop
49143 Coil only	200-200 1500 N.I.	Nos. 18-D, 23-D Drops
35427 Coil only	500 Ohms	Nos. 18-B, 21-B, 23-B, 25-B, 26-B Drops
35428 Coil only	600 Ohms	Nos. 18-C, 21-C Drops

NOTE: No. 49948 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.

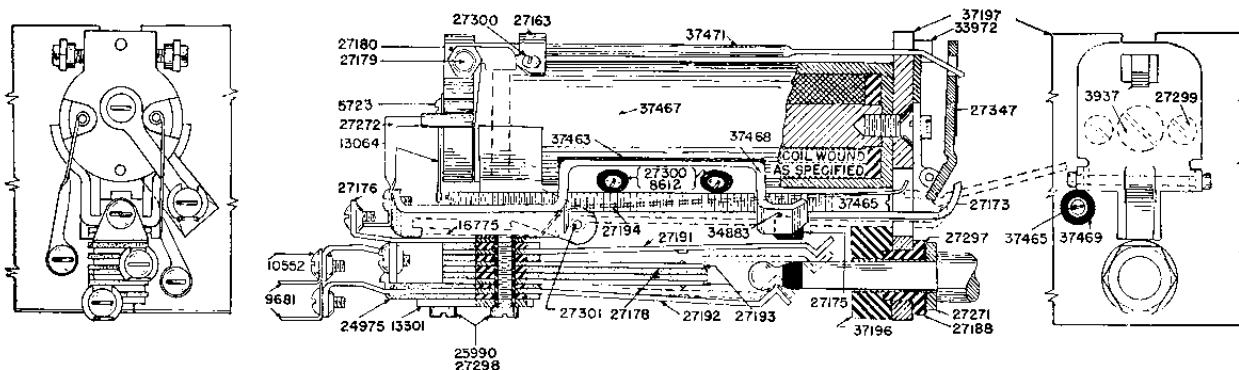
Revised 6-1-55

COMBINED DROP AND JACKS UNITS

Parts of Nos. 18 and 23 Type Drops (Less Coils)

Stock No.	Description	Use	Stock No.	Description	Use
3937	Screw— (Replaced by No. 503883)	Coil retaining screw	27300	Screw	Used with No. 27163 Saddle
8612	Washers (2)	Used with bracket screws	(a) 27301	Pin	Used with No. 27173 Spring
9681	Connectors (4)	Jack Springs	27347	Number plate	Shutter (specify number)
10552	Screws— (Replaced by No. 501003)	Used with connectors	33972	Shutter assembly	Drop assembly
(a) 13301	Plate	Spring pileup (Top)	(a) 34883	Stud	Jack assembly
(a) 24975	Insulation (5)	Spring pileup	(b) 37196	Spacer	Used with No. 37468 Bracket
(a) 25990	Screws (2)	Spring pileup	(a) 37463	Insulation	See No. 202039
27163	Saddle	Drop shell	37465	Rod assembled	Drop Coil
(a) 27173	Spring	Shutter restoring	(a) 37467	Shell	Used with No. 37465 Rod
(a) 27175	Separator	Spring pileup	(b) 37469	Bushing	Mounting Plate
(a) 27176	Terminal	Used with No. 27194 Spring	37471	Armature assembly	Drop assembly
(a) 27178	Insulations (2)	Spring pileup	(a) 37523	Contact assembly 1 No. 37465 Rod, 1 No. 13064 Spring 1 No. 5723 Screw	(Code alarm) consisting of—
27179	Screws (2)	Armature	(a) 49768	Screws (2)	Used with No. 37468 Bracket
27180	Nuts (2)	Armature	(a) 49769	Bushings (2)	Used with No. 49768 Screws
(b) 27188	Insulating sleeve	Jack assembly	202039	Rod assembly	Code alarm
(a) 27191	Spring assembly	Ring conductor	501003	Screws (6)	Used with No. 9681 Connectors
(a) 27192	Spring assembly	Tip conductor	503883	Screw	Coil retaining screw
(a) 27193	Spring assemblies (2)	Inner contacts			
(a) 27194	Spring assembly	Regular night alarm			
(b) 27271	Jack (Metal bushing)	Drop and Jack unit			
27272	Connectors (2)	Terminals			
(b) 27297	Washer	Jack sleeve			
(a) 27298	Bushings (2)	Used with No. 25990 Screws			
27299	Screws (2)	Drop shutter			
27300	Screws (2)	Used with No. 37468 Bracket			

(a) A basic assembly of these parts may be ordered under Stock No. 200578 which does not include regular or code alarm contacts but does include jack and associated parts.
(b) These parts are assembled with the strip on which the drops are mounted. See "Drop Mountings".



Parts of Nos. 18 and 23 Type Drops

Drop Mounting Plates

Stock No. Code	Description	Use
*37197 (147)	Mounts 10 No. 18 or 23 Line Drops	No. 125 Swbd.
37198 (148)	Mounts 10 No. 21 Clear-Out Drops	No. 125 Swbd.
39860 (149)	Mounts 10 No. 24 Line Drops	No. 106 Swbd.
200435	Mounts 5 No. 18 or 23 Line Drops	No. 126 Swbd.

*No. 37197 (147) Drop Mounting Plate is assembled with the following parts:

- 10 No. 27271 Metal Bushings (Jack)
- 10 No. 27188 Insulating Sleeves
- 10 No. 27297 Washers(sleeve)
- 1 No. 37196 Spacer
- 10 No. 37469 Bushings

Drop Blanks

Stock No.	Code	Type	No. of Drops Covered	Used
37194	(42)	18, 23	10	No. 125 Magneto Switchboard.
200476		18, 23	5	No. 126 Magneto Switchboard.
802997	(41)	23	1	Nos. 125, 126 Magneto Swbds.
803470	(43)	18	1	Nos. 125, 126 Magneto Swbds.

Drop Blanks—Steel

Stock No.	Code	Fills the space of—
800017	(33)	1 No. 11 Drop
800018	(34)	5 No. 11 Drops

STROMBERG-CARLSON

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 $4\frac{7}{8}" \times 1\frac{3}{32}" \times 1\frac{7}{16}"$. The No. 140 drop strip mounts 5 drops: $7\frac{7}{64}" \times 1\frac{7}{16}"$.

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 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

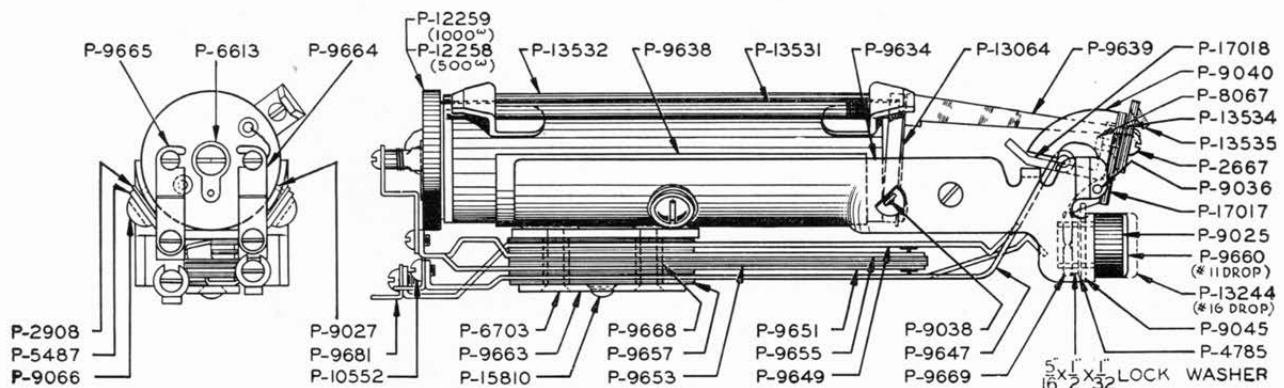
Stock No.	Code	Use	Resistance
801771	(11-A)	Line Signal in former Magneto Switchboards	500 Ohms
801773	(11-F)	Same as 11-A	1000 Ohms
801775	(12-A)	Clear-Out Signal (has no jack)	500 Ohms
801777	(12-F)	Same as 12-A	1000 Ohms
801781	(14-A)	Same as 12-A	500 x 500 Ohms
801782	(16-A)	Same as 11-A except takes No. 53 Plug	500 Ohms
801784	(16-F)	Same as 16-A	1000 Ohms
801785	(17-A*)	Takes No. 53 Plug	500 Ohms
801787	(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.
2525	Screw	11, 12, 14, 16, 17	9655	Spring Assembly (contact)	11, 16, 17
2667	Screw	11, 12, 14, 16, 17	9657	Insulations (short spring) 4	11, 16, 17
2908	Washers (2)	11, 12, 14, 16, 17	9660	Bushing (Jack)	11
4785	Washer	11, 16, 17	9663	Clamp Plate	11, 16, 17
5487	Washer	11, 12, 14, 16, 17	9664	Connector	11, 16, 17
6613	Terminal	11	9665	Connector	11, 16, 17
6703	Screw	11, 16, 17	9668	Bushings (2) Spring	11, 16, 17
8067	Screw	11, 12, 14, 16, 17	9681	Connectors (2)	11, 16, 17
9025	Bushing	11, 16, 17	10552	Screws (501003) 4—RHBM	11, 16, 17
9027	Bushing (2) Frame	11, 12, 14, 16, 17	12258	Coil—500 Ohms	11-A, 12-A, 16-A, 17-A
9036	Pin	11, 12, 14, 16, 17	12259	Coil—1000 Ohms	11-F, 12-F, 16-F, 17-F
9038	Pin	11, 12, 14, 16, 17	12260	Coil—500-500 Ohms	14-A
9045	Washer	11, 16, 17	13064	Spring (Armature)	11, 12, 14, 16, 17
9066	Screws (2)	11, 12, 14, 16, 17	13244	Bushing (Sleeve)	16, 17
9634	Frame assembled	11, 12, 14, 16, 17	13531	Rod Assembly	11, 12, 14, 16, 17
9638	Insulation	11, 12, 14, 16, 17	13532	Shell Assembly	11, 12, 14, 16, 17
9639	Armature	11, 12, 14, 16, 17	13534	Number Plate	11, 12, 14, 16, 17
9647	Spring (Jack)	11, 16, 17	13535	Protector	11, 12, 14, 16, 17
9649	Spring (Jack)	11, 16, 17	15810	Button	11, 16, 17
9651	Spring Assembly (contact)	11, 16, 17	17016	Shutter	11, 12, 14, 16, 17
9653	Insulations (Long spring) 2	11, 16, 17	17017	Frame	11, 16, 17



Line Drawing Showing Piece Parts of the No. 11 Drop

EXTENSION BELLS

See Supply Catalogue for No. 53 Loud Ringing Extension Bell.

FUSES

Indicator Alarm Type

A flat spring on the reverse side of the fuse is connected by fuse wire to a coiled spring on the opposite side. When the fuse is operated this coiled spring causes a glass bead to appear in a prominent position as a visible indication of the blown fuse.

This fuse may also be made to connect with an alarm circuit which operates when the fuse wire is broken.

Stock No.	Code	Rated Capacity
38789	(35-B)	1 1/3 Amperes
39277	(35-G)	3 Amperes
202826	(35-H)	5 Amperes
208439	(35-C)	2 Amperes
208524	(35-B)	2 Amperes

250 Volt Enclosed Fuse — Ferrule Type

Stock No.	Overall Length	Operates On	Stock No.	Overall Length	Operates On
41036	2"	3 Amp.	41042	2"	30 Amp.
41037	2"	6 Amp.	41043	3"	35 Amp.
41038	2"	10 Amp.	41044	3"	40 Amp.

250 Volt Enclosed Fuse — Ferrule Type

Stock No.	Overall Length	Operates On	Stock No.	Overall Length	Operates On
41039	2"	15 Amp.	41045	3"	45 Amp.
41040	2"	20 Amp.	41046	3"	50 Amp.
41041	2"	25 Amp.	41047	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	(1)	3	1"	G-179	Connecting Racks
801562	(4)	10	1"	G-174	Relay Racks

Fuse Wire

For repairing Grasshopper fuses, Stromberg-Carlson carries the following fuse wires in stock:

Stock No.	Description
211731	1 1/4 Ampere Fuse Wire
211732	2 Ampere Fuse Wire
211733	3 Ampere Fuse Wire
211734	5 Ampere Fuse Wire
211735	7 Ampere Fuse Wire

GONGS

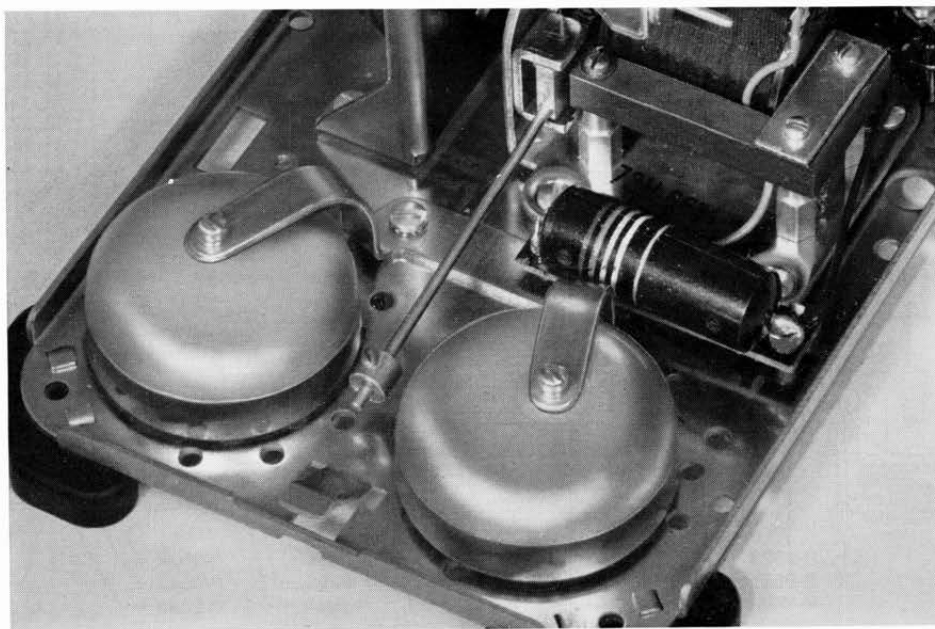
The two-toned (Hi-Lo) bells furnish a clear and pleasing tone which compels attention without being objectionable. Ringers that are used on the 1248-58-68 Magneto Telephones continue to use two-coil ringers with the gong mounting as part of the ringer assembly.

The following gongs are used with Stromberg-Carlson Ringers:

Stock No.	Size	Finish	No. of Telephone
*28569	1 3/4"	Brass	1210, 1211, 1212, 1222, 1223, 1242, 1243, 1247, 1248, 1258 Handset Tels.
*28570	1 3/4"	Brass	1260, 1268 Desk Set Boxes
9888	2"	Brass	903, 904, 965, 1122, 1163-I-C Tels. and 1192 Handset Telephones

12047	2 1/2"	Black	896, 1155, 1157, D-2843 Tels. 327, 1156, 1158, 1167, 1180 and 1230 Desk Set Boxes.
24604	3 5/16"	Black	1191 Telephone, 1209 Desk Set Box
8437	4"	Brass	890, 950 Iron-Clad Telephones.
207744	2"	Brass	Hi Toned for 1400 and 1500 Series Telephones
207745	2"	Brass	Lo Toned for 1400 and 1500 Series Telephones

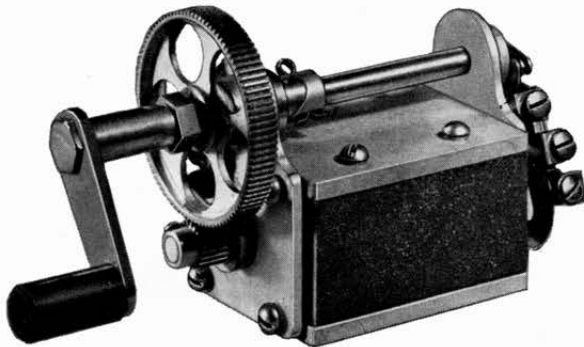
*28569 and 28570 are used in pairs. The material is of different thickness to produce a two-tone effect.



Close-up of Gongs used in 1500 Series Telephones

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.

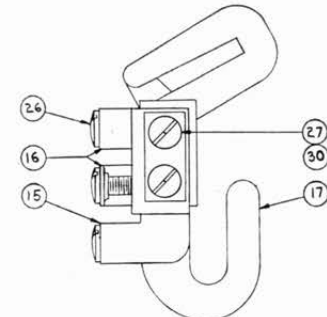
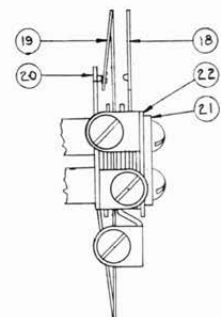
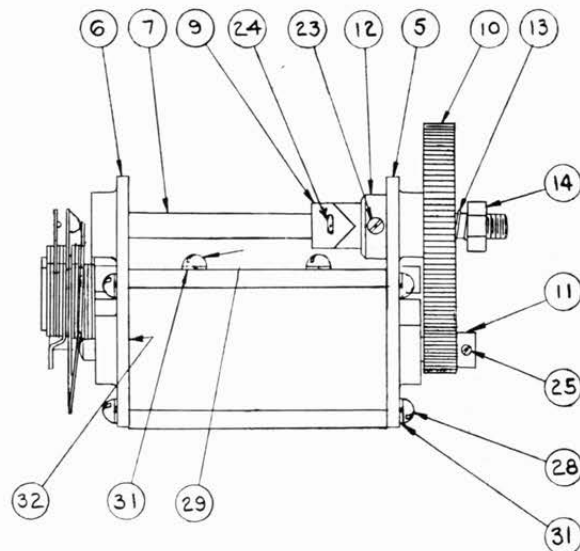
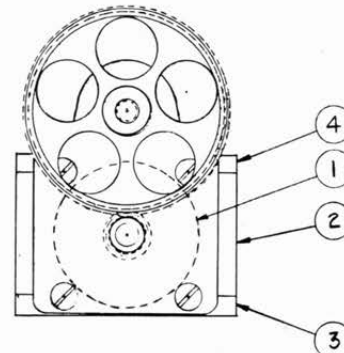
The No. 64 is an adaptation of the generator that has been used over a period of years for government requirements and has proved entirely dependable under every possible condition that can be encountered in actual service operation.

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	(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	Armature assembly
	204859	Crank assembled
	203459	Crank assembly
	207593	Crank assembly
	201792	Crank assembly
2	201690	Magnets
3	201691	Field pole plate (Bottom)
4	201692	Field pole plate (Top)
5	201693	Bearing plate
6	201694	Bearing plate
7	201695	Generator Shaft assembly
9	201697	Cam (over shaft)
10	201698	Large Gear
11	201699	Pinion (Small Gear)
12	201700	Collar (over large gear sleeve)
13	201701	Spiral spring (Next to large gear)
14	201702	Spring retainer (Hex nut)
15	201704	Terminal (Shunt)
16	201703	Terminals (2) Shunt
17	201705	Spring (Next to Armature)
18	201706	Contact Spring Assembly (Shunt)
19	201707	Contact Spring Assembly (Shunt)
20	201709	Contact Spring Assembly (Shunt)
21	201711	Screw Plate
22	201713	Insulations (4) Springs
23	204462	Set Screw (Collar)
24	245	Cotter pin (Cam)
25	501853	Screw (Pinion to shaft)
26	503623	Terminal Screws (3)
27	504053	Screws (2) Screw plate



Drawing Item No.	Stock No.	Description
28	505453	Screws (8) Bearing plates
29	204326	Screws (4) Top field plate
30	201712	Bushings (2) Shunt
31	526132	Split lock washer (12) Bearing and top plates
32	201718	Thrust washers (As required)
	204816	Complete Shunt Spring Assembly

Specify 201678 (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.

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HAND GENERATORS (Cont.)

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

Stock No.	Telephones Used On	Description
208830	890	Generator Assembly (Mounting) (Includes No. 64 Generator, one 208832 Block, and four 508052 screws)
208834	890	Package Assembly (Includes two 512700 screws, one 207593 Crank Assembly, one 207595 Gland, one 207596 Gland, one 207601 washer, two 504052 screws and Instruction Sheet 208836)
208829	963	Generator Assembly (Includes No. 64 Generator, one 208831 Block, and four 508052 screws)
208833	963	Package Assembly (Includes one 208837 spacer, one 207593 crank assembly, one 207595 gland, one 207596 gland, one 207601 washer and instruction sheet 208835)

Crank Shafts for Switchboard Generators

The following generator crank shafts are designed for switchboard use:

Stock No.	Code	Length	Generator	Swbd. No.
800774	(2)	18½"	53	102
800775	(3)	16"	38	105
203555		19⅝"	64	120, 127, 128, 106
13287		17½"	64	125
465		1¼"	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	(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	(3)	109 Type Jacks	Length, 10½" Width—½" Thickness, ⅛" Jack Mounting Ctrs, 10½"	White Holly with Lacquered Edges
13116	(15)	No. 127 Jack	Length, 7⅞" Width—¾" Thickness, ⅛" Jack Mounting Centers, 8⅝"	White Holly
13444	(16)	No. 130 Jack	Length, 10⅝" Width—½" Thickness, ⅛" Jack Mounting Ctrs, 11⅞"	White Holly with Lacquered Edges

NOTE: No. 15 mounts with 3 No. 22 x ¼" 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	(41-B)	Hookswitch	Common battery and magneto wall sets
801957	(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	41-B	896, D-2843	1155, 1157
13825	41-G		*903, 1163
*Selective Talking, Selective Ringing I.C. Systems			
Stock No.	Used on Suspended Telephone Sets Common Battery Handset Type		
19136	1201 and 1234		
34522	1232 and 1233		

Hooks Only

Stock No.	Hookswitch Used (Less Hook)
27677 Hook	No. 13824 on hand set telephones
24093	No. 19136, 34522 on handset telephones.
211360	Nos. 1532, 1533, 1534 Telephones

Parts of Complete Hookswitch for Ironclad Telephones

Stock No.	Description
10818	Hook Assembly
8457	Spring Assembly
8465	Plunger

See "Telephone" Section, Ironclad Telephones.

STROMBERG-CARLSON

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.

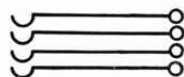
When jacks are mounted on strips they are assembled in groups of ten or twenty; and are equipped with dull finished facestrips, either plain, or with white line divisions, or drilled for party line indicators. State the type and code number of the mountings when ordering jacks in strips. Jack fasteners 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 (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 (93-B)	Similar to 93 except that it has a one break contact.

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.

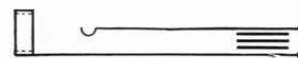
Stock No. Code	Description
200707 (140)	Jacks, No. 84 Mounting—5 per strip, with 121 Lamp Sockets.
801177 (140)	Jacks, No. 85 Mounting—5 per strip.

Toll Test Jacks

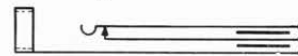
Toll Test Jacks are used primarily for terminating toll lines. They are mounted in pairs or singly in accordance with the circuits. When mounted in pairs a twin type plug is used for test purposes. When mounted singly two or three conductor plugs are used.



No. 144 Spring Combination



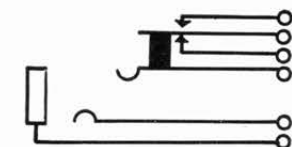
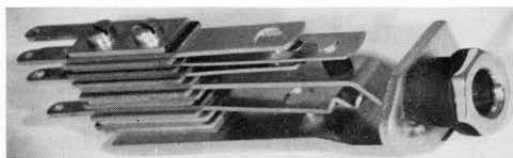
Stock No. Code	Description
801179 (144)	Individual jack. Mounts on panel 9/16" thick, requires 15/32" drill hole. Used with No. 60 two-conductor plug.
202815 (144-A)	Same, except adjusted for No. 61 two-conductor plug.
801180 (144-A on 87 mtg.)	Same as No. 144-A but on No. 87 two-jack mounting instead of individual.



No. 145 Spring Combination

Stock No. Code	Description
801181 (145)	Same type as No. 144 except spring combination. Adjusted for No. 59 three-conductor plug.
801182 (145-A)	Same as No. 145, adjusted for No. 61 two-conductor plug.

Individual Jacks



No. 140 Jack Spring Combination

Stock No. Code	Description
49907 (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 31/64". Face Dimensions—1/2". Mounting Centers—Horizontal—15/16". Vertical—3/4". Plug required—No. 42 two conductor, No. 57 two conductor, or No. 55 three conductor plug.

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INDIVIDUAL JACKS (Cont.)



No. 154 Spring Combination



No. 155 Spring Combination

Stock No.	Code	Description
801188	(154)	Same type as No. 144, except spring combination. Takes No. 59 three conductor plug.
801189	(154-A)	Same as No. 154, adjusted for No. 61 two-conductor and No. 62 twin plugs.
801190	(155)	Same type as No. 144, except spring combination. Takes No. 59 three-conductor plug.
800069	(155-A)	Same as No. 155, adjusted for No. 61 two-conductor and No. 62 twin plugs.



No. 158 and No. 159
Spring Combination



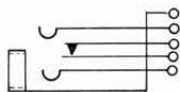
No. 160
Spring Combination

Stock No.	Code	Description
802598	(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	(159)	Similar spring combination and construction to No. 158. Used in No. 115 Lamp Signal Magneto Switchboards. Takes No. 61 Plug.
802600	(160)	An individual double cut-off line jack used in No. 120 PBX Switchboards. Oxidized bronze finish. Takes No. 53 or No. 65, three conductor Plug.

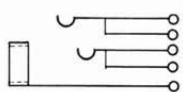


No. 161 Spring Combination

Stock No.	Code	Description
802601	(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	(165)	An individual Jack taking No. 53 or No. 65 three conductor Plug. Similar to No. 161, with one make contact.
202488	(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	(167)	An individual jack taking No. 61 two conductor plug. Sleeve length 35/64".
204251	(167-A)	Individual jack. Takes No. 59 three conductor plug. Sleeve length 35/64".
203016	(168)	Similar to the No. 167 except for spring combination. Takes No. 61 two conductor plug. Sleeve length 35/64".
204252	(168-A)	Individual jack. Takes No. 59 three conductor plug. Sleeve length 35/64".

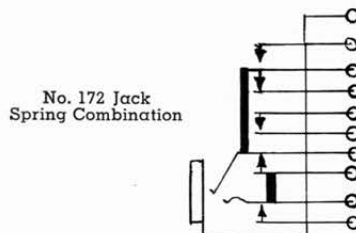


No. 170 Jack
Spring Combination

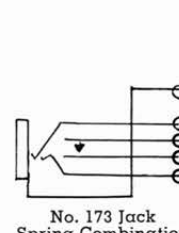


No. 171 Jack
Spring Combination

Stock No.	Code	Description
204308	(170)	Individual jack taking No. 59 three conductor plug. Sleeve length 35/64".
204309	(171)	Similar to No. 170 except for spring combination. Takes No. 59 three conductor plug. Sleeve length 35/64".



No. 172 Jack
Spring Combination



No. 173 Jack
Spring Combination

Stock No.	Code	Description
209147	(172)	Individual type jack taking a No. 56 three conductor plug. Sleeve length 1/2".
209212	(173)	Also an individual type jack taking a No. 59 three conductor plug. Sleeve length 35/64".

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.

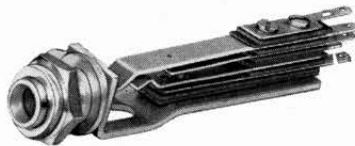
Stock No.	Code	No. of Jacks	Description
200966	(93)	Mounting 48	For Toll Test Panels (17 13/16" over-all length)
200967	(94)	Mounting 24	For Toll Test Panels (17 13/16" over-all length)
	(93)	Mounting—Less designation strip	
	(94)	Mounting—Less designation strip	
204271	(93-A)	Mounting 48	Toll Test Panel (18 5/16" over-all length)
204272	(94-A)	Mounting 24	Toll Test Panel (18 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.

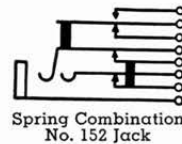
*No. 155 Jacks require vacant spaces between jacks on account of the size of their spring pile-ups. Other jacks mount in adjacent mounting holes of the No. 93 or No. 94 Jack Mounting.

INDIVIDUAL JACKS (Cont.)

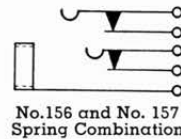
Individual Jacks for Thin Panel Mounting



Typical Jack—(No. 147)



Spring Combination
No. 152 Jack



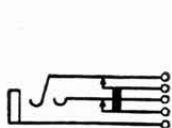
No. 156 and No. 157
Spring Combination

No. 147, 151 and 152 Types

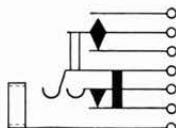
These Jacks are all of the same general design, the only difference being in the spring combinations used. They are made to mount on panels varying from $\frac{1}{8}$ " to $\frac{1}{4}$ " in thickness by proper adjustment of a nut associated with the Jack frame.

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.

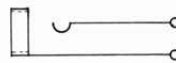
Stock No.	Code	Plug Used
801183	(147)	No. 59 (3 Cond.) Nos. 60, 61 (2 Cond.)
801184	(148)	No. 59 (3 Cond.) No. 60 (2 Cond.)



No. 147 Jack
Spring Combination



No. 148 Jack
Spring Combination



No. 151 Jack
Spring Combination

801185	(151)	No. 59 (3 Cond.) Nos. 60, 61 (2 Cond.)
801186	(152)	No. 59 (3 Cond.) Nos. 60, 61 (2 Cond.)

No. 156 and 157 Types

These Jacks are also furnished with an associated finishing nut similar to the one used with the No. 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	(156)	No. 65 (3 Conductor)
802597	(157)	No. 54 (3 Conductor)

Wall Outlet Type

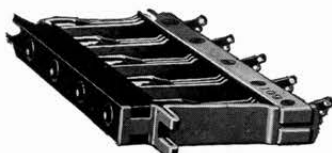
Conveniently mounted in walls for extension telephone service. Uses standard single gang outlet box and plastic wall plate equipped with two conductor jack; escutcheon marked "Telephone." Used to advantage with all Handset Telephones on metallic (two wire) circuits.

Stock No.	Code	Description
25856		Telephone Plug-in Jack Assembly, includes outlet plate with jack assembly, outlet box—2" x 2" x 3" and Plate—2 1/4" x 4 1/2"
25960		Plug-in Jack Assembly, less outlet box Used with No. 60 Plug

JACKS MOUNTED IN STRIPS

No. 109 Type

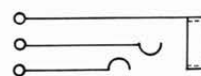
Used as multiple jacks for additions to former standard Stromberg-Carlson Switchboards. Face length—10 15/32", Width—1/2", Mounting Centers—10 15/16". Uses No. 15 Jack Fasteners and No. 6 Jack Blank. Takes No. 42 or No. 57 two conductor plugs or No. 55 three conductor plug. Replaced by No. 130 Type Jack on all new work.



End View No. 109 Jack

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 Type.



No. 109 Jack
Spring Combination



No. 113 Jack
Spring Combination

Stock No.	Code	Mounting	No. of Jacks	Group Marking
801089	(109)	60	10	Plain Face
801090	(109)	61	20	Plain Face
801091	(109)	62	20	White Line
801092	(109)	63	20	White Line and Party Line indicators
801097	(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.

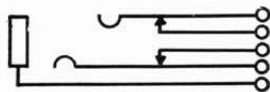
STROMBERG-CARLSON

Revised 6-1-55

JACKS MOUNTED IN STRIPS (Cont.)

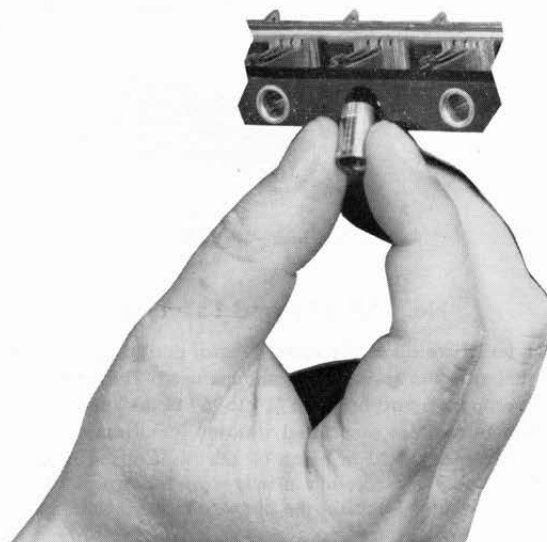
No. 114 Jack (109 Type)

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	(114)	60	10	Plain Face
801100	(114)	61	20	Plain Face
801101	(114)	62	20	White Line Divisions
801102	(114)	63	20	White Line Divisions— Drilled for party line indication.

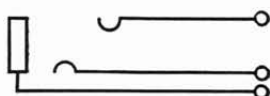


Sleeves are easy to replace in the No. 130 Type Jacks

No. 127 Type



End View
No. 127 Jack



No. 127 Jack
Spring Combination

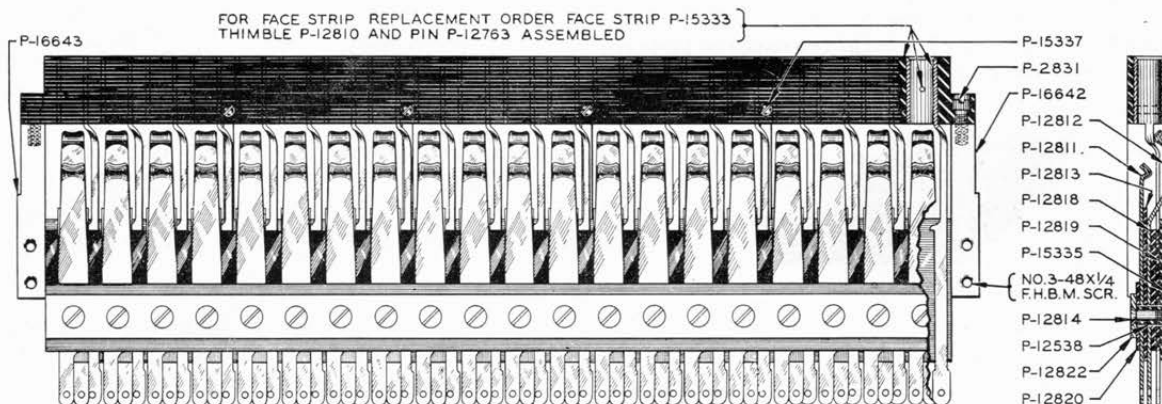
Stock No.	Code	Mounting	No. of Jacks	Group Marking
801137	(127)	89	10	Plain Face
801138	(127)	91	10	Drilled for No. 60-D Number Plate
42996	(127)	90	20	Plain Face
801139	(127)	90-A	20	White Line Divisions
801140	(127)	90-B	20	White Line Divisions Party Line Indication
801141	(127)	90-C	20	White Line Divisions can be lined on beveled edge to show a group of jacks.

Standard for eight panel multiple switchboards. Mounts—10 or 20 per strip. Length of face—7 19/32". Width—3/8". Depth of Jack from face to tip of springs—2 29/32". Mounting centers—8 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

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.



Line Drawing to show parts of No. 90 Mountings
for 127 Jack, with their Stock Numbers

JACKS MOUNTED IN STRIPS (Cont.)

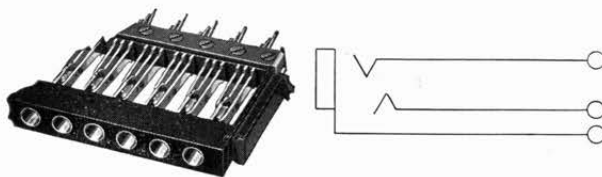
130 TYPE

No. 130 Jack

For the No. 130 Type 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	(130)	99	10
48371	(130)	100	20
200721	(130)	100-A	20
200730	(130)	100-B	20

Plugs used—No. 56 Type, two conductor and either No. 53 or 65 Type, three conductor.

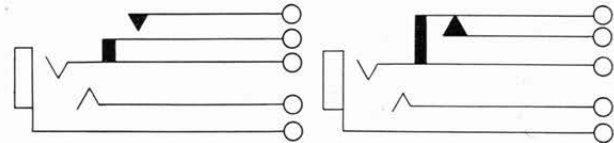
Standard Mountings for No. 130 Type Jack

Selections to meet requirements should be made from the following standard mountings for the No. 130 Type Jack 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 type Jacks.

No. 132 Jack

Stock No.	Code	Mounting	No. of Jacks
48372	(132)	100	20
200722	(132)	100-A	20
200731	(132)	100-B	20

No. 133 Jack

Stock No.	Code	Mounting	No. of Jacks
48373	(133)	100	20
200723	(133)	100-A	20
200732	(133)	100-B	20

Plugs used—No. 56 Type, two conductor and either 53 or 65 type, three conductors.

No. 130 Type 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 3/8"

Width of face—3 1/64"

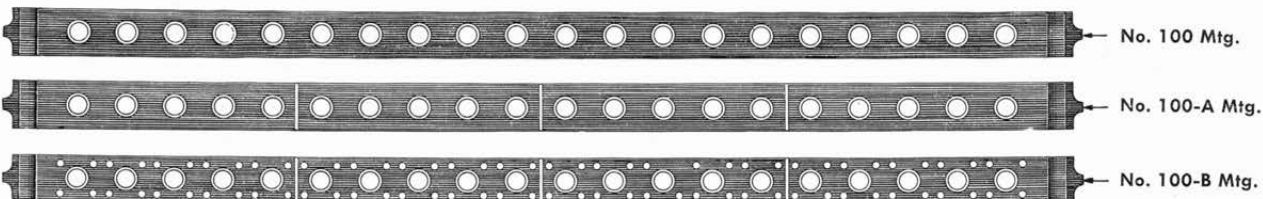
Mounting Strip Centers—1 1/16"

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 Type Jacks

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
- No. 175—Two Way Locking, Bent Handle
- No. 176—Locking and Non-Locking, Clickless

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:

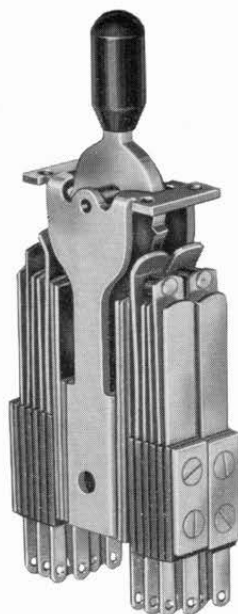
Two Keys on Flush Mounting

1—802626	(170-C)	Key } mounted on Key } Key Mounting
1—802628	(170-D)	
1—801296	(93)	

One Key on Surface Mounting

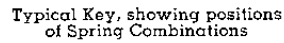
1—205012	(171-B)	Key mounted on
1—801332	(132)	Key Mounting

For these and other standard Key Mountings see "Key Mountings" further along in this section.



Typical No. 170 Type Cam Key, without Key Mounting

Contact Springs are shown in the non-operated (normal) position.



(1170-J)

(170-B)

(170-C)

LOCK

(170-D)

(170-E)

(170-1)

(170-M)

LOCK

R
D
C
T

(170-N)

Revised 6-1-55

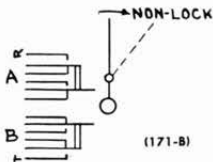
NO. 170 TYPE KEYS (Cont.)

Contact Springs are shown in the non-operated (normal) position.

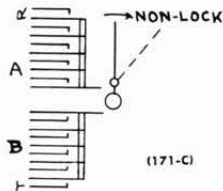
One Way, Non-Locking

Stock and Code No. Position Contact Description

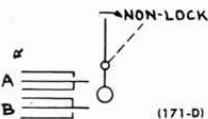
- 205012**
(171-B) A Two break-makes
B Two break-makes



- 205684**
(171-C) A Five makes
B Five makes

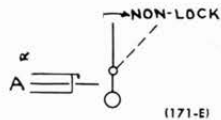


- 802627**
(171-D) A One break-make
B One break-make

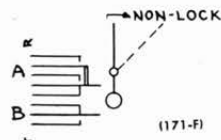


- 204986**
(171-DZ) Same Combination-Brass Cam

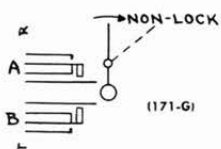
- 802640**
(171-E) A One make-before-break



- 802645**
(171-F) A One break-make, one make
B One break-make



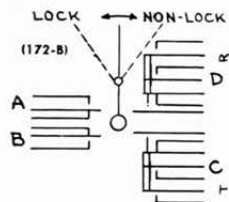
- 802681**
(171-G) A One break-make
B One break-make



Two Way, Locking and Non-Locking

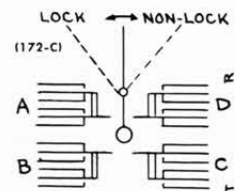
Stock and Code No. Position Contact Description

- 204956**
(172-B) A One break-make
B One break-make
C One make-before-break, two makes
D One make-before-break, two makes

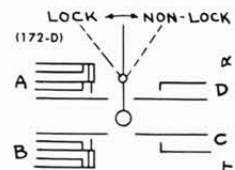


- 204957**
(172-BZ) Same Combination-Brass Cam

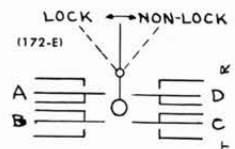
- 204964**
(172-C) A Two break-makes
B Two break-makes
C Two break-makes
D Two break-makes



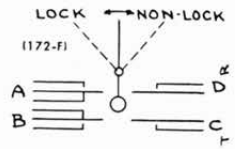
- 204965**
(172-D) A One make-before-break, one break
B One make-before-break, one break
C One make
D One make



- 802619**
(172-E) A One break-make
B One break-make
C One break-make
D One break-make

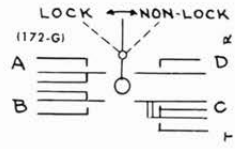


- 802622**
(172-F) A One break-make
B One break-make
C One make
D One make

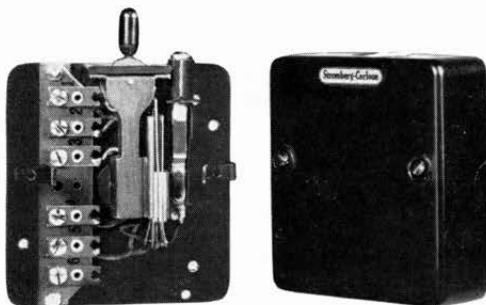
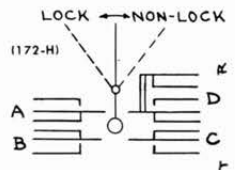


- 207621**
(172-FZ) Same Combination-Brass Cam

- 802623**
(172-G) A One break-make
B One break-make
C One make sequence with one break-make
D One make



- 802625**
(172-H) A One break-make
B One break-make
C One break-make
D One break-make, one break



Many extra Keys are ordered for use in Key Boxes.

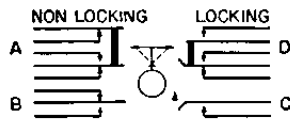
"Z" added to code number indicates brass finished cam for those keys used on No. 120,121 Switchboards. See PBX Boards.

STROMBERG-CARLSON

NO. 170 TYPE CAM KEYS (Cont.)

Contact Springs are shown in the non-operated (normal) position.

Two Way, Locking and Non-Locking (Cont.)



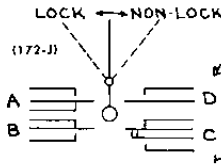
Typical Key, showing positions
of Spring Combinations

Stock and
Code No.

802629
(172-J)

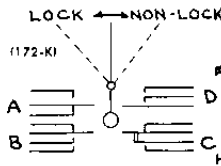
Position Contact Description

- A One break-make
- B One break-make
- C One break, one make
- D One make



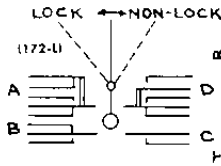
201055
(172-K)

- A One break-make
- B One break, double make
- C One break, one make
- D One double make



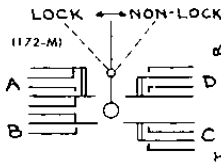
802630
(172-L)

- A One break-make
One make
- B One break-make
- C One make
- D One break-make,
One make



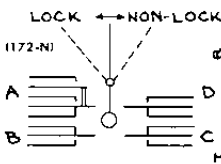
42665
(172-M)

- A One break-make,
One break
- B One break-make
- C Two makes
- D Two makes



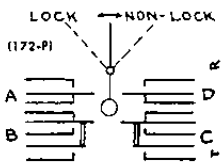
802633
(172-N)

- A One break-make,
One make
- B One break-make
- C One break-make
- D One break-make



802637
(172-P)

- A One break-make
- B One break-make,
One make
- C One break-make,
One make
- D One break-make



209816
(172-PZ)

Same Combination—
Brass Cam

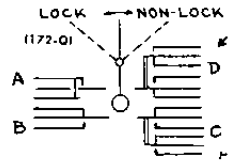
"Z" added to code number indicates brass finished cam for those keys used on No. 120, 121 Switchboards. See PBX Boards.

Stock and
Code No.

802642
(172-Q)

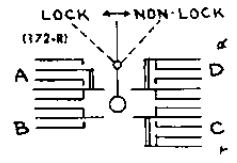
Position Contact Description

- A One make before break
- B One break-make
- C Two break-makes
- D Two break-makes



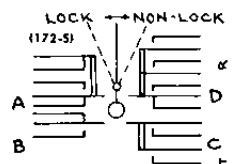
802643
(172-R)

- A One break-make,
One make
- B One break-make
- C One break-make,
One break
- D One break-make,
One break



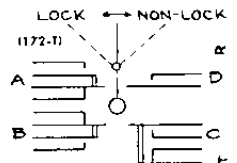
206794
(172-S)

- A One break-make,
One break
- B One break-make
- C Two makes
- D One break-make,
Two makes



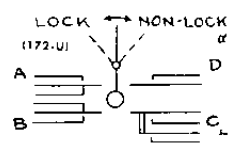
207164
(172-T)

- A One break, one make
- B One break, one make
- C One make, one break
- D One make



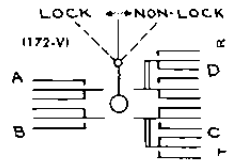
802994
(172-U)

- A One break-make
- B One break-make
- C Two makes
- D One make



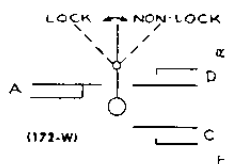
803021
(172-V)

- A One break-make
- B One break-make
- C Two break-makes
- D Two break-makes



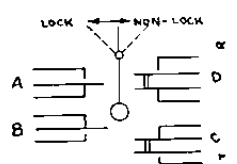
206930
(172-W)

- A One break
- B ———
- C One make
- D One make



209815
(172-X)

- A One break-make
- B One break-make
- C One break, one make
- D One break, one make



Revised 6-1-55

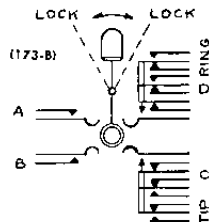
NO. 170 TYPE KEYS (Cont.)

Contact Springs are shown in the non-operated (normal) position.

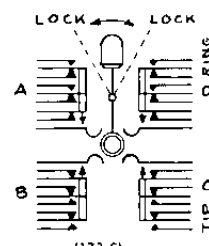
Two Way, Locking and Locking

Stock and Code No. Position Contact Description

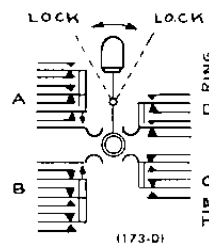
204966
(173-B) A One make
B One make
C One make-before-break,
Two break-makes
D One make-before-break,
Two break-makes



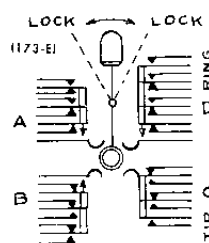
204967
(173-C) A One make-before-break,
Two break-makes
B One make-before-break,
Two break-makes
C One make-before-break,
Two break-makes
D One make-before-break,
Two break-makes



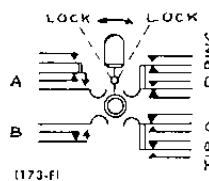
204968
(173-D) A One make-before-break,
Two break-makes
B One make-before-break,
Two break-makes
C Two break-makes
D Two break-makes



204969
(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

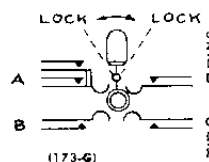


204970
(173-F) A One make-before-break,
One make
B One make-before-break
C Two break-makes
D Two break-makes



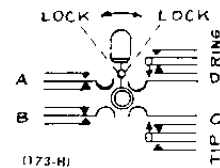
204971
(173-FZ) Same Combination-Brass Cam

204994
(173-G) A Two makes
B One make
C One make
D One make

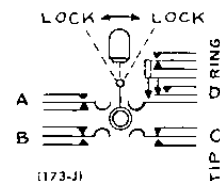


Stock and Code No. Position Contact Description

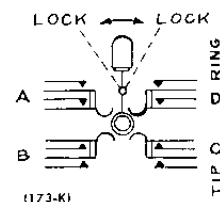
205025
(173-H) A One break-make
B One break-make
C One make-before-break
and make
D One make-before-break
and make



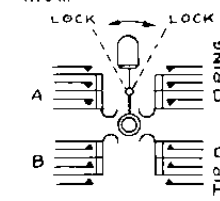
205038
(173-J) A One break-make
B One break-make
C One break-make
D One make-before-break,
One make, one break-
make



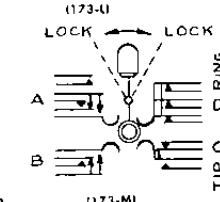
205039
(173-K) A Two makes
B Two makes
C Two makes
D Two makes



205040
(173-L) A Three makes
B Three makes
C Three makes
D Three makes

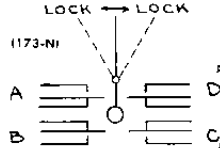


205052
(173-M) A One make-before-break-
make, One make
B One make-before-break,
One make
C One break, one make
D Three breaks

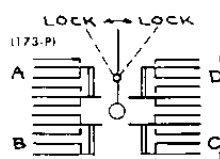


207201
(173-MZ) Same Combination-Brass Cam

802621
(173-N) A One break-make
B One break-make
C One break-make
D One break-make



802624
(173-P) A Two break-makes
B Two break-makes
C Two break-makes
D Two break-makes



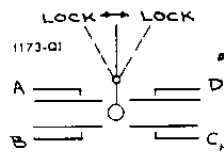
204987
(173-PZ) Same Combination-Brass Cam

"Z" added to code number indicates brass finished cam for those keys used on No. 120,121 Switchboards. See PBX Boards.

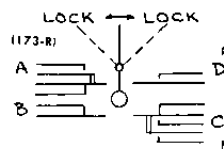
NO. 170 TYPE KEYS (Cont.) Two Way, Locking and Locking (Cont.)

Stock and
Code No. Position Contact Description

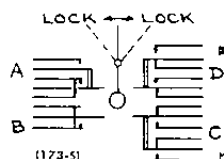
802631
(173-Q) A One make
B One make
C One make
D One make



206795
(173-R) A One break, one make
B One break
C One break-make, one make
D One make

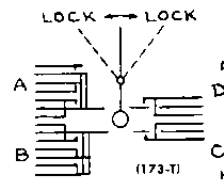


802644
(173-S) A One make-before-break, one make
B One make-before-break
C Two break-makes
D Two break-makes

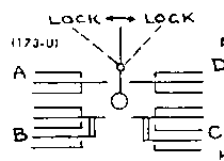


207343
(173-SZ) Same Combination-Brass Cam

802665
(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

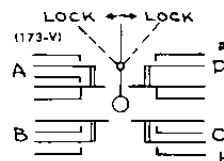


802670
(173-U) A One break-make
B One break-make, one make
C One break-make, one make
D One break-make

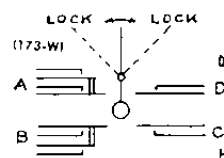


204985
(173-UZ) Same Combination-Brass Cam

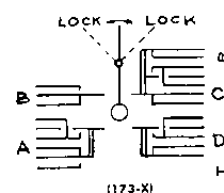
802674
(173-V) A One break-make, one make
B Two makes
C Two makes
D One break, one make



206931
(173-W) A Two makes
B Two makes
C One make
D One make

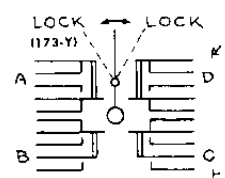


207052
(173-X) A One break-make
B One make-before-break, one break-make
C One make-before-break, two breaks
D One make-before-break, one break

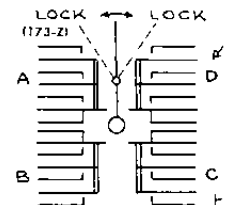


Stock and
Code No. Position Contact Description

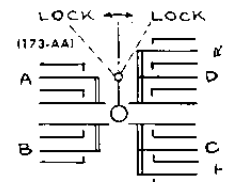
207249
(173-Y) A One break-make, one break
B One break-make, one make
C One break-make, one make
D One break-make, one break



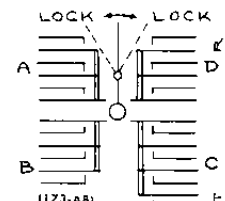
207250
(173-Z) A One break-make, two makes
B One break-make, two makes
C One break-make, two makes
D One break-make, two makes



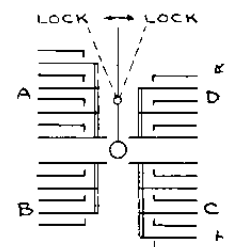
207251
(173-AA) A Two makes
B Two makes
C Three makes
D Three makes



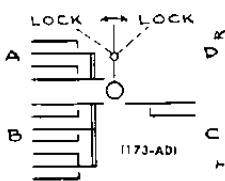
207252
(173-AB) A Three makes
B Three makes
C Four makes
D Three makes



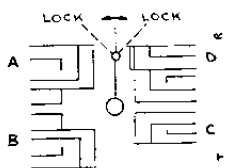
207337
(173-AC) A Four makes
B Three makes
C Four makes
D Three makes



207338
(173-AD) A Two makes
B Two makes Break-make
C One make
D - - - -



210190
(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



Revised 6-1-55

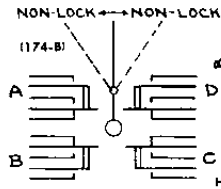
NO. 170 TYPE CAM KEYS (Cont.)

Contact Springs are shown in the non-operated (normal) position.

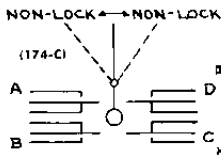
Two Way, Non-Locking and Non-Locking

Stock and Code No. Position Contact Description

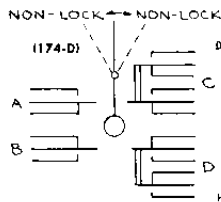
204995
(174-B) A One break-make,
One make
B One break-make,
One make
C One break-make,
One make
D One break-make,
One make



802620
(174-C) A One break-make
B One break-make
C One break-make
D One break-make

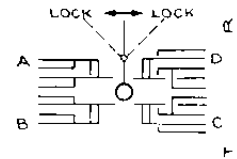


207165
(174-D) A One break-make
B One break-make
C Two break-makes
D Two break-makes

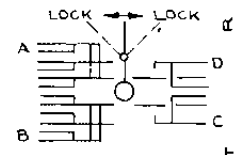


Stock and Code No. Position Description

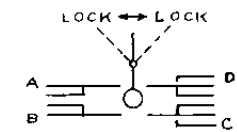
208126
(175-E) A Two breaks
B Two breaks
C One make-before-break,
One break
D One make-before-break,
One break



209339
(175-F) A Three breaks
B Three breaks
C One make-before-break
D One make-before-break



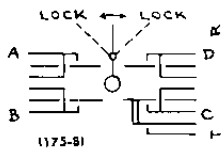
209805
(175-G) A One break
B One break
C One break-make
D One break-make



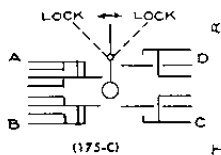
Two Way Locking (Bent Handle)

Stock and Code No. Position Contact Description

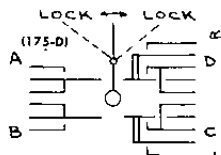
206790
(175-B) A One make-before-break
B One make-before-break
C One make-before-break,
One make
D One make-before-break



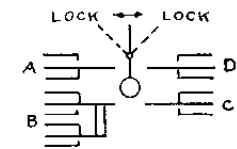
206791
(175-C) A One break-make
B One break-make
C One make-before-break,
One make
D One make-before-break,
One make



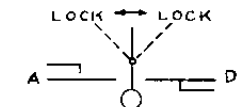
207246
(175-D) A Two breaks
B Two breaks
C One make-before-break
D One make-before-break



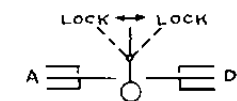
209806
(175-H) A One break-make
B Two break-makes
C One break-make
D One break-make



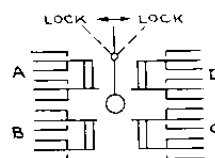
209807
(175-J) A One make
D One break



209808
(175-K) A One break-make
D One break-make

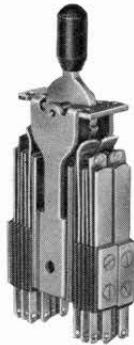


210969
(175-L) A Two break-makes
B Two break-makes
C Two break-makes
D Two break-makes



STROMBERG-CARLSON

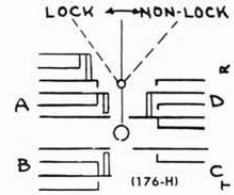
NO. 170 TYPE CAM KEYS (Cont.)
Clickless Two Way, Locking and Non-Locking (Cont.)



No. 176 Key
(170 Type)
with clickless
buffer spring.

Stock and
Code No. Position Contact Description
205051
(176-H)

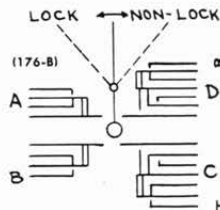
- A One break-make,
One break
- B One break-make
- C One make
- D One break-make,
One make



207206
(176-HZ) Same Combination-Brass Cam

Stock and
Code No. Position Contact Description
204958
(176-B)

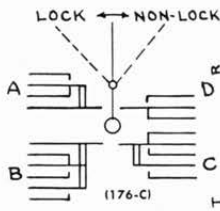
- A One break-make
- B One break-make
- C One make-before-break,
One break-make
- D One make-before-break,
One break-make



204959
(176-BZ) Same Combination-Brass Cam

204972
(176-C)

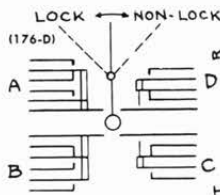
- A One break-make
- B One break-make,
One make
- C One break-make,
One make
- D One break-make



204973
(176-CZ) Same Combination-Brass Cam

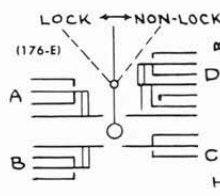
204993
(176-D)

- 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



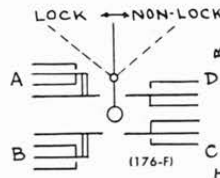
205037
(176-E)

- A One break-make
- B One break-make
- C One break-make
- D One make-before-break-
make, One break-make



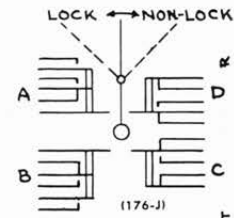
205026
(176-F)

- A One break-make
- B One break-make
- C One break-make
- D One break-make



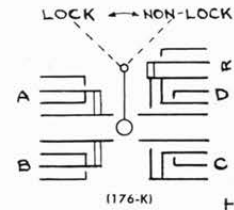
205064
(176-J)

- A One break-make,
One make
- B One break-make,
One make
- C One break-make,
One break
- D One break-make,
One break



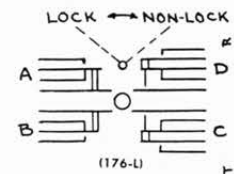
207075
(176-K)

- A One break-make
- B One break-make
- C One make-before-
break-make
- D One make-before-break-
make, One make



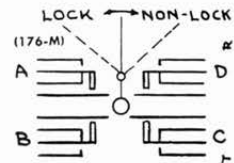
802676
(176-L)

- A One break-make
- B One break-make
- C One make-before-break,
One make
- D One make-before-break,
One make



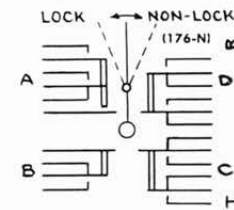
802680
(176-M)

- A One break-make
- B One break-make
- C One break-make
- D One break-make



207169
(176-N)

- A One break-make,
One make
- B One break-make
- C Two break-makes
- D Two break-makes

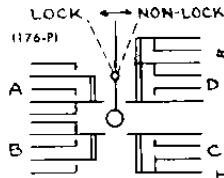


Revised 6-1-55

NO. 170 TYPE CAM KEYS (Cont.) Two-Way, Locking and Non-Locking (Clickless) (Cont.)

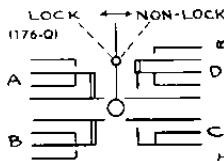
Stock and
Code No.
207202
(176-P)

Position Contact Description
A One break-make,
One make
B One break-make
One make
C One break, one make
D Two breaks, one make



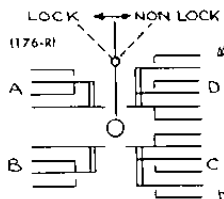
207219
(176-Q)

A One break-make
B One break-make
C One make-before-break
D One make-before-break,
One make



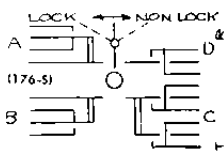
207663
(176-R)

A One break-make
B One break-make
C One break, two makes
D One break, two makes



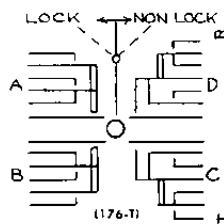
207800
(176-S)

A One break-make
B One break-make
C Two make-before-breaks
D One make-before-break



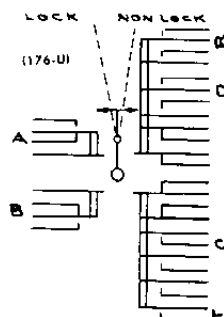
207806
(176-T)

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



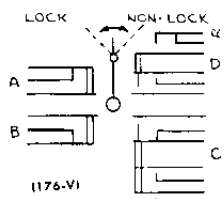
207823
(176-U)

A One break-make
B One break-make
C Two breaks, four makes
D Two breaks, four makes



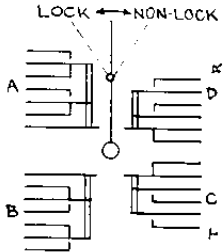
Stock and
Code No.
208136
(176-V)

Position Contact Description
A One break
B One break
C One make-before-break,
Two makes
D Two make-before-breaks



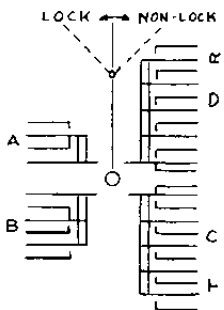
208519
(176-W)

A Two break-makes
B Two break makes
C One break, two makes
D One break, two makes



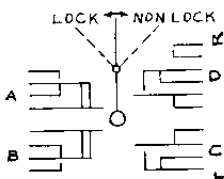
211040
(176-X)

A One break-make
B One break-make,
one make
C One break-make,
four makes
D One break-make,
four makes



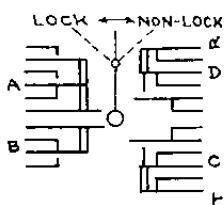
212479
(176-Y)

A One break-make
B One break-make
C One break, one
make-before-break
D One break, one make-
before-break, one make



212844
(176-Z)

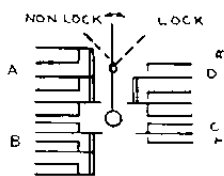
A One break-make,
one make
B One break-make
C One make-before-break,
two breaks
D One make-before-break,
two breaks



Two-Way, Locking and Non-Locking (Bent Handle)

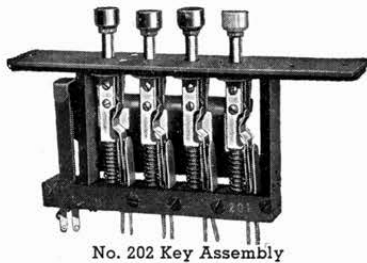
209272
(177-B)

A Three breaks
B Three breaks
C One break-make
D One break-make,
one make



PARTY LINE INDICATING TYPE KEYS

No. 200 Type Key

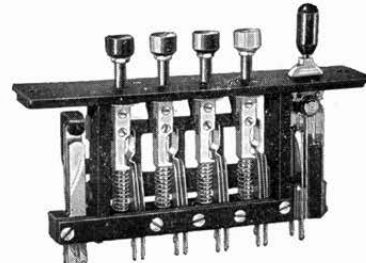


No. 202 Key Assembly

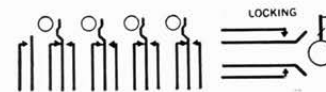


A four button, indicating, party line ringing key. Adapted to switchboards that are equipped with either "Manual" or "Machine Ringing" facilities. Each button has three positions—fully depressed, partially released or indicating, and fully released or normal. The spring combinations individual to each 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



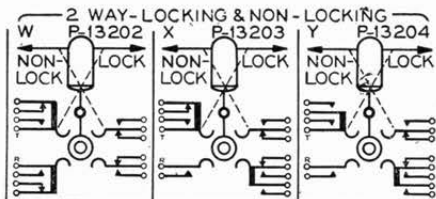
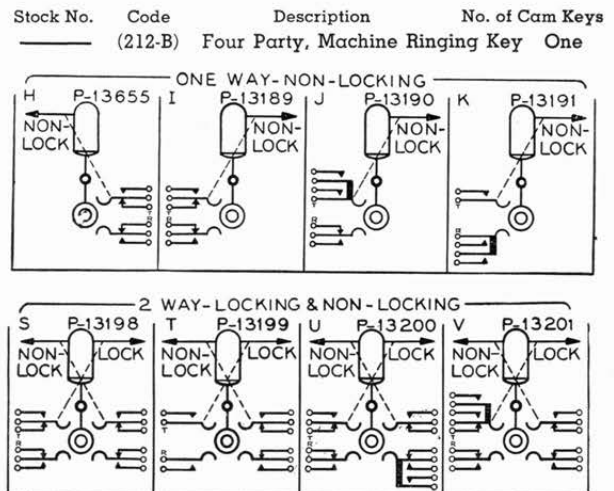
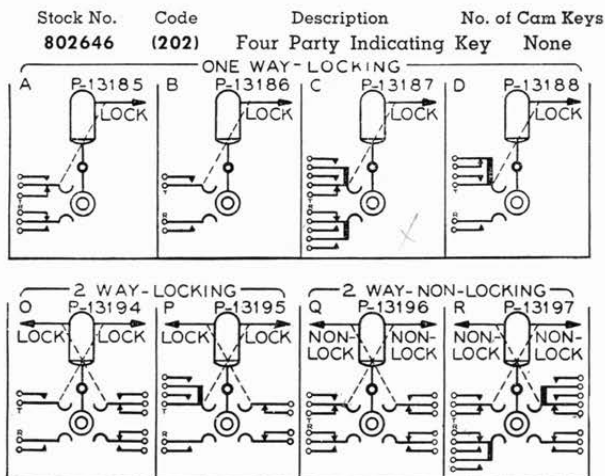
No. 212-B Key Spring Combinations

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 $2\frac{3}{4}$ ".



Some Cam Key Combinations used with Party Line Keys
Code Nos. 210 to 259

Revised 6-1-55

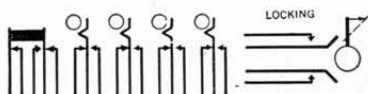
PARTY LINE INDICATING TYPE KEYS (Cont.)

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.

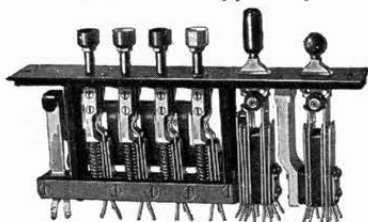
Size of keytop— $5\frac{1}{2}$ " x 1". Depth of key from the surface of escutcheon to the tips of the springs— $2\frac{3}{4}$ ".



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.
200	$1\frac{1}{4}$ "	$5\frac{1}{2}$ "	13151
201	$1\frac{1}{8}$ "	$5\frac{1}{2}$ "	13152
202	1"	$5\frac{1}{2}$ "	13153
203	$\frac{3}{4}$ "	$5\frac{1}{2}$ "	13154
204	$\frac{1}{64}$ "	$5\frac{1}{2}$ "	13155
205	$1\frac{1}{4}$ "	$6\frac{1}{2}$ "	13156
206	$1\frac{1}{8}$ "	$6\frac{1}{2}$ "	13157
207	1"	$6\frac{1}{2}$ "	13158
208	$\frac{3}{4}$ "	$6\frac{1}{2}$ "	13159
209	$\frac{1}{64}$ "	$6\frac{1}{2}$ "	13160
210	$1\frac{1}{4}$ "	$5\frac{1}{2}$ "	13165
211	$1\frac{1}{8}$ "	$5\frac{1}{2}$ "	13166
212	1"	$5\frac{1}{2}$ "	13167
213	$\frac{3}{4}$ "	$5\frac{1}{2}$ "	13168
214	$\frac{1}{64}$ "	$5\frac{1}{2}$ "	13169
215	$1\frac{1}{4}$ "	$6\frac{1}{2}$ "	13170
216	$1\frac{1}{8}$ "	$6\frac{1}{2}$ "	13171
217	1"	$6\frac{1}{2}$ "	13172
218	$\frac{3}{4}$ "	$6\frac{1}{2}$ "	13173
219	$\frac{1}{64}$ "	$6\frac{1}{2}$ "	13174
220	$1\frac{1}{4}$ "	$5\frac{1}{2}$ "	13165
221	$1\frac{1}{8}$ "	$5\frac{1}{2}$ "	13166
222	1"	$5\frac{1}{2}$ "	13167
223	$\frac{3}{4}$ "	$5\frac{1}{2}$ "	13168
224	$\frac{1}{64}$ "	$5\frac{1}{2}$ "	13169
225	$1\frac{1}{4}$ "	$6\frac{1}{2}$ "	13170
226	$1\frac{1}{8}$ "	$6\frac{1}{2}$ "	13171

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— $6\frac{1}{2}$ " x 1". The buttons are colored blue, red, green and black.

Depth of key from surface of escutcheon to the tips of springs— $2\frac{3}{4}$ ".

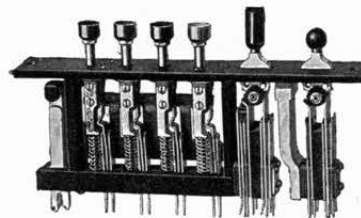
Code No.	Description	No. of Cam Keys
232-WH	Four Party, Machine Ringing Key	Two

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— $6\frac{1}{2}$ " x 1". Depth of key from surface of escutcheon to the tips of springs— $2\frac{3}{4}$ ".



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

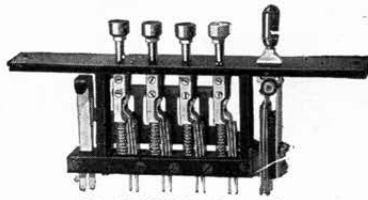
Code No.	Width	Length	Esc.
227	1"	$6\frac{1}{2}$ "	13172
228	$\frac{3}{4}$ "	$6\frac{1}{2}$ "	13173
229	$\frac{1}{64}$ "	$6\frac{1}{2}$ "	13174
230	$1\frac{1}{4}$ "	$5\frac{1}{2}$ "	13175
231	$1\frac{1}{8}$ "	$5\frac{1}{2}$ "	13176
232	1"	$5\frac{1}{2}$ "	13177
233	$\frac{3}{4}$ "	$5\frac{1}{2}$ "	13178
234	$\frac{1}{64}$ "	$5\frac{1}{2}$ "	13179
235	$1\frac{1}{4}$ "	$6\frac{1}{2}$ "	13175
236	$1\frac{1}{8}$ "	$6\frac{1}{2}$ "	13176
237	1"	$6\frac{1}{2}$ "	13177
238	$\frac{3}{4}$ "	$6\frac{1}{2}$ "	13178
239	$\frac{1}{64}$ "	$6\frac{1}{2}$ "	13179
252	1"	$5\frac{1}{2}$ "	12697
260	$1\frac{1}{4}$ "	$5\frac{1}{2}$ "	13151
261	$1\frac{1}{8}$ "	$5\frac{1}{2}$ "	13152
262	1"	$5\frac{1}{2}$ "	13153
263	$\frac{3}{4}$ "	$5\frac{1}{2}$ "	13154
264	$\frac{1}{64}$ "	$5\frac{1}{2}$ "	13155
265	$1\frac{1}{4}$ "	$6\frac{1}{2}$ "	13156
266	$1\frac{1}{8}$ "	$6\frac{1}{2}$ "	13157
267	1"	$6\frac{1}{2}$ "	13158
268	$\frac{3}{4}$ "	$6\frac{1}{2}$ "	13159
269	$\frac{1}{64}$ "	$6\frac{1}{2}$ "	13160

STROMBERG-CARLSON

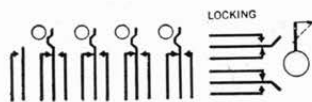
PARTY LINE INDICATING TYPE KEYS (Cont.)

No. 250 Type Key

Similar to No. 210 except that it is equipped with a locknig 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— $7\frac{1}{4}$ " x 1".



No. 252-A Key Assembly

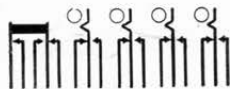


No. 252-A Key Spring Combination

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	$7\frac{3}{4}$ " x 1"
280	1	4 Pty. Machine	$6\frac{1}{2}$ " x 1"
283	2	4 Pty. Machine	$7\frac{3}{4}$ " x 1"
290	1	2 Pty. Machine	$7\frac{3}{4}$ " x 1"
291	2	2 Pty. Machine	$7\frac{3}{4}$ " x 1"
292	2	5 Pty. Harmonic	$7\frac{3}{4}$ " x 1"
293	2	5 Pty. Harmonic	$7\frac{3}{4}$ " x $1\frac{1}{8}$ "

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	$7\frac{3}{4}$ " x 1"
281	None	4 Pty. Machine	$7\frac{3}{4}$ " x 1"
285	None	2 Pty. Manual	$7\frac{3}{4}$ " x 1"
289	None	2 Pty. Machine	$7\frac{3}{4}$ " 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

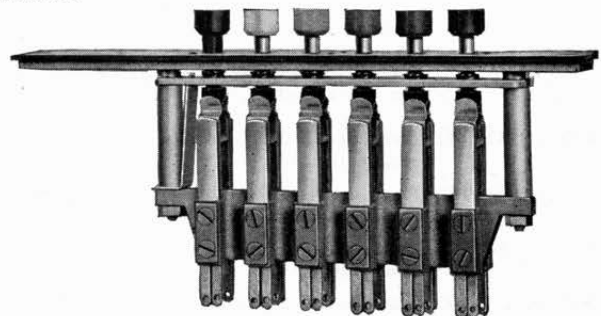
These are 5 and 6 button type master keys adapted for use as an individual master key for either five or six party line ringing. The No. 326 Key is used for six party service as all buttons are operative.

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	(325-A)	$5\frac{1}{2}$ "	1"	5	5
49956	(325-B)	7"	1"	5	5
49892	(325-C)	$7\frac{3}{4}$ "	1"	5	5
200394	(325-D)	$6\frac{1}{2}$ "	1"	5	5
*203588	(325-E)	$7\frac{3}{4}$ "	1"	5	5
802678	(326-A)	$5\frac{1}{2}$ "	1"	6	6
802679	(326-B)	7"	1"	6	6
49893	(326-C)	$7\frac{3}{4}$ "	1"	6	6
200395	(326-D)	$6\frac{1}{2}$ "	1"	6	6
*203589	(326-E)	$7\frac{3}{4}$ "	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

Revised 6-1-55

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 $7\frac{1}{4}'' \times 1\frac{1}{8}''$.

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 catalogue.

No. 352 Key

Stock No.	Code	Resistance	Description
212746	(352-A)	500 Ohms	Double ring-off drops
212747	(352-B)	1000 Ohms	Double ring-off drops

Cam Key Assembly

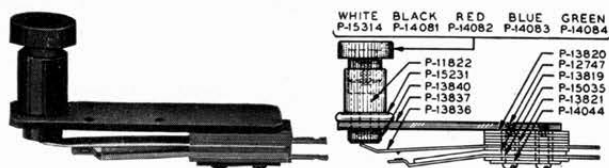
Stock No.	Description
212744	Cam Key only, completely assembled

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

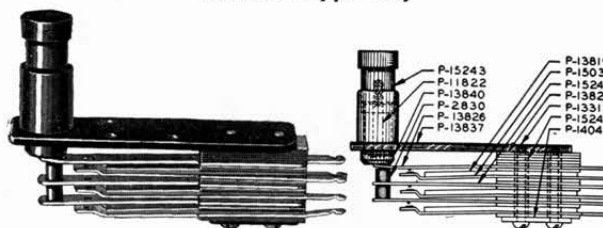


No. 310 Type Key Assembly

Stock No.	Code	Description
802490	(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— $21/32''$ for clearance of push button. White button-black center. Mounts with 2 No. 11998 R.H.I.W. Screws. Specify these screws on order. Total height— $125/64''$. Length of key over springs— $215/16''$. Width— $3/4''$. Diameter of button— $5/8''$. Diameter of colored center— $31/64''$. Designed for $7/8''$ key shelf.
802491	(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	(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	(312)	An Individual Non-Locking Push Button Order Wire Key for Super-Service Switchboards. Designed for mounting from under side of a $7/8''$ key shelf through a $1/2''$ drill hole flush with key shelf surface. Mounts with 2 No. 11998 R.H.I.W. Screws. Specify these screws on order. Length of key over springs— $215/16''$. Width— $3/4''$. Total height— $115/16''$. Finish of button—Black. Diameter— $29/64''$.

802666 (315-E) Same as No. 310 except Breaks one Contact.

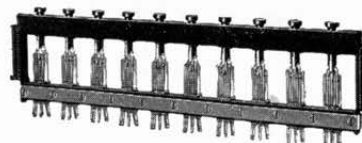
When specified engraved buttons can be furnished at an additional charge.

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	(62) Key	Non-Locking	2 & 6 Panel Multiple Swbds.
42980	(69) Key	Locking	Mount same as No. 130 Jacks

No. 123 Mounting

Stock No.	Code	Operation	Use
42979	(62) Key	Non-Locking	3 & 8 Panel Multiple Swbds.
42981	(69) Key	Locking	Mount same as No. 127 Jacks

Mounting Information

Specifications	122 Mtg.	123 Mtg.
Length of Key strip overall	$11\frac{1}{8}''$	$7\frac{31}{32}''$
Length of face strip overall	$10\frac{3}{8}''$	$7\frac{19}{32}''$
Width of face strip	$\frac{1}{2}''$	$\frac{1}{2}''$
Depth—face to tip of springs	$3\frac{1}{16}''$	$3\frac{1}{16}''$
Mounting Centers	$11\frac{1}{16}''$	$8\frac{3}{8}''$
Jack Fasteners used	No. 17(2)	No. 17(2)
Jack blank for empty space	No. 52	No. 43

STROMBERG-CARLSON

INDIVIDUAL PLUNGER KEYS

Individual Push Button Keys



No. 303 Key

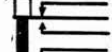
Spring Combinations



No. 303 Key
Non-Locking



No. 304 Key
Non-Locking

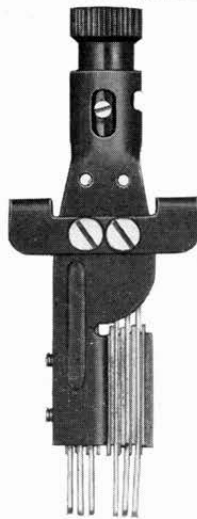


No. 305 Key
Non-Locking

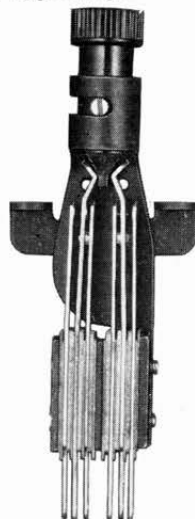
Stock No.	Code	Use
802659	(303)	Key Magneto Telephones and Desk Set Boxes, for ringing central.
802260	(304)	Key Magneto telephones for shorting lines in connection with Non-Interfering Ringing.
802261	(305)	Key No. 844 Lineman's Magneto Test Set.

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 7/8" or 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 7/8" Panel Stock No.	Code		Mounts on 1/2" Panel Stock No.	Code
49506	(334-A)	Locking	49512	(335-A)
49507	(334-B)	Locking	49513	(335-B)
49508	(334-C)	Locking	49514	(335-C)
49509	(334-D)	Locking	49515	(335-D)
49510	(334-E)	Locking	49516	(335-E)
49511	(334-H)	Locking	49517	(335-H)
49518	(336-A)	Non-Locking	49524	(337-A)
49519	(336-B)	Non-Locking	49525	(337-B)
49520	(336-C)	Non-Locking	49526	(337-C)
49521	(336-D)	Non-Locking	49527	(337-D)
49522	(336-E)	Non-Locking	49528	(337-E)
49523	(336-H)	Non-Locking	49529	(337-H)
-----	-----	Non-Locking	211082	(337-J)
-----	-----	Non-Locking	211083	(337-K)
-----	-----	Non-Locking	211132	(337-L)
211158	(336-M)	Non-Locking	-----	-----

Individual Twist Type Plunger Keys

Mounts on 7/8" Panel Stock No.	Code		Mounts on 1/2" Panel Stock No.	Code
49530	(338-A)	Locking	49536	(339-A)
49531	(338-B)	Locking	49537	(339-B)
49532	(338-C)	Locking	49538	(339-C)
49533	(338-D)	Locking	49539	(339-D)
49534	(338-E)	Locking	49540	(339-E)
201122	(338-G)	Locking	-----	-----
49535	(338-H)	Locking	49541	(339-H)
-----	-----	Locking	209018	(339-J)
-----	-----	Locking	211740	(339-L)
-----	-----	Locking	212699	(339-M)
-----	-----	Locking	211760	(339-N)
-----	-----	Locking	211947	(339-P)
-----	-----	Locking	213104	(339-Q)

- 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 and two breaks
- 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

Revised 6-1-55

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

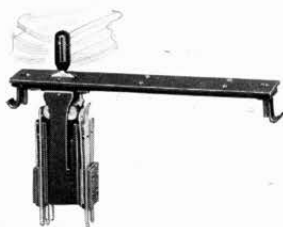
Surface Key Mounting

Stock No.	Code No.	No. of Keys	Face Length	Face Width	Mounting Centers
†801264	(55)	1 No. 175	2 3/4"	3/4"	2 3/8"
†801270	(66)	1 No. 170	2 5/16"	3/4"	1 7/8"
801332	(132)	1 No. 340	2 3/4"	15/16"	2 3/8"
801333	(133)	1 No. 340	2 5/16"	15/16"	1.880"

†No. 55 and No. 66 will not mount No. 340 Type Keys.

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 No. 12908 screws and 2 No. 12672 clamps for key frame mounting. Finish dull black, except those marked*, which are suntan.



No. 88 Flush Key Mounting for one Cam Type Key



No. 120 Switchboard Face Key Mounting

Line Drawing shows Parts of No. 89 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	(82)	1	6 1/2"	1"	6 1/16"
801286	(83)	2	6 1/2"	1"	6 1/16"
801287	(84)	3	6 1/2"	1"	6 1/16"
207331	(88)	1	5 1/2"	1"	5 1/16"
207332	(89)	2	5 1/2"	1"	5 1/16"
207333	(90)	3	5 1/2"	1"	5 1/16"
801295	(92)	1	5 1/2"	1 1/8"	5 1/16"
801296	(93)	2	5 1/2"	1 1/8"	5 1/16"
801297	(94)	3	5 1/2"	1 1/8"	5 1/16"
801298	(95)	1	2 3/4"	1 1/8"	2 5/16"
801311	(111)	1	6 1/2"	1 1/8"	6 1/16"
801312	(112)	2	6 1/2"	1 1/8"	6 1/16"
801313	(113)	3	6 1/2"	1 1/8"	6 1/16"
801314	(114)	1	7 1/4"	1 1/8"	6 13/16"
801315	(115)	2	7 1/4"	1 1/8"	6 13/16"
801316	(116)	3	7 1/4"	1 1/8"	6 13/16"
†801319	(119)	3	5 1/2"	3/4"	5 1/16"
801321	(121)	1	2 3/4"	1"	2 5/16"
801325	(125)	1	7"	1"	6 1/2"
801326	(126)	2	7"	1"	6 1/2"
801327	(127)	3	7"	1"	6 1/2"
*801328	(128)	1	5 1/2"	1"	5"
*801329	(129)	2	5 1/2"	1"	5"
*801330	(130)	3	5 1/2"	1"	5"
*801331	(131)	3	5 1/2"	7/8"	5"
801334	(134)	1	5 1/2"	1"	5 1/16"
*205649	(138)	1	5 1/2"	7/8"	5 1/16"
*205650	(139)	2	5 1/2"	7/8"	5 1/16"
203773	(150)	2	6 1/2"	1"	6 1/8"
203774	(151)	2	6 1/2"	1"	6 1/8"
203775	(152)	1	6 1/2"	1"	6 1/8"
203776	(153)	3	6 1/2"	1"	6 1/8"
206771	(154)	1	7"	1"	6 9/16"
206772	(155)	2	7"	1"	6 9/16"
206773	(156)	3	7"	1"	6 9/16"
206774	(157)	2	7"	1"	6 9/16"
205651	(158)	1	2 3/4"	7/8"	2 5/16"
205652	(159)	1	6.496"	.999"	6 1/16"
205653	(160)	2	6.496"	.999"	6 1/16"
205654	(161)	3	6.496"	.999"	6 1/16"

Mountings Nos. 150 through 157 have clear escutcheons.

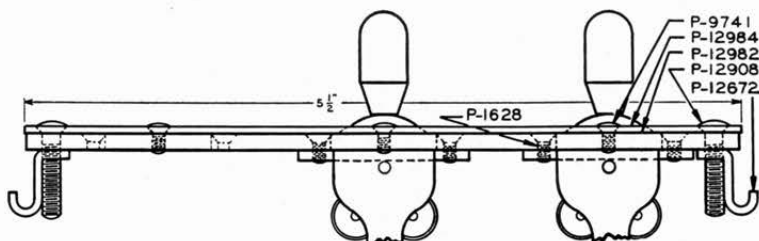
*These Key Mountings have Suntan finish escutcheons and use Phillips head brass screws for face mounting.

†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	(91)	10	10 3/8"	1 1/2"	11 1/16"
801304	(104)	5	10 3/8"	2"	11 1/16"
801320	(120)	10	10 3/8"	1 1/2"	11 1/16"
204950	(162)	10	11 3/32"	1 3/4"	10 1/16"
205047	(163)	15	17 1/16"	2"	



NO. 13 KEY BOX



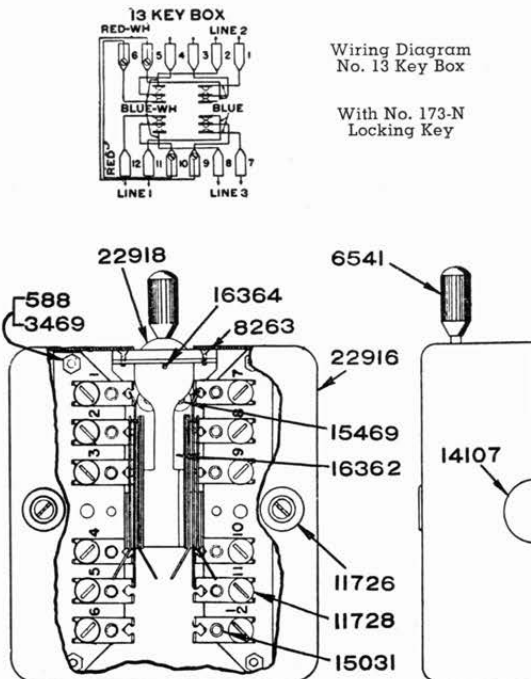
No. 13 Key Box

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. 34575 Key Box (Less Key and Wiring)

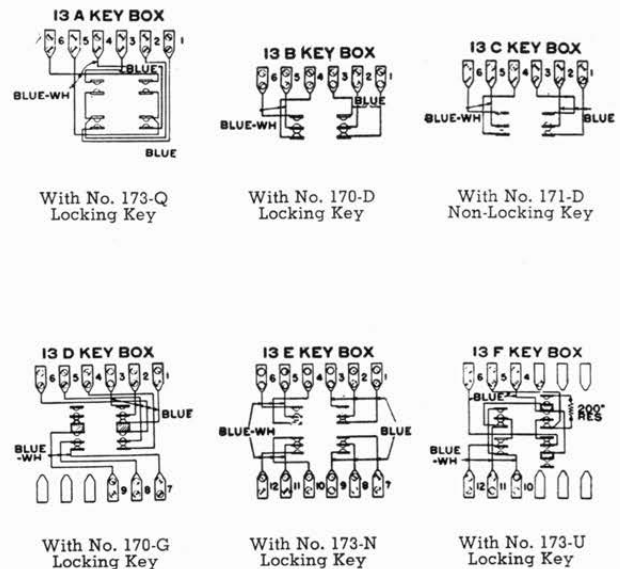
When keys other than those shown in the following codes are required, they may be selected from those listed under "Cam Keys". These keys may be mounted in the No. 34575 Key Box (less key and wiring). Twelve terminals are provided within each Key Box.

Stock No.	Code	Equipped with	Description
801226	(13)	173-N Key	2-Way, Locking-Locking
801227	(13-A)	173-Q Key	2-Way, Locking-Locking
801228	(13-B)	170-D Key	1-Way, Locking
801229	(13-C)	171-D Key	1-Way, Non-Locking
801230	(13-D)	170-G Key	1-Way, Locking
801231	(13-E)	173-N Key	2-Way, Locking-Locking
801232	(13-F)	173-U Key	2-Way, Locking-Locking
800091	(13-FA)	173-H Key	2-Way, Locking-Locking
*800094	(13-G)	175-B Key	1-Way, 3 position lock'g

*No. 175-B Key, used in the No. 13-G Key Box, has a tilted handle. All other keys have straight handles.

Typical Wiring Diagrams of No. 13

Type Key Boxes



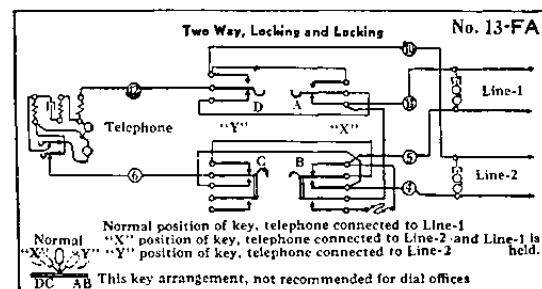
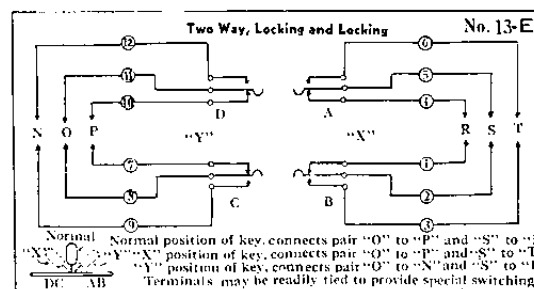
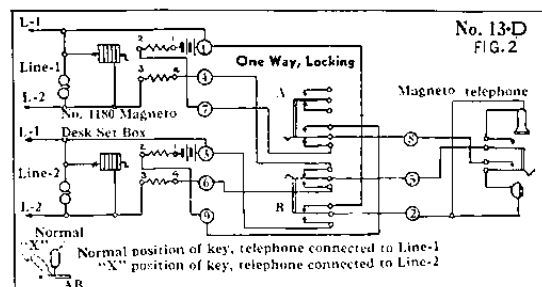
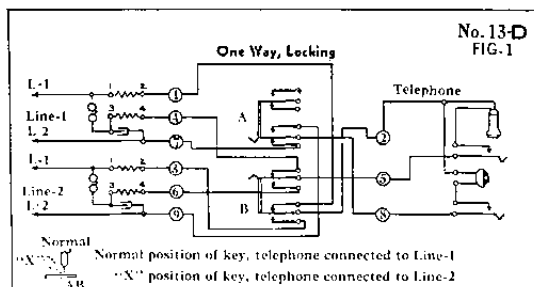
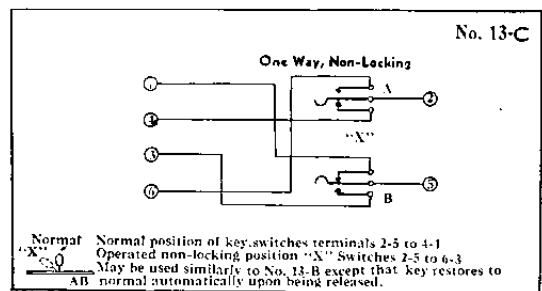
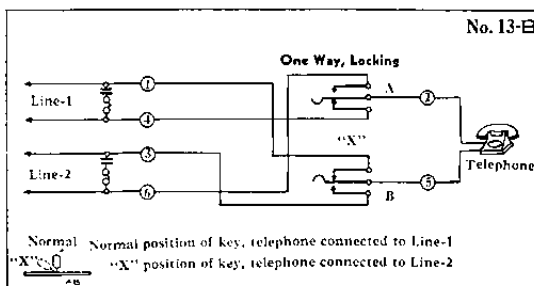
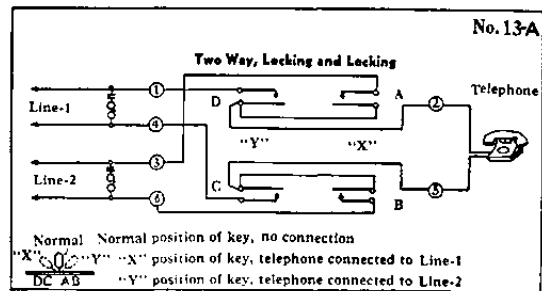
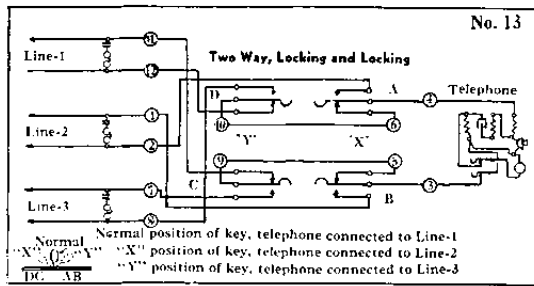
NO. 14-A KEY BOX

This key box is used as a code ringing key in convenience systems, such as the No. 2-6, 2-10 Systems and the 6-K System. The box employs a No. 171-C one-way, non-locking key for ringing.

In outward appearance, this key box is practically identical with the No. 13 key box listed above. Dimensions are—4½" x 3¾" x 1⅞".

Stock No.	Code	Capacity	Use
205686	(14-A)	1-way, Non-Locking Key Box	Convenience Systems

TYPICAL NO. 13 KEY BOX APPLICATIONS



CARD FRAMES

Stock No.	Code	Use	Description
801350	(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 15/32". Width—29/32".
801351	(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 3/4". Width—2 11/16".



No. 2 Card Frame

Stock No.	Code	Use
801352	(4)	Card Frame used on No. 1201, 1232-3-4, and 1532-3-4 suspended type Handset Telephones.
24557	—	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 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.

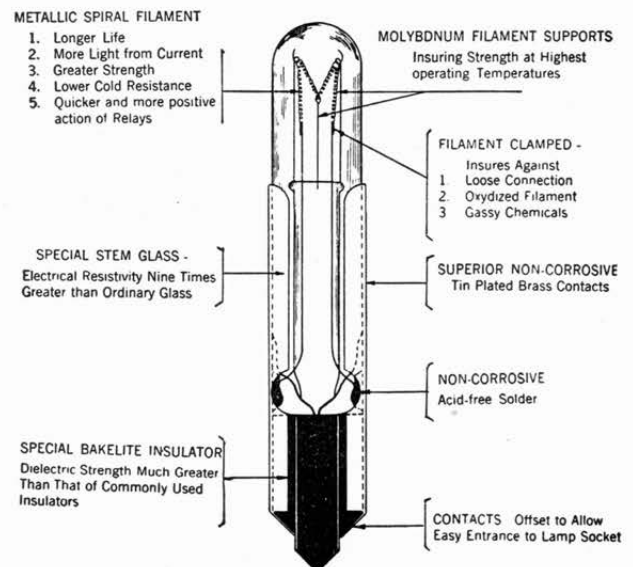
Long life and low current consumption is enhanced by using special stem glass that is nine times more resistant to heat than ordinary glass.

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	Ampere	Approximate Min. Ohms, *End Foot Cold Resistance	Min. Candle Power
801363	(4-A-2)	4	.170	.210	2.0	150
801364	(6-A-2)	6	.120	.160	4.5	200
801365	(8-A-2)	8	.080	.100	9.0	75
801366	(12-A-2)	12	.090	.110	12	110
801367	(16-A-2)	16	.090	.110	16	130
801368	(18-A-2)	18	.035	.050	46	150
801369	(24-B-2)	24	.035	.050	61	200
801370	(24-C-2)	24	.060	.085	33	750
209569	(24-H-2)	24	.018	.033	135	75
801371	(30-B-2)	30	.090	.110	30	500
801372	(44-A-2)	44	.060	.085	61	650
801374	(48-B-2)	48	.090	.110	48	360
42201	(48-C-2)	48	.032	.038	160	200
201737	(48-D-2)	48	.012	.021	410	30
801375	(55-C-2)	55	.045	.055	109	500
45271	(60-A-2)	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; 48 C-2 lamp may be substituted for 44-B-2.

Revised 6-1-55

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— $59/64$ ", Diameter of shank is 0.811 ", fits $13/16$ " hole.

Stock No.	Code	Color	Lens Finish	Glass Description
801388	(23-A)	White	Glossy	Translucent
801389	(23-B)	Red	Sanded	Translucent
801390	(23-C)	Green	Sanded	Translucent
801391	(23-D)	Amber	Sanded	Translucent
207824	(23-E)	Red	Glossy	Translucent
207825	(23-F)	Clear	None	Transparent
207826	(23-G)	Red	Glossy	Translucent
207827	(23-H)	Clear	None	Transparent
209428	(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— $3/8$ ", Diameter of shank— 0.340 ", fits $11/32$ " hole.

Stock No.	Code	Color	Lens Finish	Glass Description
801392	(27-A)	White	Glossy	Cloudy
801393	(27-B)	Red	Sanded	Clear
801394	(27-C)	Green	Sanded	Clear
801395	(27-D)	Transparent	Glossy	Clear
801396	(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— $3/8$ ", Diameter of shank— 0.320 ", fits a $5/16$ " hole.

Stock No.	Code	Color	Lens Finish	Glass Description
801400	(29-A)	Transparent	Glossy	Clear, number disc
801401	(29-B)	Red	Sanded	Clear
801402	(29-C)	Green	Sanded	Clear
801403	(29-D)	White	Glossy	Cloudy
801404	(29-E)	White	Glossy	Cloudy with • Symbol
801405	(29-F)	White	Glossy	Cloudy with + Symbol
801406	(29-G)	White	Glossy	Cloudy with I 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— $3/8$ ", Diameter of shank— 0.340 ", fits a— $11/32$ " hole.

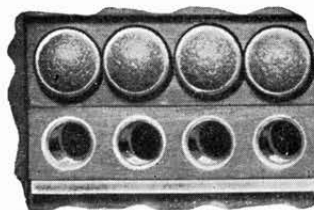


No. 30 Line

Stock No.	Code	Color	Lens Finish	Glass Description
801407	(30-A)	Transparent	Glossy	Clear, number disc
801408	(30-D)	White	Glossy	Cloudy with • Symbol
801409	(30-J)	White	Glossy	Cloudy with + Symbol
801410	(30-K)	White	Glossy	Cloudy with I Symbol
801411	(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— $13/32$ ", Diameter of shank— 0.343 ", fits $11/32$ " hole.



No. 31 Supervisory
Lamp Caps

Stock No.	Code	Color	Lens Finish	Glass Description
801412	(31-A)	White	Glossy	Translucent
801413	(31-B)	Red	Sanded	Translucent
801414	(31-C)	Green	Sanded	Translucent
207177	(31-D)	Clear	None	Transparent

STROMBERG-CARLSON

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 15/16". Diameter of head—7/8". Diameter of sleeve—7/16".



No. 9 Lamp Sockets

Stock No.	Code	Used with
801417	(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—7/8" key shelf with one No. 4 x 1/2" R.H.I.W. Screw. Takes standard switchboard lamp and the No. 27 Lamp Cap. Length over springs—2 7/16". Diameter of sleeve—7/16". Mounting lug—11/16" from face.



No. 12 Lamp Socket

Stock No.	Code	Used with
801420	(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—7/8" panel with one No. 4 x 1/2" R. H. I. W. Screw.

Takes standard switchboard lamp and the No. 31 Lamp Cap. Length over springs—2 29/32". Diameter of sleeve—1/2". Mounting lug—27/32" from face.



No. 13 Lamp Socket

Stock No.	Code	Used with
801421	(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 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.

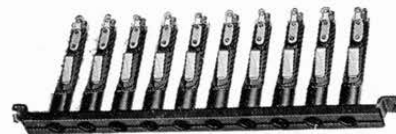


No. 10 Lamp Socket

Stock No.	Code	No. of Sockets	Used with
801418	(10)	Lamp Socket 4	Edison base lamps
801419	(11)	Lamp Socket 5	Edison base lamps
801422	(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 15/32", Overall length—11 15/32", Width of face—1/2", Mounting Centers—10 15/32", Face Length—7 37/64", Jack Fasteners—No. 15.

Stock No.	Code	Mtg.	No. of Sockets	Description
801431	(121)	L.S. on 60 Mtg.	10	Plain face
801432	(121)	L.S. on 61 Mtg.	20	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 3/8", Overall length—10 3/4", Width of face—1/2", Mounting Centers—11 1/16", Jack Fastener—No. 17.

Stock No.	Code	Mounting	No. of Sockets	Description
801424	(121)	80	10	*Plain Face
801425	(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 Lamp Socket on 82 Mounting

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.

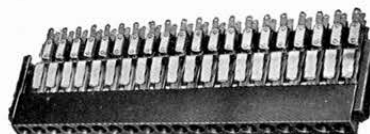
Length of face—7 19/32", Overall length—5 31/32", Width of face—1/2", Mounting Centers—8 3/8", Jack Fastener—No. 17.

Stock No.	Code	Mountings	No. of Lamp Sockets	Caps
801426	(121)	Lamp Socket Strip	82	10 No. 30
801429	(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 19/32", Overall length—7 31/32", Width of face—1/2", Mounting Centers—8 3/8", Jack Fastener—No. 17.

Stock No.	Code	Mountings	No. of Description Sockets
801440	(121)	Lamp Socket Strip	91 10 Plain face
801427	(121)	Lamp Socket Strip	83 20 Plain face
801439	(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 (13) A round number plate, used on wood drop mounting panels, keyboards, terminal strips, etc. Consists of white opaque celluloid engraved with black figures—1/8" high. Mounts flush—drive fit. Diameter—1/4". Thickness—3/16".
- 9573 (17) 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—3/16" high. Mounts flush—drive fit. Diameter—7/16". Thickness—5/16".
- 15373 (17-A) Same as No. 17 except Black.
- 15374 (17-B) Same as No. 17 except Red.
- 15375 (17-C) Same as No. 17 except Blue.
- 15376 (17-D) Same as No. 17 except Green.
- 13062 (19-A) Square number plate used on multiple finishing stiles. Consists of white ivory with black engraved figures—style to be specified. Three figures or less—7/32" high, four or more 9/64". Mounts with 2 No. 12910 O.H.M. Screws. Size—11/16" square. Thickness—7/64".
- 13063 (19-B) Same as No. 19-A except Red.

OPERATOR'S TELEPHONE SETS



No. 4 Operator's Telephone Set

No. 4 Type with Breast Plate Transmitter

The No. 4 Operator's Telephone Set consists of a breast plate transmitter with a neck band, a light weight receiver, a four conductor Duratex cord, and a four point plug. It offers the following desirable features:

Transmitter embodies the most modern design to give distinct and clear articulation. It is mounted on a white enameled plate which prevents garments from being soiled and is equipped with adjustable neckband to maintain the transmitter at proper height. A ball and socket joint at transmitter opening makes it possible to keep the mouthpiece in correct relation to the operator's lips. Transmitter operates equally well with common battery or magneto switchboard circuits. Sensitive Receiver, light in weight, enables the operator to wear it for long periods without fatigue—equipped with wire head band which holds it firmly and comfortably to the operator's ear.

Duratex Cord with bronze ribbon conductors which reduces scratching and noise to a minimum.

Rugged Plug uses four separate conductors which provide low resistance circuit contacts—easily removed from the jack.

Stock No.	Code	Description
801453	(4)	Operator's Set complete

Parts of No. 4 Operator's Set

Stock No.	Code	Description
802523	(21)	Breast Plate Transmitter complete
801592	(29)	Headband Receiver
201839	(66)	Four-Point Plug (Used with No. 93 Jack)
201829	(MO-4-K)	5' 4-cond. Duratex Cord
13483		Neckband and clasp
5419		Mouthpiece

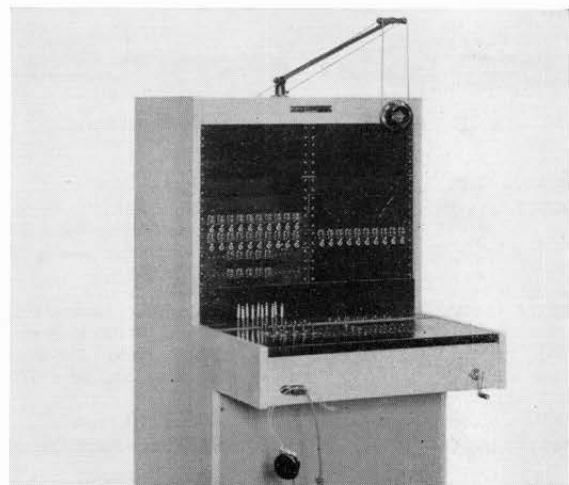
Suspended Type Operator's Sets

This set consists of No. 22 Universal Type Transmitter with mouthpiece 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	(22)	Operator's Transmitter (Suspended)
801592	(29)	Headband Receiver (Less Cord)
202926	(MO-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

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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.

Designations

"X" affixed to code number indicates over-all shell covering butt of plug.

"N" affixed to code number indicates non-depressed ring.

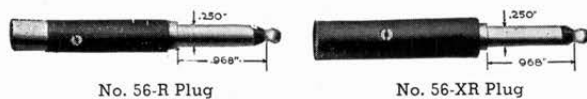
Diameters shown in illustrations indicate size of associated jack.

"R" indicates large screw.

Switchboard Plugs Two Conductor Plugs



Stock No.	Code	Used with	Class of Service
801465	(10)	34, 101 102 Jack	Manually restored drops and toll test panels. Uses S-23-G Two Conductor Cord
801481	(42)	11 Drop	No. 105 Magneto Switchboard. Uses S-23-G Two Conductor Cord



Stock No.	Code	Used with	Class of Service
206515	(56-R)	130 Jack	Replaces No. 5060 Plug on Garford Magneto Swbds. Uses S-22-F Two Conductor Cord. Replaces No. 56 Plug.
206516	(56-XR)	130 Jack	No. 125 Magneto Switchboard. Also PBX and Multiple Boards. Uses S-22-F Two Conductor Cord. Replaces No. 56-X Plug.

Stock No.	Code	Class of Service
*206517	(56-G)	Used on Multiple Switchboards.

*Numbers that are listed have black shells; grey and red shells are available upon request.

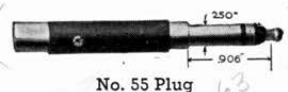


Stock No.	Code	Jack used
801498	(57)	109



Stock No.	Code	Jack used	Class of Service
801502	(61)	144-A, 145-A, 154-A,	Replaces No. 36. Former common battery and PBX Switchboards. Uses S-22-B Two Conductor Cord
200516	(61-R)	155-A	Toll test panels Uses S-24-K Two Conductor Cord Interchangeable with W.E. No. 47

Three Conductor Switchboard Plugs



Stock No.	Code	Used with	Class of Service
801504	(63)	109 Jack	Same profile as No. 55. Uses W.E. 101 Cord Tips. Uses S-32-P three conductor cord. Replaces No. 55 Plug.
801505	(63-N)	127 Jack	Same as No. 63 but with non-depressed ring. Uses S-32-P three conductor cord. Replaces No. 55-N Plug.
205554	(64-R)	156, 157 and 127 Jacks	Same profile as No. 54. Uses W.E. 101 Cord Tips. Uses S-32-P three conductor cord. Replaces No. 54 and 64 Plugs.
*205547	(64-DR)	127 Jack with large form on	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	(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	(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-32-P Cord.
*205557	(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	(64-NR)	Garford 110, and 120 Jacks	Same as No. 64 but with non-depressed ring. Uses S-32-P three conductor cord. Replaces No. 54-N and No. 64-N Plug.

STROMBERG-CARLSON

PLUGS (Cont.)



No. 59 Plug

801500 (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. 53 Plugs in service, S-32-K 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	(65-R)	130 Jack	S-32-P (Three conductor)
*205541	(65-XR)	130 Jack	S-32-P (Three conductor)
*205535	(65-NR)	130 Jack	S-32-P (Three conductor)
*205538	(65-NXR)	130 Jack	S-32-P (Three conductor)

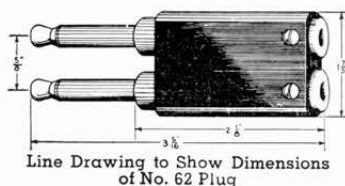
*Used on Stromberg-Carlson PBX and Multiple Switchboards. Black shells are standard but red and gray shells can also be furnished. For Stock Numbers of shells see heading "Plug Parts".

Test Plugs

These plugs are used in connection with toll test panels and wire chief's testing equipment at the M.D.F.



No. 35-A Plug

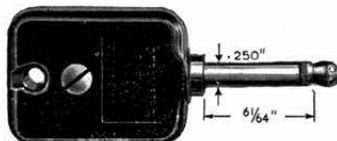


Line Drawing to Show Dimensions of No. 62 Plug

Stock No.	Code	Conductors	Used with	Class of Service	Cord Used
801476	(35-A)	3	101 Type Jack	Test Panel	S-32-K
801503	(62)	4	154 Type Jack	Test Panel	M-4-C
209779	(67)	6	145 Type Jack	Test Panel	S-33-NS

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.

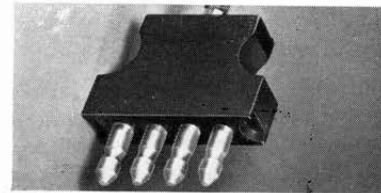


No. 60 Plug

For a description of this complete assembly refer to this section (F) under "Individual Jacks."

Stock No.	Code	Jack Used	Description
801501	(60)	2-Point	Used with No. 25856 Plug-in Jack Assembly

No. 66 Operator's Plugs



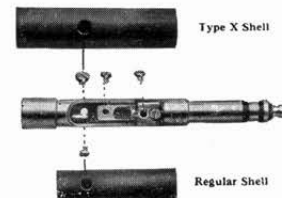
No. 66 Operator's Plug

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	(66)	93	4	MO-4-K, 5'	No. 4 B.P. Type
201839	(66)	93	2	MO-2-J, 4'	Susp. Type

Plug Parts

Plug Code No.	Shell Stock No.	Shell Screws Stock No.	Terminal Screws Stock No.
10	8851	5729	5729
35-A	12836	4836	8300
42	8339	13061	5729
53, 53-N	25045(a)	4836	8300
53-X, 53-NX	13060(b)	13061	8300
54, 54-N	25045(a)	4836	8300
55, 55-N	25045(a)	4836	8300
56	25045(a)	4836	5729
56-X	13060(b)	13061	5729
57	25045(a)	4836	5729
59	14033	14695	14693



Plug Parts

Plug Code No.	Shell Stock No.	Shell Screws Stock No.	Terminal Screws Stock No.
60	15148(2)	15147	515020
61	21421	21420	21419
61-A	22321(c)	21420	21419
62	26853	26854	21419
63, 63-N	34405(d)	4836	4836
65, 65-N	202076(e)	4836	8300
65-X, 65-NX	35296(f)	13061	8300

- (a) These shells are black. Specify 15319 for red shell. Specify 15578 for gray shell.
- (b) These shells are black. Specify 27584 for red shells. Specify 27585 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. Gray is 34407.
- (e) These shells are black. Red shell is 202078. Gray is 202077.
- (f) These shells are black. Red shell is 35297. Gray is 35298.

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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, No. 52236.



Jack Gauge

Stock No.	Diameter
13070	.246
13071	.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	.217	Plug Gauge
13118	.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	.197	Plug Gauge
13119	.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	(5)	10, 42, 59, 61	11/32"	Fiber	2-No. 3939
4638	(6)	53, 54, 55, 56	5/16"	Fiber	2-No. 4638
		57, 63, 64, 65			
12170	(12)	18, 33, 34, 39	1/4"	Fiber	2-No. 3939
203957	(13)	62	11/32"	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	(1)	Trouble Cap	1 1/8"	54, 64
16583	(2)	Trouble Cap	1 1/8"	10, 42, 53, 55, 56, 63, 64, 65
16584	(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



No. 14 Type



No. 15 Type

Stock No.	Code	Stock No.	Code	Stock No.	Code
801526	(7-A)	801531	(14-A)	801537	(15-A)
801527	(7-B)	801532	(14-B)	801538	(15-B)
801528	(7-C)	801533	(14-C)	801539	(15-C)
801529	(7-D)	801534	(14-D)	801540	(15-D)
801530	(7-E)	801535	(14-E)	801541	(15-E)
802769	(7-F)	801536	(14-F)	204349	(15-F)

Above code letters indicate the following colors:

A—Green	C—Blue	E—Black
B—Red	D—White	F—Yellow

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
1294	(1)	Composition	.500	10, 42, 53-X, 56-X
1323	(2)	Composition	.375	106, 108, 124 Jacks
1513	(3)	Composition	.375	12, 18, 33, 34 Plugs
4415	(5)	Composition	.477	34, 99, 102, 119 Keys
7637	(6)	Composition	.406	53, 54, 55, 56, 57, 63, 64, 65
12713	(7)	Rubber	.347	No. 12 Lamp Socket
13940	(8)	Composition	.453	142, 143, 144 Jacks
				12 L.S., 59 Plug
15323	(11)	Rubber	.650	310 Key
21672	(12)	Composition	.610	No. 61 Plug
32142	(13-A)	Brass	.515	10, 15, 24, 25, 42,
32143	(13-B)	Ox. Bronze	.515	43, 44, 53-X Plugs; 6, 8 L.S.
209398	(13-C)	Brass, black	.515	Toll Test Boards
32144	(14-A)	Brass	.500	158 Jack
—	(14-B)	Ox. Bronze	.500	in
205515	(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	(29)	Receiver with head band (Less Cord)
202926	(MO-2-J)	6' Cord only (Two conductor)

For Breast Plate Operator's Sets

Stock No.	Code	Description	Plug Used	B.P. Set Used
801592	(29)	Headband Rcvr (less cord)	No. 66	No. 4
201829	(MO-4-K)	5' Four Conductor Cord	No. 66	No. 4

Other Parts

Stock No.	Name	Used on
19279	Headband	No. 29 Receiver
18583	Ear Cap	No. 29 Receiver
21433	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	(30)	Receiver	Wall Sets and Desk Stands
801594	(30-A)	Receiver	Wall Sets and Desk Stands
801595	(30-B)	Receiver	Iron-Clad Telephones

*The No. 30 Receiver is furnished without cord.

Assembly Parts

Stock No.	Code	Name	Receiver Used
800655	(MR-2-J)	39" Cord	No. 30-A
800627	(M-2-I)	22" Cord	No. 30-B
33179		Casing	No. 30-A, 30-B
32864		Earcap	No. 30-A, 30-B
34230		Capsule Unit	No. 30-A, 30-B

RECEIVERS (Cont.)

Handset Receivers

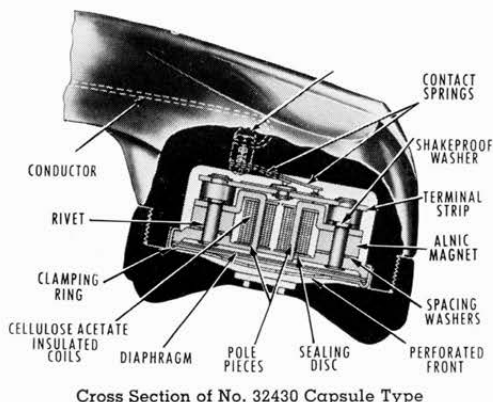


No. 32 Capsule Receiver

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.



Cross Section of No. 32430 Capsule Type

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. 210285 Capsule Type

This receiver is used in the Stromberg-Carlson No. 27 Handsets which is the handset for the No. 1543-W Telephones. Comes equipped with a varistor which reduces noise and other interferences.

Present Handset Receivers

Stock No.	Code	Description	Handsets Used
210278	(32)	Capsule Type Receiver	26, 28
210285		Capsule Type Receiver	27
34230	(31)	Capsule Type Receiver	18, 19, 20, 21, 22, 23, 24
212707	(T-1-L)	Cord for adapting No. 32 Receiver to Nos. 20, 21, 22, 23, 24 handsets	

Former No. 19-A Watchcase Receiver

This permanent magnet receiver was used with Stromberg-Carlson No. 844 Linesman's Test Set. No longer manufactured.

Parts only are obtainable

Stock No.	Code	Description
800626	(M-2-J)	24" Cord
15190		Ear Cap
9924		Diaphragm

RELAYS AND RELAY COILS

The relays listed in this Catalogue 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.

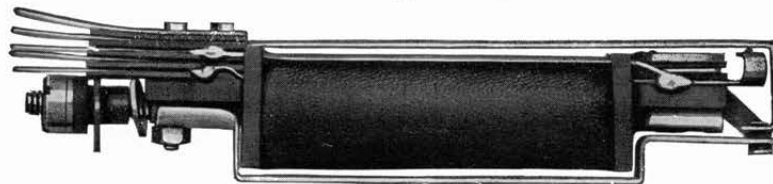
Ordering Information

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.

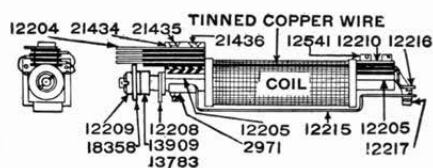
COMPACTNESS—But one-third to one-half of the space is required for this relay that is required for other types of relays. Obviously, this compactness permits closer mounting centers which means a marked saving of space either in the switchboard section or on the relay racks in the terminal room.

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.



Parts Drawing of No. 190 Type Relay

Stock No.	Code	Approx. Ohms Resistance	Spring Arrangement	Stock No. Coil only
802772	(192-A)	100 x 670	One make	12233
802773	(193-A)	320	One make	12234
802774	(193-BB)	320	Two breaks	12234
802775	(194-A)	800	One make	12235
802776	(194-C)	800	One break-make	12235
803052	(194-1-BB)	800	Two breaks	12235
802777	(195-A)	320-1000 N.I.	One make	12265
200580	(197-BB)	34	Two breaks	19075
802950	(198-A)	400 x 400	One make	21587
802778	(199-BB)	320	Two breaks	12234

Under the heading "Relay Casings" dust proof covers are shown that will accommodate groups of 20, 40 or 50 No. 190 Type Relays.

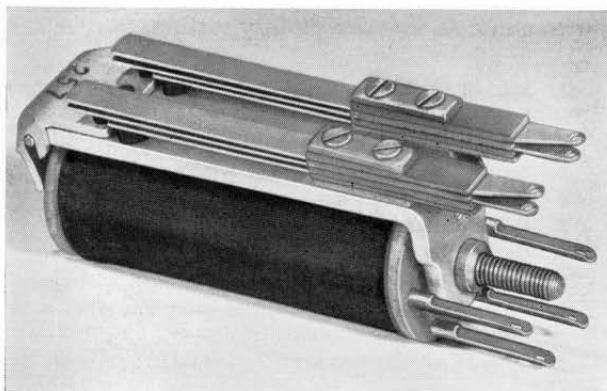
STROMBERG-CARLSON

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 Uses AY Spring only	12276
202	15	12277
203	70	12278
204	100	15491
205	200	12280
206	500	12266
207	1000	12267
208	800	12281
209	1500	12282
210	5000	12283
212	18-50 N.I.	12285
213	320	15435
214	2000	15436
215	16-75 N.I. Copper Sleeve	32846
218	2000 AC	201054
219	500 AC	34947

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
262	200	15430
263	500	15431
264	1000	15432
265	50	15433
266	23	202167
267	5000	202453

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
222	100-100 Balanced Inductance	12287
223	200-200 Balanced Inductance	12288
224	500-500	12289
225	1000-1000	12290
226	50-50 Balanced Inductance	12291
227	100-250	12292
228	75-75 Balanced Inductance	12293
229	200-2000	12294
231	500-1000	12295
232	400-400	12296

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
241-1	200-350 N.I.	33856
242	1000-100 N.I.	12298
242-1	200-1000 N.I.	33857
243	100-350 N.I.	15197
243-1	1000-500 N.I.	37012
244	500-350 N.I.	15198
245	500-2000 N.I.	15199
246	100-60 N.I.	15200
247	100-1000 N.I.	15201
248	500-500 N.I.	15202
249	1000-1000 N.I.	29743



Concentric Wound Coils

Two Inductive Windings (Concentric)

Code No.	Relays Less Springs Approx. Ohms Resistance	Coil only Stock No.
251	500-1000	15203
251-1	500-1000 (A.C. Relay)	39351
251-2	100-600	211883
252	500-100	15204
252-1	13-12,000	42782
253	200-500	15205
254	175-2100	17809
254-1	500-5000	202006
255	100-10,000 (Takes AY Spring)	15207
255-1	250-2000	203192
256	250-500	15208
257	250-670	15209
258	500-500	15210
259	100-200	15211
295	200-75	28366
296	500-75	28365
297	1000-75	28367
298	340-2000	32845
299	1000-150	38507

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
292	500-450 N.I.	33757
293	500-2000 N.I.	33855

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
275	500-1000 Both Inductive	16480
276	500-100 N.I.	202007
277	500-2000 N.I.	202008
278	500-10,000 N.I.	202009
279	50-1000 N.I.	201174
*281	160-200 N.I.	15218

*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.

Revised 6-1-55

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
307	1000	Single	15221
313	400-500	Concentric	15222

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
*344-C	500	250	One break-make	13086
*345-C	20,000	10,000	One break-make	35036
*346-C	174	87	One break-make	35405
347-CC	20,000	10,000	Two break-make	35036
348-CC	30,000	15,000	Two break-make	201028
349-C	50-15,000	50-15,000	One break-make	201952

*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
367-A	One make	1000	Non-Locking	15221

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
376-WCYBY	75-175-700-2200 N.I.	One break-make	205103
		One break	
377-WCYCY	75-175-700-2200 N.I.	Two break-make	205103
378-W	150-225-700-2200 N.I.	-----	38506
379-WCY	150-225-700-2200 N.I.	One break-make	38506
385-WFYCY	75-175-400-400 N.I.	One break and double make:	200575
		One break-make	

Code Number	Resistance	Stock No.
386-W	100-100, 700-200 NI	203405 Coil
387-W	200-200, 700-200 NI	203404 Coil
388-WCY	100-100, 700-200 NI	203405 Coil
389-WCY	200-200, 700-200 NI	203404 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 No.	Resistance
803103	(381-A)	44356	1.7 Ohms
208075	(382-A)	208076	1000 Ohms
211907	(383-C)	211908	16.4-36-NI-14 NI
211909	(384-C)	211910	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

A, B AND C TYPE 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°F 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.

"A" Type Relays

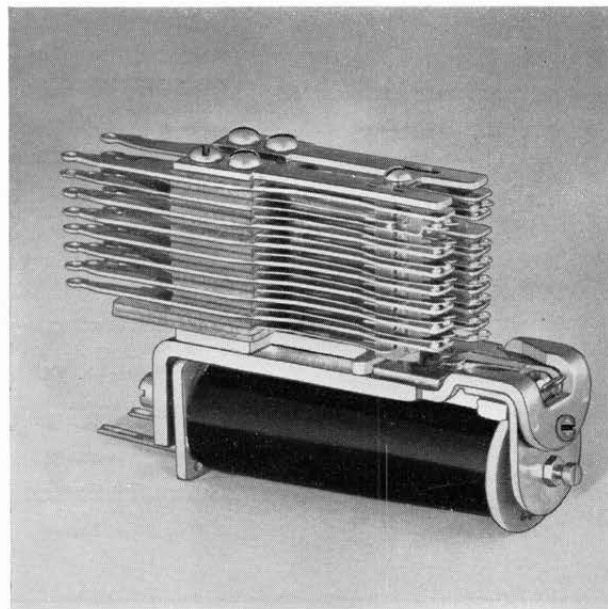
The "A" Type is a general-purpose telephone relay used in XY Systems or in other places where similar operating conditions exist. This relay will give reliable service under ordinary conditions or in damp climates, due to the use of carefully selected insulating materials and special treatment to prevent 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 coils are designed to withstand the most unfavorable climatic conditions and cellulose acetate insulation is used at all points coming in contact with the wire. 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 "A" Type Relays may also be mounted in one stack. The equivalent of 12 "make" contacts may be mounted on each "A" Type Relay although this number may be increased to 18 when sufficient mounting space is available. Twin contacts of precious metal are carried by two lines on each spring, which assures unfailing operation. Stability of contact adjustment is maintained



"A" Type 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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A, B AND C TYPE RELAYS (Cont.)

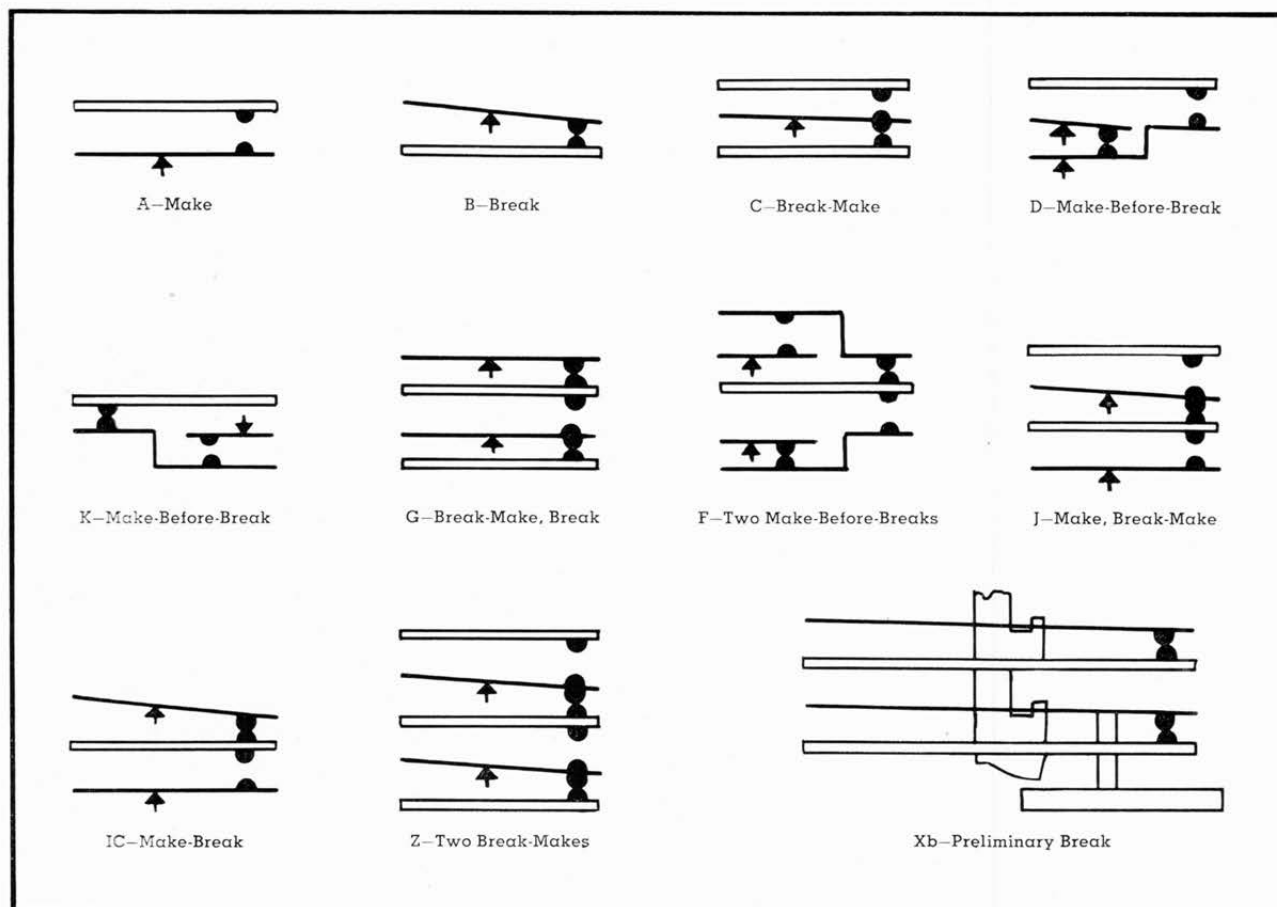
Basic Spring Combinations For Pile-Ups in A Type Relays

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 crossbar type contacts.



A few of the most commonly used Spring Combinations

Twin-Type Contacts

Stromberg-Carlson "A" Type 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.



A, B AND C TYPE RELAYS (Cont.)

ARMATURES

"A" type 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 "A" TYPE RELAYS

One Inductive Winding

Standard Spool (ST)

Stock No. Coil	Approx. Ohms Resistance	Stock No. Coil	Approx. Ohms Resistance
36801	1.1	36874	300
36802	1.7	36870	320
36803	2.7	36814	350
36804	4.3	36871	514
36805	7	36815	560
36806	11	36876	800
36807	17	36816	850
36808	27	36822	1170
36823	32	36872	1200
36809	40	36875	1310
36810	67	36817	1350
36811	100	36878	1500
36812	140	36818	2120
36877	180	36819	3500
36873	214	36820	5500
36813	220	36821	8600

5/8" Heel-End Slug (SR-1)

Stock No. Coil	Approx. Ohms Resistance	Stock No. Coil	Approx. Ohms Resistance
36824	5.25	36833	262
36825	8.25	36834	420
36826	12.70	36835	638
36827	20.2	36836	1010
36828	30	36837	1590
36829	50.3	36838	2620
36830	75	36839	4120
36831	105	36840	6540
36832	165		

1 1/4" Heel-End Slug (SR-2)

Stock No. Coil	Approx. Ohms Resistance	Stock No. Coil	Approx. Ohms Resistance
36857	417	36859	983
36858	660	36860	1710

1/2" Armature End Slug (SO-1)

Stock No. Coil	Approx. Ohms Resistance	Stock No. Coil	Approx. Ohms Resistance
36844	262	36841	2620
36842	1010	36843	4120
36845	1590	36846	6540

1 1/4" Armature End Slug (SO-2)

Stock No. Coil	Approx. Ohms Resistance	Stock No. Coil	Approx. Ohms Resistance
36853	172	36851	2700
36852	983		

One Inductive Winding

1/2" Diameter Sleeve (SL-1)

Stock No. Coil	Approx. Ohms Resistance	Stock No. Coil	Approx. Ohms Resistance
36861	11.8	36863	1330
36864	938	36862	2400

11/16" Diameter Sleeve (SL-2)

Stock No. Coil	Approx. Ohms Resistance	Stock No. Coil	Approx. Ohms Resistance
36865	610		

**1/2" Armature End Slug and
7/16" Diameter Sleeve (RT-1)**

Stock No. Coil	Approx. Ohms Resistance	Stock No. Coil	Approx. Ohms Resistance
36880	61	36879	200

Two Inductive Windings — Concentric Wound

Standard Spool (ST)

Stock No. Coil	Approx. Ohms Resistance	Stock No. Coil	Approx. Ohms Resistance
36898	.1 x 200	36201	214 x 3090
36889	2.5 x 130	36205	332 x 470
36206	7.5 x 1200	36886	332 x 1220
36895	10 x 2020	36896	332 x 2020
36203	16 x 16	36923	475 x 530
36899	16 x 23	36208	514 x 38
36900	24.8 x 780	36207	514 x 780
36892	24.8 x 2020	36883	514 x 1220
36890	38.7 x 38.4	36887	514 x 2020
36202	50 x 2020	36905	610 x 1017
36897	61.5 x 1550	36891	800 x 470
36200	79 x 1220	36894	800 x 780
36893	79 x 2020	36881	800 x 1220
36885	135 x 780	36903	800 x 2020
36888	135 x 2020	36922	1310 x 318
36209	140 x 1500	36884	1310 x 2020
36901	185 x 215	36974	1310 x 4500
36921	200 x 200	36904	2090 x 2020
36902	214 x 3.9	36979	3000 x 3000
36204	214 x 780	36978	30000 x 1200
36882	214 x 2020		

5/8" Heel-End Slug (SR-1)

Stock No. Coil	Approx. Ohms Resistance	Stock No. Coil	Approx. Ohms Resistance
36949	250 x 560	36950	1560 x 2300

Revised 6-1-55

COILS FOR "A" TYPE 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	2.2 x 985	36945	250 x 595
36943	7.7 x 985	36944	640 x 985
36946	90 x 950	36941	1075 x 1650

1/2" Armature End Slug (SO-1)

Stock No. Coil	Approx. Ohms Resistance	Stock No. Coil	Approx. Ohms Resistance
36933	159 x 909	36935	927 x 167
36932	595 x 909	36931	1560 x 2300
36934	800 x 1160		

1 1/4" Armature End Slug (SO-2)

Stock No. Coil	Approx. Ohms Resistance	Stock No. Coil	Approx. Ohms Resistance
36938	250 x 595	36936	640 x 985
36937	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
36930	300 x 600		

Nickel-Steel Sleeve (SL-3)

Stock No. Coil	Approx. Ohms Resistance	Stock No. Coil	Approx. Ohms Resistance
36925	3 x 490	36977	*200 x 200
36976	*200 x 200		

*Sandwich wound.

1/2" Armature End Slug and 7/16" Diameter Sleeve (RT-1)

Stock No. Coil	Approx. Ohms Resistance	Stock No. Coil	Approx. Ohms Resistance
36927	150 x 750	36926	220 x 1000
36929	180 x 980		

One Inductive — One Non-Inductive Winding

Standard Spool (ST)

Stock No. Coil	Approx. Ohms Resistance	Stock No. Coil	Approx. Ohms Resistance
36907	5 x 500 N.I.	36237	1310 x 500 N.I.
36975	* 24.2 x 700 N.I.	36238	1310 x 700 N.I.
36906	214 x 800 N.I.	36234	1310 x 800 N.I.
36910	214 x 1000 N.I.	36229	1310 x 1000 N.I.
36218	320 x 2000 N.I.	36230	1310 x 1500 N.I.
36223	332 x 500 N.I.	36224	1310 x 2000 N.I.
36221	514 x 500 N.I.	36239	1310 x 3000 N.I.
36913	514 x 1000 N.I.	36235	1310 x 4000 N.I.
36917	514 x 2000 N.I.	36231	2000 x 300 N.I.
36912	514 x 3500 N.I.	36219	2000 x 400 N.I.
36911	514 x 4500 N.I.	36919	2000 x 500 N.I.
36918	514 x 5000 N.I.	36233	2000 x 800 N.I.
36908	800 x 500 N.I.	36914	2000 x 1000 N.I.
36222	800 x 800 N.I.	36220	2000 x 1100 N.I.
36226	800 x 1000 N.I.	36920	2000 x 2000 N.I.
36916	800 x 2000 N.I.	36236	2000 x 3000 N.I.
36228	800 x 3500 N.I.	36232	2000 x 3500 N.I.
36225	800 x 5000 N.I.	36909	2000 x 4000 N.I.
36227	1200 x 800 N.I.	36915	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	20 x 20	36963	280 x 280
36953	34 x 34	36965	425 x 425
36955	50 x 50	36956	1000 x 1000
36957	70 x 70	36954	1060 x 1060
36959	110 x 110	36969	1200 x 1200
36961	175 x 175	36952	1750 x 1750
36967	200 x 200		

Three Inductive Windings

Standard Spool (ST)

Stock No. Coil	Approx. Ohms Resistance	Stock No. Coil	Approx. Ohms Resistance
36973	.1 x 14 x 3000	36971	865 x 1235 x 1400
36972	540 x 740 x 700		

One Inductive — Two Non-Inductive Windings

Standard Spool (ST)

Stock No. Coil	Approx. Ohms Resistance
36980	514 x 4500 N.I. x 1000 N.I.

To Order An "A" Type Relay

- (1) Select the desired spring combination from the information given on page 60f.
- (2) 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.

- (3) 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.

A, B AND C TYPE RELAYS (Cont.)

"B" Type Multi-Contact Relays

These are multi-contact units used in switching systems where reliable operation of a large number of contacts is essential. The "B" Type Relay will accommodate six stacks of spring combinations which are the same as the basic combinations used with "A" Type Relays. The use of twin precious metal contacts assures long life and reliable operation.

A—Make Contact C—Break-make contact
B—Break Contact D—Make-before-break contact

The "B" Type Relay has a capacity of 54 "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 "A" Type 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 "B" Type 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 "B" Type 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.

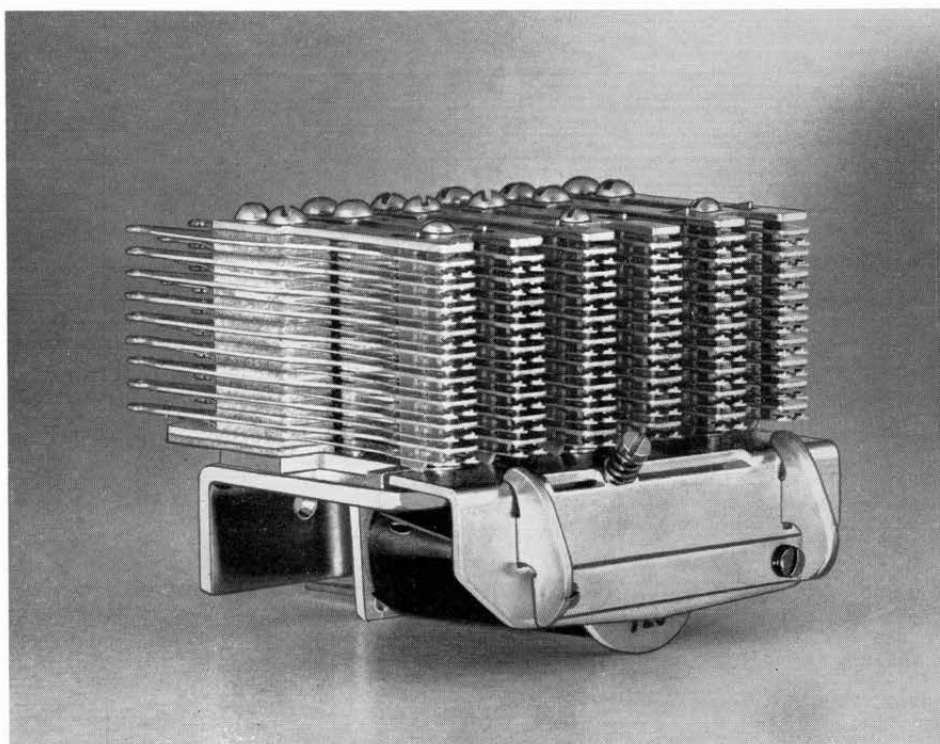
Types of "B" Relay Coils

Stock No.	Approx. Resistance	Stock No.	Approx. Resistance
36986	728 Ohms	36989	1070 Ohms
36987	175 Ohms	36990	2780 Ohms
36988	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

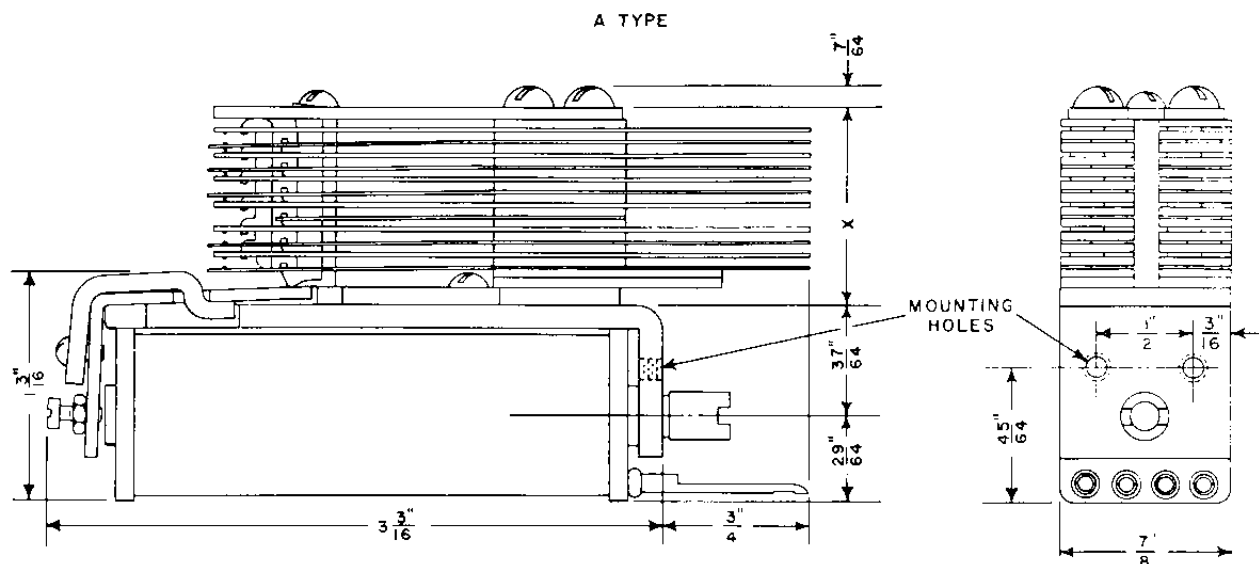
Total Make, Break-Make Combinations	No. of Groups	Type per Group	Stock No.
24	3	8-A's	36040
30	3	10-A's	36047
36	3	12-A's	36048
42	3	14-A's	36049
48	3	16-A's	36050
54	3	18-A's	36051
24	3	8-C's	351802



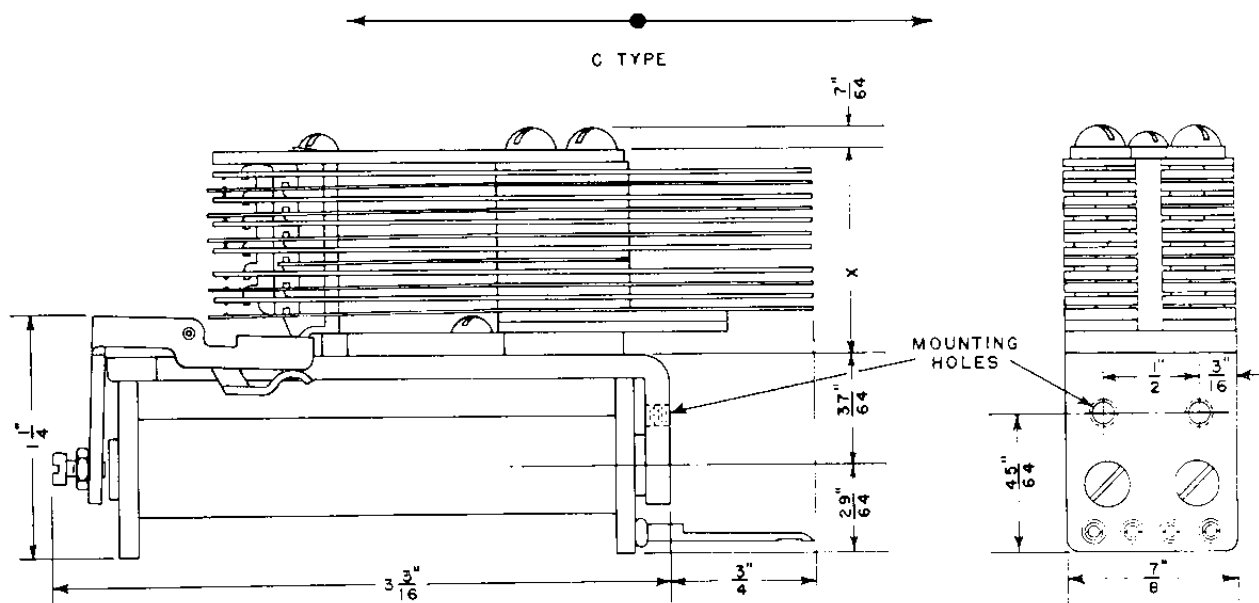
Stromberg-Carlson "B" Type Relay

STROMBERG-CARLSON

MOUNTING INFORMATION ON "A", "B", AND "C" TYPE RELAYS



"A" TYPE RELAYS MOUNT WITH TWO NO. 8-32 SCREWS. DIMENSION "X" IS $\frac{1}{2}$ " FOR RELAYS WITH A SINGLE COMBINATION (MINIMUM HEIGHT) OR $1\frac{13}{32}$ " FOR RELAYS WITH NINE MAKE COMBINATIONS OR EQUIVALENT PER PILE-UP (MAXIMUM HEIGHT). CUT SHOWN ILLUSTRATES A RELAY WITH A 2-1/2:1 ARMATURE RATIO. THE SPRING PILE-UP CONTAINS THE FOLLOWING COMBINATIONS: TWO MAKES, TWO BREAKS AND ONE BREAK-MAKE. VIEW SHOWN IS ACTUAL SIZE. *

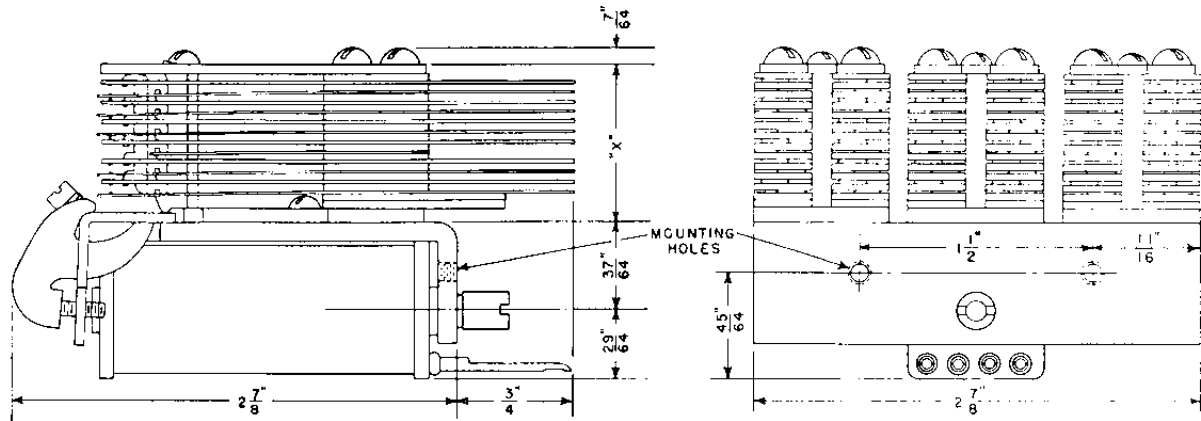


"C" TYPE RELAYS MOUNT WITH TWO NO. 8-32 SCREWS. DIMENSION "X" VARIES FROM $\frac{1}{2}$ " FOR RELAYS WITH A SINGLE COMBINATION (MINIMUM HEIGHT) TO $1\frac{9}{32}$ " FOR RELAYS WITH EIGHT MAKE COMBINATIONS OR EQUIVALENT PER PILE-UP (MAXIMUM HEIGHT). CUT SHOWN ILLUSTRATES A RELAY WITH SPRING PILE-UP CONTAINING THE FOLLOWING COMBINATIONS: TWO MAKES, TWO BREAKS, AND ONE BREAK-MAKE. VIEW SHOWN IS ACTUAL SIZE. *

* THE "X" DIMENSION INCREASES $\frac{1}{32}$ " WHEN A PRELIMINARY "MAKE", "BREAK" OR "BREAK-MAKE" COMBINATION IS USED.

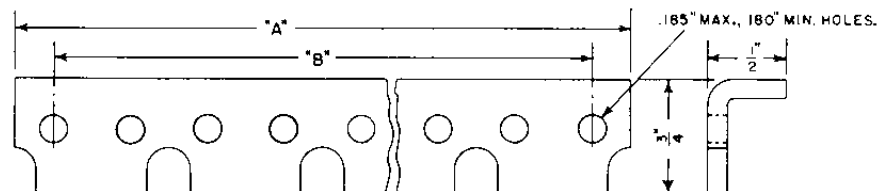
MOUNTING INFORMATION (Cont.)

B TYPE



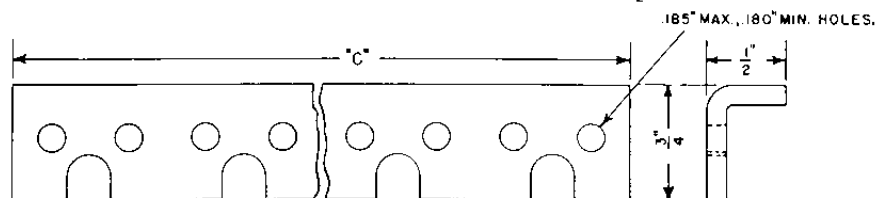
"B" TYPE RELAYS MOUNT WITH TWO NO. 8-32 SCREWS. DIMENSION "X" VARIES FROM 49/64" (MINIMUM HEIGHT) FOR RELAYS WITH A TOTAL OF 24 MAKE COMBINATIONS OR EQUIVALENT TO 1-13/32" (MAXIMUM HEIGHT) FOR RELAYS WITH A TOTAL OF 54 MAKE COMBINATIONS OR EQUIVALENT.

**RELAY MOUNTING STRIPS.
FOR A, B & C TYPE RELAYS.**



FOR USE WHEN FASTENING WITH SCREWS IN END HOLES.

STOCK NO.	NO. OF RELAYS		LENGTH *	MTG. CENTERS
	A OR C TYPE	B TYPE		
206326	3	1	4"	3 1/2"
204904	6	2	7"	6 1/2"
206437	8	2	9"	8 1/2"
209558	10	3	11"	10 1/2"
209278	24	8	25"	24 1/2"



FOR USE WITH BUTT WELDED ENDS OR SIMILAR TYPE FASTENING.

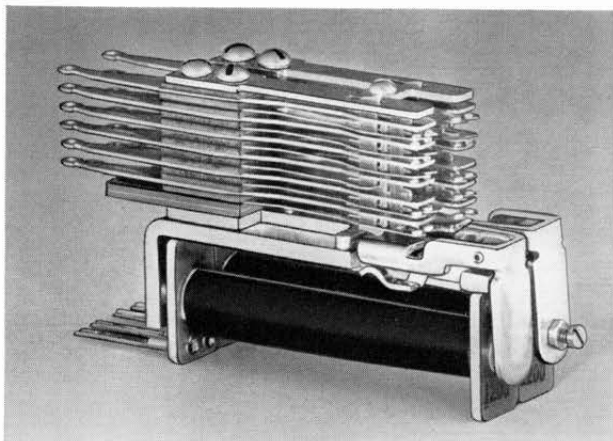
STOCK NO.	NO. OF RELAYS		LENGTH *
	A OR C TYPE	B TYPE	
204190	3	1	3"
480209	4	1	4"
204056	6	2	6"
204274	7	2	7"
481348	8	2	8"
484921	9	3	9 1/2"
204173	10	3	10"
480812	15	5	15"
483865	16	5	16"
484726	18	6	18"

* 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 A OR C OR 12 B TYPE 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 "A" Type 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.



"C" Type 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 "A" Type 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 9 "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 cross-bar 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. All insulating materials in contact with the windings are made of the best electrical grade cellulose acetate to prevent failures due to electrolysis or corrosion. 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 "C" Type Relays

Single Winding — No Slug

Stock No.	Resistance
36470	1200 Ohms
36471	785 Ohms
36473	8.5 Ohms
36474	475 Ohms
36475	320 Ohms
36476	220 Ohms
36477	142 Ohms
36478	150 Ohms
211428	580 Ohms

Single Winding — 1 1/2" Heel and Slug

Stock No.	Resistance
36480	820 Ohms

Double Winding — No Slug

Stock No.	Resistance
36479	780 x 335 Ohms

Adjustment

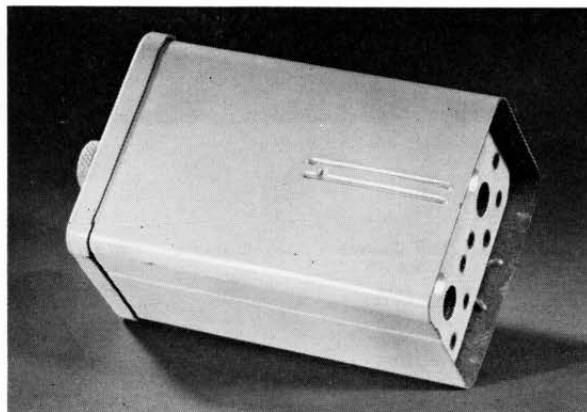
The relays are completely factory adjusted to very exacting limits, ready for immediate use, and during their normal life they will not usually require any readjustment. In extreme cases, some adjustment may be necessary and the relay is designed so that such readjustment may be made easily in the field.

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 60f covering "A" Relays); what coil is desired (see information on coils below); 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	(16-L)	50 No. 190	9 9/16	3 3/8	3 1/2
801598	(17-L)	40 No. 190	7 3/4	3 3/8	3 1/2
801600	(18-L)	20 No. 190	4 1/8	3 3/8	3 1/2
-----	(19-L)	Replaced by No. 25 Casing			
801603	(20-L)	20 No. 200	11 1/4	3 3/4	3 1/4
801605	(21-L)	10 No. 200	11 1/4	3 3/4	1 5/8
801607	(23-L)	40 No. 190	23 13/32	3 3/4	1 5/8
801609	(24-L)	14 No. 200	16 49/64	3 3/4	1 5/8
*801610	(25)	2 No. 200	2 1/32	4	1 25/32
801611	(26)	6 No. 200	7 3/4	3 3/4	1 5/8
205108	(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 A, B, and C Type 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 A, B, and C Type 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	7 A or C	484505	18 3/8	19	1 11/16
480590	14 A or C	480507	18 3/8	19	3 3/8
480594	21 A or C, or 7 B	484518	18 3/8	19	5 1/8
*482869	28 A or C	None or †482887	18 3/8	19	6 7/8

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	18 A or C	448704	19 3/4	20 1/4	2 7/16
448505	16 A or C	448704	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	18 A or C	448701	20 1/2	21	1 11/32

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	10 A or C	447611	27	27 1/2	1 13/64
447511	20 A or C	447612	27	27 1/2	3 1/16
447521	30 A or C, or 10 B	447613	27	27 1/2	4 1/64
447541	40 A or C	447614	27	27 1/2	6 7/32
447502	15 A or C	447615	38	38 1/2	1 13/64
447512	20 A or C	447616	38	38 1/2	3 1/16
447522	45 A or C, or 15 B	447617	38	38 1/2	4 1/64

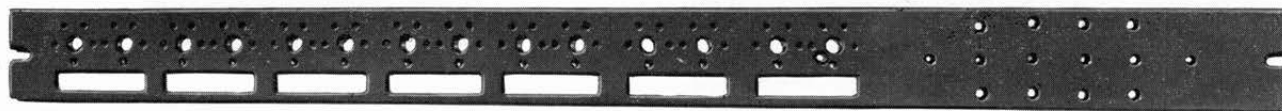
*Terminal Block and Mounting are attached

†Has one cut-out for make busy and test unit

Revised 6-1-55

RELAY MOUNTINGS

These relay mounting strips are light-finished plates of 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
801652	(83-L)	100 No. 190	2 No. 16	25 1/2	26	3 3/4
801653	(84-L)	120 No. 190	3 No. 17	25 1/2	26	3 3/4
801654	(85-L)	40 No. 200	20 No. 25	25 1/2	26	3 3/4
200473	(86-L)	60 No. 190	3 No. 18	20 3/8	21 1/8	3 3/4
801657	(87-L)	16 No. 200	8 No. 25	20 3/8	21 1/8	1 7/8
801659	(88-L)	60 No. 190	3 No. 18	17	17 1/2	3 3/4
801661	(89-L)	12 No. 200	6 No. 25	17	17 1/2	1 7/8
44361	(90-L)	10 No. 200	5 No. 25	13	13 1/2	1 7/8
801663	(91-L)	100 No. 190	2 No. 16	20 3/8	21 1/8	3 3/4
45492	(92-L)	16 No. 200	8 No. 25	13	13 1/2	3 3/4
801668	(96-L)	40 No. 190	1 No. 17	8 3/8	8 7/8	3 3/4
801671	(98-L)	20 No. 190	8 No. 25	17	17 1/2	3 3/4
801675	(101-L)	12 No. 200 (a)	1 No. 21, 25	18 3/8	18 7/8	1 7/8
801677	(102-L)	14 No. 200	2 No. 25	25 1/2	26	1 7/8
		4 No. 19 Cond.	1 No. 21			
801679	(103-L)	10 No. 200	5 No. 25	17	17 1/2	1 7/8
801681	(104-L)	20 No. 200	10 No. 25	25 1/2	26	1 7/8
801683	(105-L)	40 No. 190	1 No. 23	25 1/2	26	1 7/8
801685	(106-L)	6 No. 200 (a)	3 No. 25	17	17 1/2	1 7/8
801688	(109-L)	9 No. 200 (b)	5 No. 25	17	17 1/2	1 7/8
801690	(110-L)	10 No. 200 (c)	5 No. 25	17	17 1/2	1 7/8
801692	(111-L)	14 No. 200	1 No. 24	18 1/8	18 7/8	1 7/8
801697	(116-L)	60 No. 190	3 No. 18	18 3/8	18 7/8	3 3/4
801698	(117-L)	18 No. 200	9 No. 25	23 3/8	23 7/8	1 7/8
801699	(118-L)	28 No. 200	14 No. 25	23 3/8	23 7/8	3 3/4
		20 No. 190	1 No. 18			
801700	(119-L)	8 No. 200	4 No. 25	17	17 1/2	1 7/8
801701	(120-L)	12 No. 200	1 No. 21, 25	17	17 1/2	1 7/8

(a) 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	(112-L)	12 No. 200	6 No. 25	13	13 1/2	2 1/2
801694	(113-L)	18 No. 200	9 No. 25	18 13/16	19 5/16	2 1/2
801695	(114-L)	12 No. 200, 2 No. 190	6 No. 25	18 13/16	19 5/16	2 1/2
801696	(115-L)	22 No. 200	11 No. 25	22	22 1/2	2 1/2
801702	(121-L)	40 No. 200		39 1/16	39 9/16	2 1/2
39829	(122-L)	23 No. 11 Repeat Coils		45 3/8	46 3/8	2 1/2

Angle Type Mountings

Stock No.	Code	Number & Type Relays Mounted	Relay Casings	Style Mounting	Length Inches	Width Inches
801665	(93-L)	1 No. 200	—	Floor	1 1/2	1 1/8
801666	(94-L)	1 No. 200	—	Sidewall	1 11/16	1
801667	(95-L)	2 No. 200	1 No. 25	Sidewall	2 19/32	1
801673	(100-L)	4 No. 200	2 No. 25	Roof	3 3/4	2 1/2

STROMBERG-CARLSON

STROMBERG-CARLSON RINGERS

Used on Stromberg-Carlson No. 1200, No. 1400 and No. 1500 Series Common Battery Telephones and No. 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.

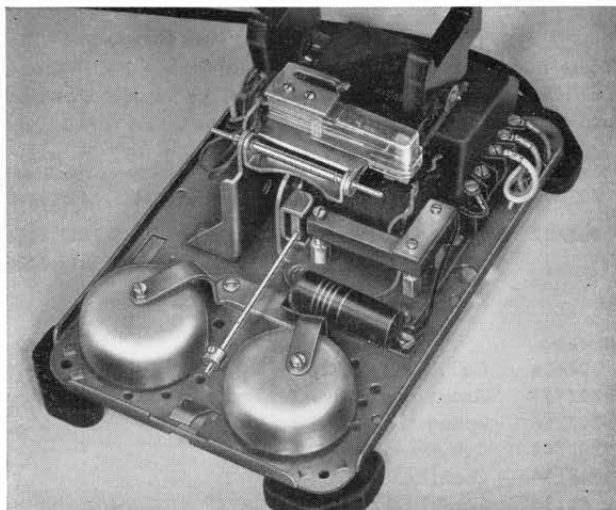
The two-toned (Hi-Lo) bells furnish a clear and pleasing tone which compels attention without being objectionable. All ringers are designed for ease in mounting; the only tool needed is a screwdriver.

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	Gong (Lo)	71, 72, 73, 74
207744	Gong (Hi)	71, 72, 73, 74
207683	Screw and Lockwasher Assembly	71, 72, 73, 74
38569	Gong (Hi)	61, 62, 65
28570	Gong (Lo)	61, 62, 65
28433	Screw	61, 62, 65
526281	Washers	61, 62, 65



No. 73 Ringer used in No. 1543 Telephone

The No. 74A—Straight Line Ringer

This Ringer is used with No. 1543A Telephones and 1560A and 1561A Desk Set Boxes.

No. 74A—Ringer

Stock No.	Code	D.C. Resistance of Ringer Winding	Telephone and D.S. Box Used
210684	(74-A)	5900 ohms, Straight Line	1543A, 1560A, and 1561A

Miscellaneous Parts

Stock No.	Description
*207684	Coil Assembly (74A)
*207754	Armature and Pivot Assembly
207766	Spring
†210720	Capacitor Assembly
44154	Cord (T.I.D.) Black
44156	Cord (T.I.D.) Red
20248	Conductor (Red)

No. 73 Tuned Frequency Ringers

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

Stock No.	Code	D.C. Resistance of Ringer Winding	Frequency
210671	(73E)	5900 ohms	16⅔
210672	(73N)	5900 ohms	25
210673	(73F)	5900 ohms	33⅓
210674	(73G)	3670 ohms	50
210675	(73H)	2050 ohms	66⅔
210676	(73R)	5900 ohms	16
210677	(73K)	5900 ohms	30
210678	(73L)	5900 ohms	42
210679	(73M)	3670 ohms	54
210680	(73P)	2050 ohms	66
210681	(73I)	5900 ohms	20
210682	(73Q)	5900 ohms	40
210683	(73J)	2050 ohms	60

Miscellaneous Parts

Stock No.	Description
*207747	Reed Armature Assembly (16⅔, 16, 20)
*207748	Reed Armature Assembly (25, 33⅓, 30, 40, 42)
*207749	Reed Armature Assembly (50, 54, 60)
*211252	Reed Armature Assembly (66⅔, 66)
*207684	Coil Assembly (16⅔, 25, 33⅓, 16, 30, 42, 20, 40)
*207668	Coil Assembly (66⅔, 66, 60)
*209546	Coil Assembly (50, 54)
†210720	Capacitor Assembly .47 (25 cycles)
†210721	Capacitor Assembly .22 (33⅓, 30)
†210722	Capacitor Assembly .15 (50, 66⅔, 42, 54, 66, 40, 60)
†210723	Capacitor Assembly .94 (16⅔, 16, 20)
44154	Cord (T.I.D.) Black
44156	Cord (T.I.D.) Red
20248	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.

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RINGERS (Cont.)

CODE AND ORDERING INFORMATION FOR CAPACITOR ASSEMBLIES

Stock Number	Rating	Used on Ringer	Capacitor Color Code
210720	.47 MF (1 Capacitor)	73N 25 Cycle	Yellow-Violet-Yellow-White-Red
		74A S.L.	
210721	.22 MF (1 Capacitor)	73F 33 $\frac{1}{3}$ Cycle	Red-Red-Yellow-White-Yellow
		73K 30 Cycle	
		73G 50 Cycle	
		73H 66 $\frac{2}{3}$ Cycle	
210722	.15 MF (1 Capacitor)	73L 42 Cycle	Brown-Green-Yellow-White-Yellow
		73M 54 Cycle	
		73P 66 Cycle	
		73Q 40 Cycle	
		73J 60 Cycle	
		210674	
210723	.94 MF (2 Capacitors in parallel)	73E 16 $\frac{2}{3}$ Cycle	Yellow-Violet-Yellow-White-Red
		73R 16 Cycle	
		73I 20 Cycle	
		74B S.L.	
		210675	

No. 72 Tuned Frequency Ringers

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

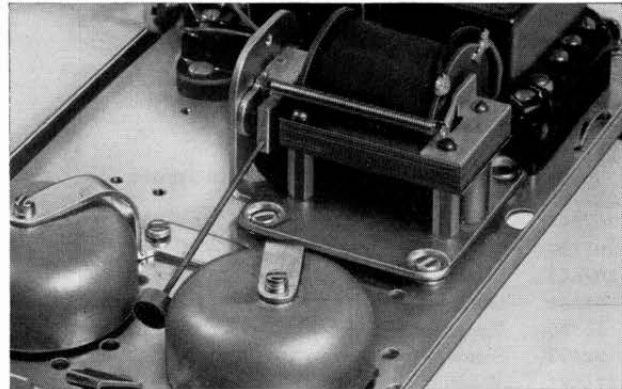
No. 72 Ringers

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

Miscellaneous Parts

Stock No.	Description
*207684	Coil Assembly (16 $\frac{2}{3}$, 25, 33 $\frac{1}{3}$, 16, 30, 42, 20, 40)
*207668	Coil Assembly (66 $\frac{2}{3}$, 66, 60)
*209546	Coil Assembly (50, 54)
*207747	Reed Armature Assembly (16 $\frac{2}{3}$, 16, 20)
*207748	Reed Armature Assembly (25, 33 $\frac{1}{3}$, 30, 42, 40)
*211252	Reed Armature Assembly (50, 54, 60, 66 $\frac{2}{3}$)
44154	Cord (T.I.D.) Black
44156	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 No. 1400 and No. 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	(71-A)	5900 ohms, Straight Line	1443, 1447, 1460
208722	(71-B)	2050 ohms, Straight Line	1543, 1560, 1561 1443, 1447, 1460

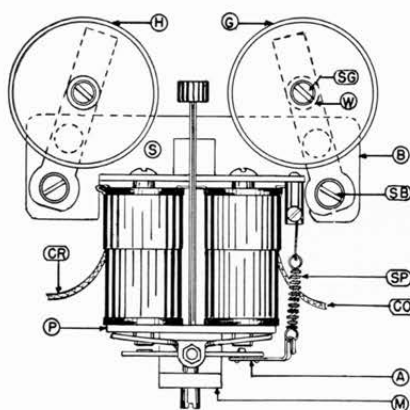
Miscellaneous Parts

Stock No.	Description
*207684	Coil Assembly (71-A)
*207754	Armature and Pivot Assembly
207766	Spring
*207668	Coil Assembly (71-B)
44154	Cord (T.I.D.) Black
44156	Cord (T.I.D.) Red

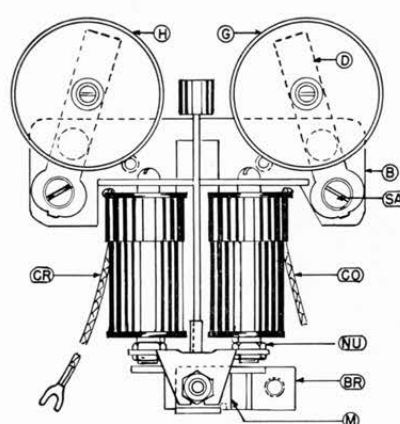
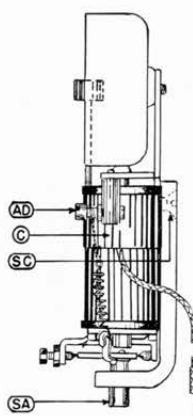
*See footnote in preceding column.

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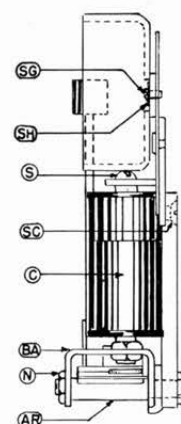
RINGERS (Cont.)



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.

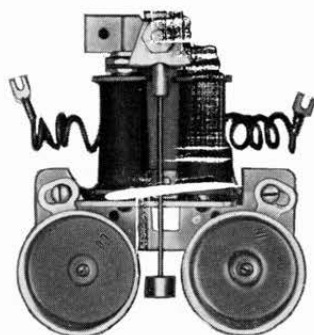
Stock No.	Code	D.C. Resistance of Ringer Winding	Telephone or D.S. Box Used
801911	(61-A)	1800 ohms	1248, 1258, 1268
801912	(61-S)	4850 ohms	1248, 1258, 1268

No. 61 Biased Type Straight Line Ringer Miscellaneous Parts

Stock No.	Item	Name
* 34785	A	Armature Assembly
34668	AD	Adjusting Stud
* 27980	C	Coil (61-A Ringer)
* 34950		Coil (61-S Ringer)
44154	CO	Cord (Black)
28569	CR	Cord (Red)
* 62997	M	Magnet
503520	SB	Screw (Gong adjusting)
16060	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	(62-E)	4320	16 2/3 cycles
803476	(62-F)	780	33 1/3 cycles
803477	(62-G)	780	50 cycles
803479	(62-H)	780	66 2/3 cycles
803480	(62-N)	4320	25 cycles
803481	(62-K)	780	30 cycles
803482	(62-L)	780	42 cycles
803483	(62-M)	780	54 cycles
803484	(62-P)	780	66 cycles
803485	(62-R)	4320	16 cycles
803474	(62-I)	4320	20 cycles
803478	(62-J)	780	60 cycles
205984	(62-Q)	780	40 cycles

No. 62 Tuned Frequency Ringer (Miscellaneous Parts)

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

Gongs and mounting hardware shown on previous page.

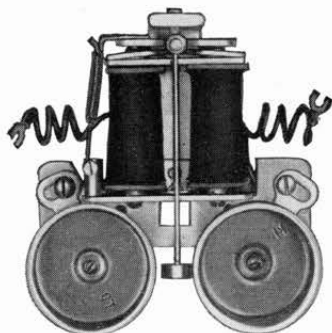
*We do not recommend any disassembly for repair of these ringers unless adequate facilities are available for remagnetization. The high efficiency Alnico magnets used in Stromberg-Carlson ringers must be remagnetized for optimum performance if the magnetic circuit is disturbed in disassembly.

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RINGERS (Cont.)

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

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



No. 65 Ringer With Biasing Spring

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

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

Gongs and mounting hardware shown on previous page.

No. 65B—Biased Type Ringer (Magneto)

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

No. 65-B Biased Ringer (Miscellaneous Parts)

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

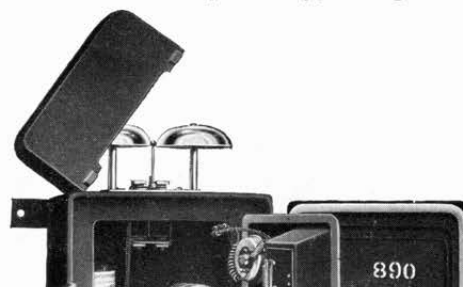
Gongs and mounting hardware shown on previous page.

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.

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.

Ironclad Telephone Type Ringer



The No. 35 type ringer is especially designed for the No. 890 magneto and No. 950 common battery ironclad telephones. This ringer is assembled on a heavy brass plate which has no openings. The armature gong posts and two 4" gongs are mounted on the top of this plate and the two ringer coils underneath. A description of these ironclad telephones will be found in the magneto telephone section.

Stock No.	Code	Resist. Ohms	Description
801825	(35-A)	1000	Polarized Straight line
801826	(35-B)	1600	Polarized Straight line
801827	(35-E)	2500	Polarized Straight line
200577	(35-D)	80	Polarized Straight line

Additional Charge for Gongs

When gongs are to be furnished with ringers one set of the following parts should be specified for each No. 35 Type.

Stock No.	Description	For one Ringer
8437	Gongs—4"	2
1345	Lock Nuts—	4

Miscellaneous Parts

Stock No.	Description
12271	Coil— 500 Ohms (35-A Ringer)
12272	Coil— 800 Ohms (35-B Ringer)
12273	Coil—1250 Ohms (35-E Ringer)
203457	Coil— 40 Ohms (35-D Ringer)
8426	Armature
8431	Bridge Piece
33986	Adjusting Screw

No. 59 Harmonic Type

Used with No. 1210 and 1211 Wall and No. 1212 Desk Type Handset Telephones which have been replaced by the No. 1250 Wall and No. 1243 Desk Models.

Stock No.	Code	Total Resistance	Description Less Gongs
801891	(59-E)	4320	16 $\frac{2}{3}$ Cycles Harmonic
801892	(59-F)	780	33 $\frac{1}{3}$ Cycles Harmonic
801893	(59-G)	780	50 Cycles Harmonic
801894	(59-H)	780	66 $\frac{2}{3}$ Cycles Harmonic
801898	(59-N)	4320	25 Cycles Harmonic
801895	(59-K)	780	30 Cycles Tuned
801896	(59-L)	780	42 Cycles Tuned
801897	(59-M)	780	54 Cycles Tuned
801899	(59-P)	780	66 Cycles Tuned
801900	(59-R)	4320	16 Cycles Tuned
801913	(59-I)	4320	20 Cycles Tuned
45389	(59-J)	780	60 Cycles Tuned

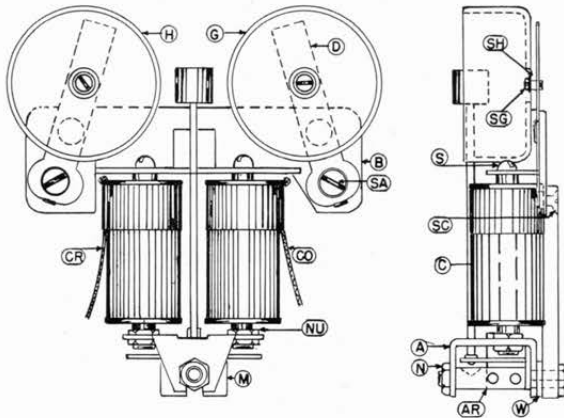
No. 60 Harmonic Type

This ringer has been discontinued and replaced by the No. 62 Ringer with No. 201567 Bracket and No. 507152 Screw. When these additional parts are specified, the No. 62 Ringer will mount in place of the No. 60.

RINGERS (Cont.)

FORMER RINGERS (Cont.)

No. 59 Harmonic Ringer



No. 59 Ringer

Miscellaneous Parts

Stock No.	Item	Name
23201	A	Bracket (Armature)
34304	AR	Arm.—Reed Assem.—16, 16 2/3, 20
34305		Arm.—Reed Assem.—25, 30, 33 1/3
34306		Arm.—Reed Assem.—42
34307		Arm.—Reed Assem.—50, 54, 60, 66, 66 2/3
27976	B	Bracket (Mounting)
27981	C	Coil (No. 59-F, G, H, J, K, L, M, P)
27982		Coil (No. 59-E, I, N, R)
44154	CO	Cord (T-1-D) Black
44156	CR	Cord (T-1-D) Red
27975	D	Arms
28569	G	Gong
28570	H	Gong
28021	M	Magnet
23202	N	Nut
23114	NU	Nut
503653	S	Screw
503520	SA	Screw (Gong adjusting)
505273	SC	Screw
28433	SG	Screw (Gongs)
526281	SH	Shakeproof Washer (Gongs)
28020	W	Washer
204364		Set screw (Armature weight)

Other Former Types

Code No.	Replaced by Code No.	Description	Used on Telephones
55-56	61	S.L. Biased	1210-11-12
57	59	Harmonic	1210-11-12

Switchboard Ringers (Buzzer Type)



No. 50-LL Buzzer

Stock No.	Code	Resist. Ohms	Use
*801861	(50-LL)	500	Nos. 102, 106, 120 PBX N.A. Circuits
*Will mount in the space of a casing on relay mounting plates.			
NOTE: Two No. 7408 Coils (50 Ohms) are used in each No. 28-H Ringer Assembly.			

Switchboards Bells and Buzzers

Vibrating Type

Stock No.	Code		Resist. Ohms	Use
38346	(571)	Bell	20	No. 125 Swbd. N.A. Circuit
200502		Bell	20	No. 126 Swbd. N.A. Circuit
39483	(570)	Buzzer	20	No. 125 Swbd. C.A. Circuit
200911		Buzzer	20	No. 126 Swbd. C.A. Circuit

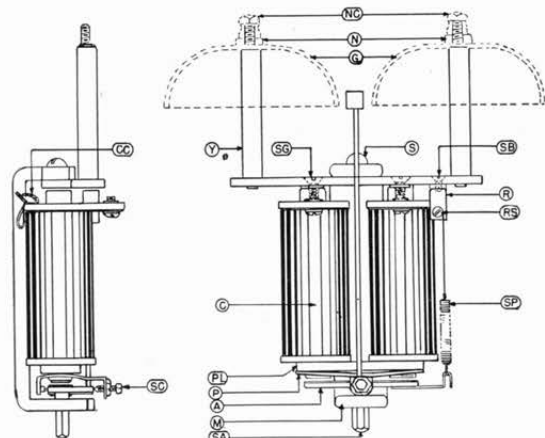
Loud Ringing Water-Proof Bells

For indoor or outdoor service—see Supply Section for No. 53 Type.

Large Type Telephone Ringers

The No. 46 Ringer is a polarized type for straight line sets. The method of mounting the armature pivot on a brass yoke that bridges the pole pieces provides a single screw adjustment.

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. 49 Type

STOCK AND CODE NUMBERS

Stock No.	Code	Total Resistance	Description Less Gongs
Polarized Systems			
801830	(46-A)	920	Straight line
801832	(46-C)	1770	Straight line
801835	(46-F)	2500	Straight line
801856	(49-A)	920	Biased
801857	(49-C)	1770	Biased
801858	(49-F)	2500	Biased
Harmonic Frequencies			
47417	(64-E)	4320	16 2/3 Cycles
47416	(64-F)	780	33 1/3 Cycles
47415	(64-G)	780	50 Cycles
47412	(64-N)	4320	25 Cycles
47413	(64-H)	780	66 2/3 Cycles
Tuned Frequencies			
47423	(64-K)	780	30 Cycles
47422	(64-L)	780	42 Cycles
47421	(64-M)	780	54 Cycles
47420	(64-P)	780	66 Cycles
47419	(64-R)	4320	16 Cycles
209429	(64-Q)	780	40 Cycles
Two Frequency Systems			
47418	(64-I)	4320	20 Cycles
47414	(64-J)	780	60 Cycles

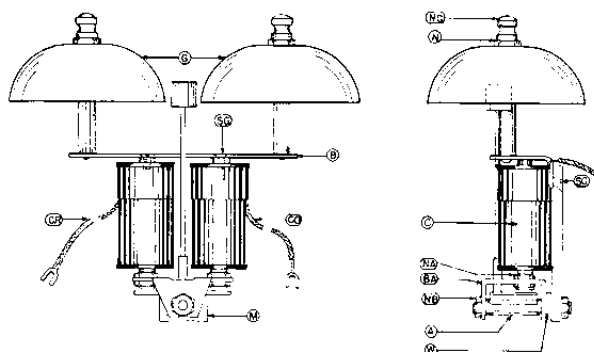
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RINGERS (Cont.)

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.

Stock No.	Item	Name	Ringer Used On
2423	A	Armature	46
5025		Armature	49
12239	C	Coil (2)	46-A, 49-A
12240		Coil (2)	46-C, 49-C
12241		Coil (2)	46-F, 49-F
20266	CC	Conductor	46, 49
12047	G	Gongs (2)	46, 49
7485	M	Magnet	46, 49
525053	N	Nut (2)	46, 49
7571	NC	Cap Nut (2)	46, 49
4717	P	Plate Assembly	46, 49
579	PL	Plate	46, 49
34808	R	Adjusting Screw	49
34668	RS	Adjusting Stud	49
505355	S	Screw	46, 49
33986	SA	Adjusting Screw	46, 49
515285	SB	Screw	49
2580	SC	Screw (pivot)	46, 49
503783	SG	Screw	49
16060	SP	Spring (biasing)	49
8594	Y	Yoke Assembly	46
16061		Yoke Assembly	49



No. 64 Type

No. 64 Harmonic Ringer

Miscellaneous Parts

Stock No.	Item	Name
201705	A	Arm.—Reed Assem.—16, 16 2/3, 20
201706		Arm.—Reed Assem.—25, 30, 33 1/3
201707		Arm.—Reed Assem.—42
201708		Arm.—Reed Assem.—50, 54, 60, 66, 66 2/3
47424	B	Bracket Assembly (Mounting)
201709	BA	Bracket Assembly (Armature)
27981	C	Coil (No. 64-F, G, K, L, M, P, Q)
27982		Coil (No. 64-E, I, 64-N, 64-R)
44156	CO	Cord (T-1-D) Red
44154	CR	Cord (T-1-D) Black
12047	G	Gongs(2)
28021	M	Magnet
23114	NA	Nut (4)
23202	NB	Nut(2)
7571	NC	Cap Nut (2)
525053	N	Nut (2)
503783	SG	Screw (2)
505273	SC	Screw
204364		Set Screw—Armature weight

Large Type Telephone Ringers

The No. 52 is a biased type polarized ringer designed for 4-party systems that use pulsating current.

Stock No.	Code	Description	Resistance
801864	(52-F)	Ringer (Biased)	2500 Ohms

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	Gongs (Black Steel) 2 1/2" Dia.	2
7571	Nuts (Cap)	2
525053	Nuts (Lock)	2
4241	Screw (Mtg.)	2
1120	Washer (Screw)	2
5312	Studs (Elevating) for Wood Mtg.	
or		
10716	Studs (Elevating) for Steel Mtg.	2

No. 47 Type Harmonic Ringer

This ringer—formerly used with 4 and 5-party systems—has been replaced by the No. 64 type which mounts on the same drillings and is interchangeable in all other respects.

Buzzer Type (Telephone)

Used with Stromberg-Carlson magneto test sets and telephones.

Polarized Type Buzzers

Stock No.	Code	Resistance	Description
801820	(28-A)	1000	Polarized (Used on No. 843 Test Set)
801821	(28-C)	1600	Polarized (Used on No. 844 Test Set)
801822	(28-H)	100	No. 105 Swbd. Gen. Circuit
39530	Coil	(500 Ohms)	Used on No. 28-A Ringer
42142	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
*801757	(1-D)	132	Encased buzzer (No. 1215, 1216, 1270, 1271, 1272 Tels.)
†45304	(2-A)	1000	Encased buzzer (No. 1233 and 1233-M Telephones)

*Used in Convenience Systems with desk type handsets

†Used in hookswitch box with suspended type handsets

Stock No.	Code	Resistance	Used On
212709	(0-E)	100 Ohms	1575 Telephone
211417	(2-B)	1,000 Ohms	211041, 211193, 211194 Button & Buzzer Assemblies
211418	(2-C)	1,000 Ohms	211420, 211421, 211422 Button & Buzzer Assemblies
211419	(2-D)	1,000 Ohms	211423, 211424, 211425 Button & Buzzer Assemblies

Testing Equipment

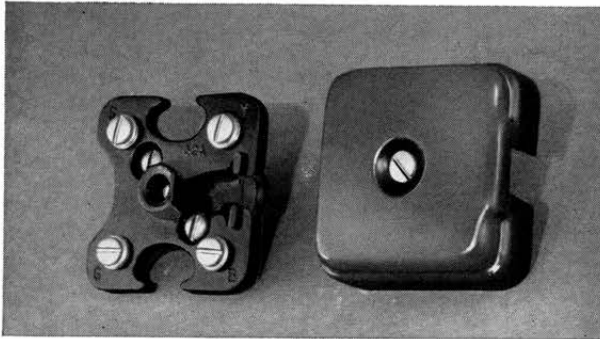
Testing equipment for central office use as described in Section G includes wire chief's and toll testing outfits, sets for cord and general circuit tests and handsets types for use with common battery manual and dial systems.

Lineman's test sets, testing meters for various purposes and transmission test sets are shown in the catalogue section covering Telephone Construction Materials and Supplies.

TERMINAL EQUIPMENT

Terminal Blocks

No. 205106 Terminal Block is used with the No. 1243-W and similar handset telephones for connecting the line cord and station wires.



No. 205106 Terminal Block
for either 3 or 4 Conductor Line Cord

No. 205106 Terminal Block — 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.

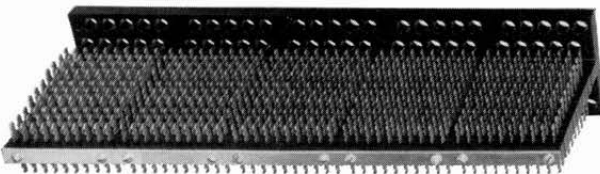
Terminal Boxes

The No. 90-A Terminal Box is used with desk type handset telephones in Stromberg-Carlson Convenience Systems described in Section D. This is a black plastic box—similar to the No. 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	(90-A)	No. 1270	(2-6 Systems)
		Nos. 1271, 1272	(2-10 & 3-9 Systems)
210730	(96-A)	No. 1575-A	(6-K System)
211156	(96-B)	No. 1575-B	(6-K System)
212769	(97)	No. 1575-B	(6-K System)
212765	(98)	No. 1575-A, or 1575-B	(6-K System)
212766	(99)	No. 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 old style No. 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	Terminals		Dimensions		
		No. of Circuits	Per Circuit	Lgth.	Thick.	Ht.
203311	(101)	10	1	2 3/4"	2 1/4"	1 1/2"
203312	(102)	10	2	2 3/4"	2 1/4"	2"
203313	(103)	10	3	2 3/4"	2 1/4"	2 1/2"
203314	(104)	10	4	2 3/4"	2 1/4"	2 1/2"
203315	(105)	10	5	2 3/4"	2 1/4"	3 1/2"
203316	(106)	10	6	2 3/4"	2 1/4"	3 3/8"
203317	(107)	10	7	2 3/4"	2 1/4"	3 3/4"
203318	(108)	10	8	2 3/4"	2 1/4"	4 1/8"
203319	(109)	10	9	2 3/4"	2 1/4"	4 1/2"
203310	(110)	10	10	2 3/4"	2 1/4"	4 3/4"
203361	(111)	15	1	4 3/4"	2 1/4"	1 1/2"
203362	(112)	15	2	4 3/4"	2 1/4"	2"
203363	(113)	15	3	4 3/4"	2 1/4"	2 1/2"
203364	(114)	15	4	4 3/4"	2 1/4"	2 1/2"
203365	(115)	15	5	4 3/4"	2 1/4"	3 1/2"
203366	(116)	15	6	4 3/4"	2 1/4"	3 3/8"
203367	(117)	15	7	4 3/4"	2 1/4"	3 3/4"
203368	(118)	15	8	4 3/4"	2 1/4"	4 1/8"
203369	(119)	15	9	4 3/4"	2 1/4"	4 1/2"
203360	(120)	15	10	4 3/4"	2 1/4"	4 3/4"
203321	(121)	20	1	5 7/8"	2 1/4"	1 1/2"
203322	(122)	20	2	5 7/8"	2 1/4"	2"
203323	(123)	20	3	5 7/8"	2 1/4"	2 1/2"
203324	(124)	20	4	5 7/8"	2 1/4"	2 1/2"
203325	(125)	20	5	4 7/8"	2 1/4"	3 1/2"
203326	(126)	20	6	5 7/8"	2 1/4"	3 3/8"
203327	(127)	20	7	5 7/8"	2 1/4"	3 3/4"
203328	(128)	20	8	5 7/8"	2 1/4"	4 1/8"
203329	(129)	20	9	5 7/8"	2 1/4"	4 1/2"
203320	(130)	20	10	5 7/8"	2 1/4"	4 3/4"
203371	(131)	26	1	6 5/8"	2 1/4"	1 1/2"
203372	(132)	26	2	6 5/8"	2 1/4"	2"
203373	(133)	26	3	6 5/8"	2 1/4"	2 1/2"
203374	(134)	26	4	6 5/8"	2 1/4"	2 1/2"
203375	(135)	26	5	6 5/8"	2 1/4"	3 1/2"
203376	(136)	26	6	6 5/8"	2 1/4"	3 3/8"
203377	(137)	26	7	6 5/8"	2 1/4"	3 3/4"
203378	(138)	26	8	6 5/8"	2 1/4"	4 1/8"
203379	(139)	26	9	6 5/8"	2 1/4"	4 1/2"
203370	(140)	26	10	6 5/8"	2 1/4"	4 3/4"
203331	(141)	30	1	7 13/16"	2 1/4"	1 1/2"
203332	(142)	30	2	7 13/16"	2 1/4"	2"
203333	(143)	30	3	7 13/16"	2 1/4"	2 1/2"
203334	(144)	30	4	7 13/16"	2 1/4"	2 1/2"
203335	(145)	30	5	7 13/16"	2 1/4"	3 1/2"
203336	(146)	30	6	7 13/16"	2 1/4"	3 3/8"
203337	(147)	30	7	7 13/16"	2 1/4"	3 3/4"
203338	(148)	30	8	7 13/16"	2 1/4"	4 1/8"

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Terminal Strips—Molded Type (Cont.)

Stock No.	Code	No. of Circuits	Terminals Per Circuit	Lgth.	Dimensions Thick.	Ht.
203339	(149)	30	9	7 13/16"	2 13/16"	4 13/32"
203330	(150)	30	10	7 13/16"	2 13/16"	4 3/4"
203341	(151)	40	1	10 7/16"	2 13/16"	1 21/32"
203342	(152)	40	2	10 7/16"	2 13/16"	2"
203343	(153)	40	3	10 7/16"	2 13/16"	2 11/32"
203344	(154)	40	4	10 7/16"	2 13/16"	2 11/16"
203345	(155)	40	5	10 7/16"	2 13/16"	3 1/32"
203346	(156)	40	6	10 7/16"	2 13/16"	3 3/8"
203347	(157)	40	7	10 7/16"	2 13/16"	3 23/32"
203348	(158)	40	8	10 7/16"	2 13/16"	4 1/16"
203349	(159)	40	9	10 7/16"	2 13/16"	4 13/32"
203340	(160)	40	10	10 7/16"	2 13/16"	4 3/4"
203351	(161)	50	1	13 1/32"	2 13/16"	1 21/32"
203352	(162)	50	2	13 1/32"	2 13/16"	2"
203353	(163)	50	3	13 1/32"	2 13/16"	2 11/32"
203354	(164)	50	4	13 1/32"	2 13/16"	2 11/16"
203355	(165)	50	5	13 1/32"	2 13/16"	3 1/32"
203356	(166)	50	6	13 1/32"	2 13/16"	3 3/8"
203357	(167)	50	7	13 1/32"	2 13/16"	3 23/32"
203358	(168)	50	8	13 1/32"	2 13/16"	4 1/16"
203359	(169)	50	9	13 1/32"	2 13/16"	4 13/32"
203350	(170)	50	10	13 1/32"	2 13/16"	4 3/4"

Terminal Strips — Molded Type For Main Frames

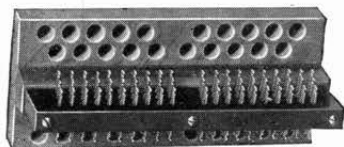
The only difference between this type of terminal strip and the

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	Lgth.	Dimensions Thick.	Ht.
212800	(180)	26	2	7 31/32"	2 19/32"	2 1/16"
212801	(181)	26	3	7 31/32"	2 19/32"	2 13/32"
212803	(182)	26	4	7 31/32"	2 19/32"	2 3/4"
212804	(183)	26	5	7 31/32"	2 19/32"	3 3/32"
212805	(184)	26	6	7 31/32"	2 19/32"	3 7/16"
212806	(185)	26	7	7 31/32"	2 19/32"	3 5/32"
212807	(186)	26	8	7 31/32"	2 19/32"	4 1/8"
212808	(187)	26	9	7 31/32"	2 19/32"	4 1 5/32"
212809	(188)	26	10	7 31/32"	2 19/32"	4 13/16"
212810	(189)	26	11	7 31/32"	2 19/32"	5 3/32"
212811	(190)	26	12	7 31/32"	2 19/32"	5 1/2"
212812	(191)	20	2	7 31/32"	2 19/32"	2 1/16"
212813	(192)	20	3	7 31/32"	2 19/32"	2 13/32"
212814	(193)	20	4	7 31/32"	2 19/32"	2 3/4"
212815	(194)	20	5	7 31/32"	2 19/32"	3 3/32"
212816	(195)	20	6	7 31/32"	2 19/32"	3 7/16"
212816	(196)	20	7	7 31/32"	2 19/32"	3 5/32"
212817	(197)	20	8	7 31/32"	2 19/32"	4 1/8"
212818	(198)	20	9	7 31/32"	2 19/32"	4 1 5/32"
212819	(199)	20	10	7 31/32"	2 19/32"	4 13/16"
212820	(200)	20	11	7 31/32"	2 19/32"	5 3/32"
212821	(201)	20	12	7 31/32"	2 19/32"	5 1/2"

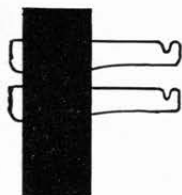
Terminal Strips—Wood Base Type

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 Terminals Circuits per Circuit	Dimensions Lgth. Thk. Ht.
802400	(44)	20 2	7 x 3 x 2 5/8"
802401	(45)	20 3	7 x 2 9/16 x 3"
802402	(46)	20 4	7 x 3 x 3 1/16"
802405	(49)	25 2	7 x 3 x 2 5/8"



Terminal Arrangement
of No. 70 and No. 71
Terminal Strips

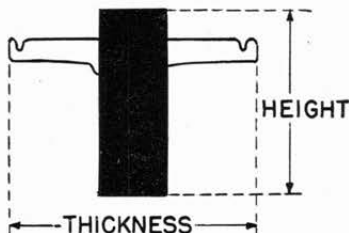


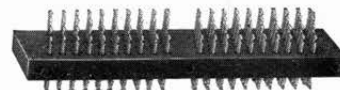
Diagram Showing
Application of
Dimensions

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



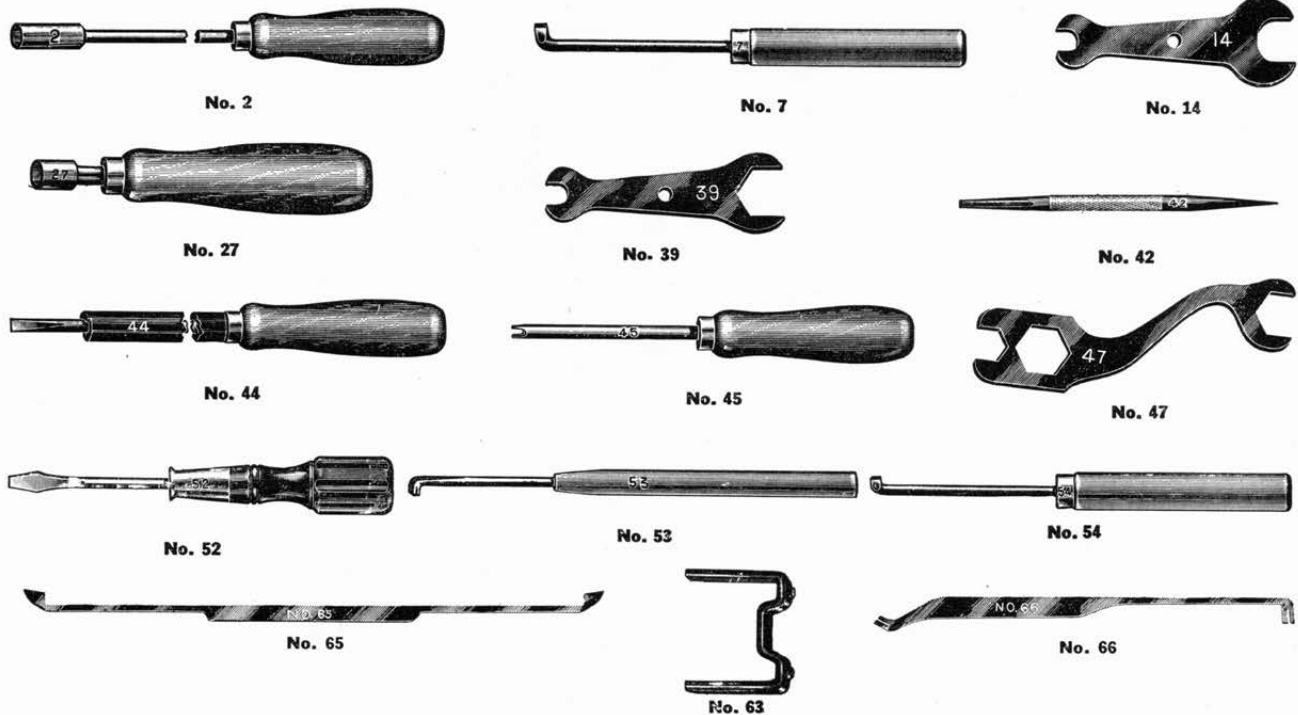
No. 79 Terminal Strip

Stock No.	Code	No. of Terminals Circuits per Circuit	Dimensions Lgth. Thk. Ht.
802418	(68)	25 2	6 31/32 x 1 3/8 x 15/16"
802420	(70)*	20 1	10 7/32 x 1 1/8 x 15/16"
802421	(71)*	20 2	10 7/32 x 1 1/8 x 1 1/4"
802422	(72)	10 2	3 23/32 x 1 3/8 x 15/16"
802423	(73)	10 3	3 23/32 x 1 1/2 x 1 1/4"
802424	(74)	10 4	3 23/32 x 1 5/8 x 1 9/16"
802425	(75)	10 5	3 23/32 x 1 5/8 x 1 3/4"
802426	(76)	10 6	3 23/32 x 1 5/8 x 2 1/32"
802427	(77)	20 2	6 31/32 x 1 3/8 x 15/16"
802428	(78)	20 3	6 31/32 x 1 1/2 x 1 1/4"
802429	(79)	20 4	6 31/32 x 1 9/16 x 1 1/4"
802430	(80)	20 4	6 31/32 x 1 5/8 x 1 1/4"
802431	(81)	20 5	6 31/32 x 1 5/8 x 1 3/4"
802432	(82)	20 6	6 31/32 x 1 5/8 x 2 1/32"
802438	(88)†	23 6	7 13/16 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

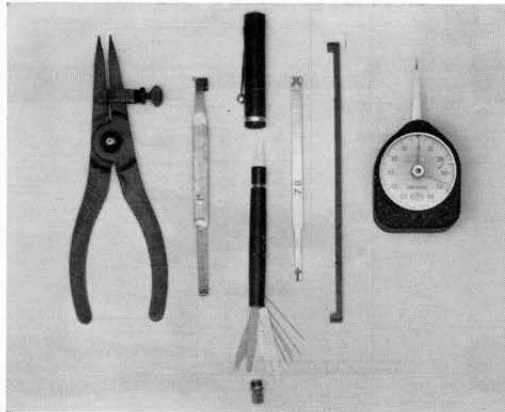


Stock No.	Code	Description
802456	(2)	Socket Wrench fits the $\frac{3}{8}$ " hexagonal mounting nut of all visual signals, impedance coils and relays (except the No. 190 Type Relay). Length, 6".
802457	(7)	Spring Adjuster used for adjusting springs up to .03" thick, on relays, keys, jacks, etc. Length, 7 3/32".
802465	(24)	Screwdriver and Socket Wrench, used with $\frac{1}{4}$ " and $\frac{3}{16}$ " nuts and residual screws on the Nos. 200, 500 and A Relays.
10438	(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.
11528	(39)	Flat Wrench used with $\frac{3}{8}$ " and $\frac{1}{4}$ " hexagonal nuts for adjusting the sleeve nuts on the No. 11 Drop. Length, 2 1/8".
12077	(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 3/8".
802474	(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".
802475	(45)	Socket Screw Driver used for removing the Nos. 190, 200 and 300 Type Relays from the bridge plate. Length, 9".
13372	(47)	Flat Wrench used for adjusting No. 47 Type Harmonic Ringers. Length, 3 3/4".

Stock No.	Code	Description
802481	(52)	Screw Driver used for removing screw terminals on the No. 11 Drop. May also be used for any small screws. Length, 6 9/16".
802482	(53)	Spring Adjuster used for adjusting contact springs on the No. 360 Type Relays. Length, 3 3/8".
802483	(54)	Spring Adjuster used for adjusting No. 24 Gauge Springs on the No. 200 Type Relay. Length, 7 7/32".
802485	(56)	Small Screw Driver, for little screws such as those used on drop number plates. Length, 4 3/4".
802487	(59)	Gauge for adjusting armatures on No. 47 Type Ringers, to correct distances from pole pieces. Length, 4".
16646	(62)	Jack Fastener Wrench and Screw Driver similar to No. 44 but designed for No. 21 Jack Fastener. Length, 18 3/8".
23877	(63)	Used for removing both transmitter and receiver from Nos. 15, 16, and 17 Handsets. Length, 1 1/4".
29372	(64)	Flat Wrench to adjust and assemble No. 57, 59, 60 and No. 23365 Ringers. Two wrenches required, one for holding, other for drawing nut tight. Length, 3 3/4".
34048	(65)	Spring Adjuster for use on moving springs of Nos. 500, 600, A, B and C Relays. Length 5 1/2".
34049	(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	(67)	Screw Driver for use with shell and terminal screws of No. 61 Plug. Similar to No. 42. Length, 3 25/32".
49937	(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. 265-C, No. 78, No. 100, No. 103

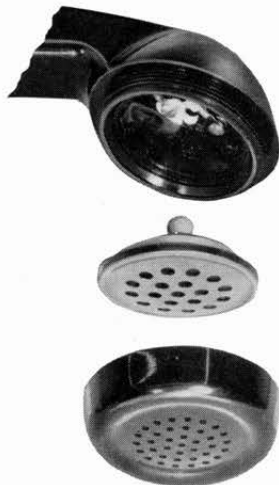
Stock No.	Code	Description	Stock No.	Code	Description
201092	(70)	Lamp Cap extractor for all lamp caps. Length, 4 7/16".	209444	(88)	Foot bending tool used to bend the feet on the X and Y carriage on the XY Switch. Length—5".
36372	(72)	Adjusting tool for light moving springs, armature back stop, and spring clamp plate on "A" Type Relays. Length, 3 9/32".	209445	(89)	Z-Armature bending tool for adjusting the release magnet armature on XY Switches. Length—4".
36371	(73)	Tool for adjusting or removing "A" Type Relay pushers and spring stops. (2-3-4-5-6 steps) Length, 15/16".	209446	(90)	Y-Armature bending tool for bending the Y-Armature downward on an XY Switch. Length—1 9/16".
36377	(74)	Adjusting tool. Same as No. 73 only for 6-7-8-9 steps. Length 1 5/16".	209447	(91)	Knu-vise for holding a magnet operated while making adjustments on an XY Switch. Length—8 1/2".
203401	(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 (1/2") for loosening nuts to regulate the armature adjusting screw. Length, 3 3/8".	209449	(93)	Slit screw driver for removing and replacing screws that are difficult to reach on the XY Switch. Length—6 3/4".
204742	(76)	Cord Tip Pliers. Used on solderless type switchboard cord tips. Length 5 1/2".	210187	(95)	Cable clip pliers for replacing the cable in the cable clip on the Y-carriage of an XY Switch. Length—6".
204954	(77)	Thickness Gauges. For adjusting springs on the A or C Type Relays. Length 3".	210188	(96)	Snap-ring pliers for putting on snap rings on X and Y armatures of an XY Switch. Length—6".
205683	(78)	Armature and Armature Back stop adjusting tool used on "C" Type Relays. Length—4".	210189	(97)	Cable clip pliers for replacing the cable in the clip on the XX-X wiper rack of an XY Switch. Length—6".
2810-750	(79)	End Wrench for use on XY Switch. Length—2 1/2".	211712	(98)	Wire stripper for stripping switchboard wire. Length—3 5/16".
4070-806	(80)	Holding screw driver used in places where it is difficult to replace or remove screws. Length—8 1/2".	212013	(99)	Special pliers used to adjust the interrupters on the XY Switch. Length—6".
2810-213	(82)	No. 6 Allen Wrench for loosening Allen head screws on the XY step-by-step switch. Length—1 3/4".	802498	(100)	Spring adjusting tool for springs up to .020" thick on "A," "B," or "C" Type Relays. Length approximately 5 1/2". Replaces former No. 268 tool.
207629	(83)	Truarc pliers used to remove and replace Truarc rings on the tubular shaft and pinion of the XY Switch. Length—5 1/16".	212756	(103)	Gram gauge (dial face) used for measuring contact spring pressures on "A," "B," or "C" Type Relays.
892499	(84)	Heat coil pliers for use in adjusting the heat coil on older types of XY Switches. Length—6".	211209	(265-C)	Contact burnisher for cleaning contacts on all types of relays. Length—4 31/32".
209441	(85)	Y-Armature adjusting tool for bending the Y-Armature upward on an XY Switch. Length—8 5/8".	38281	(553-A)	Lamp Extractor for removing 1/4" diameter switchboard lamps from lamp sockets. Made of slotted steel cylinder 17/64" diameter. Length, 3 3/8".
209442	(86)	X-Armature bending tool for adjusting the armature on an XY Switch. Length—5 1/2".			

STROMBERG-CARLSON

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) 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.

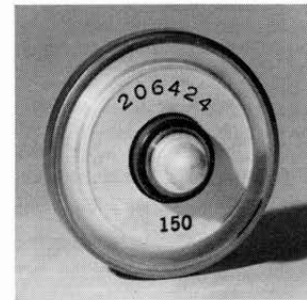
LONGER LIFE—is assured by the use of new age-stabilized carbon in the capsule unit.

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	(29)	Capsule Type Transmitter	1500 Series Telephones
210287	(30)	Capsule Type Transmitter	No. 1543-W Telephone

No. 28 Transmitter



This type of transmitter is used on magneto and common battery telephones having No. 23 handsets. This transmitter is also a capsule type unit but of a larger size to fit the older style handsets found in the 1200 and 1400 Series Telephones. Because of its size this transmitter cannot fit the Nos. 26, 27, and 28 handsets whereas the transmitters that are used in these sets can replace the No. 28 Transmitter with the aid of an adapter ring.

Stock No.	Code	Description
206426	(28)	Capsule Type Transmitter

Note: The No. 28 Transmitter replaces the former 204782 Transmitter.

No. 27 Transmitter

This transmitter is used in older handsets (No. 12 through No. 19). The front and mouthpiece 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	(20)	Transmitter complete with back and mouthpiece
205784	(27)	Transmitter unit
26791		Transmitter—less back
12038		Back
25600		Mouthpiece only
9077		Washer (Back)
1266		Screw (2) — Back to arm
500155		Screw (4) — Body to back

No. 205784 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. No. 205784 transmitter is designed for mounting in the inner compartments of the No. 890 (magneto) and No. 950 (Common Battery) ironclad telephones.

Stock No.	Description
209624	Transmitter Assembly, including
205784	Transmitter (Less back and mouthpiece)
209623	Mouthpiece (Threaded)

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No. 20 Wall Set 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	(20)	Transmitter complete with back and mouthpiece
26791		No. 20—less back
205789		No. 20—less back and mouthpiece-front
25600		Mouthpiece-front only (No. 20)
12038		Back (Black)—No. 20
9077		Washer (Back)—No. 20
1266		Screw (2) Back to arm—No. 20
500155		Screw (4) Body to back—No. 20

No. 21 Operator's Breastplate Type (Used on No. 4 Operator's Telephone Set)



No. 21 Operator's Transmitter

A switchboard transmitter of the breast plate type. Universal in operation; can be used equally well on common battery or magneto switchboards. Performs efficiently under low or high current conditions. Has white enameled plate, nickel-plated front, and semi-vulcanized mouthpiece. Replaces former No. 18-CW and No. 18-L Transmitter on Nos. 3-C and 3-L Operator's Sets.

Stock No.	Code	Description
802523	(21)	Breastplate Transmitter
205784	(27)	Transmitter Unit
13483		Neckband and clasp
13484		Plate
5419		Mouthpiece
23056		Transmitter—less mouthpiece, plate, neckband.

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	(22)	Suspended transmitter complete with back (universal)

Assembly Parts

Stock No.	Code	Description
205784	(27)	Transmitter, less back
26791		Transmitter, less back and mouthpiece
25600		Mouthpiece-front (combined)
9819		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	(29)	Receiver with headband, less cord
44269	(MO-2-I)	4' Receiver Cord
800632	(MO-1-A)	5' Transmitter Cord

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 No. 12038 Back and No. 9077 Washer.

When No. 20 or No. 7 Transmitter with back is to be mounted to desk stands, use No. 13073 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.

Transmitter Arms No. 15 Transmitter Arm



No. 15 Transmitter Arm

Mounts on roof of switchboard. Generally used on PBX and central office switchboards. Adjusts to any desired position, swings horizontally, swings vertically and telescopes from a fully extended length of 23" to a fully contracted length of 14". Suspends the transmitter on flexible cords. Made of brass with black enamel finish.

Stock No.	Code	Description
802527	(15)	Transmitter Arm for Switchboards

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

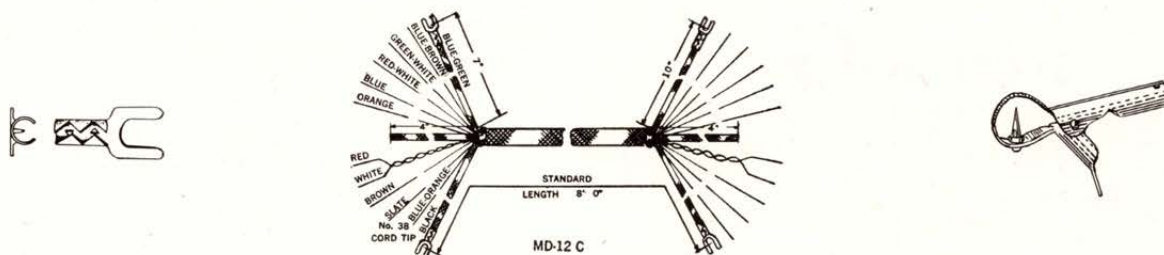
Mtg. No.	Visuals per Strip	Face Length	Face Width	Mtg. Centers
120	20	10 3/8"	1"	11 1/16"
121	10	10 3/8"	1"	11 1/16"
122	10	7 19/32"	1"	8 3/8"

No. 18 Visuals Mounted

Stock No.	Code	Mounting	Resist. Ohms	Used with
49871	(18-A)	Visual	120	11 Cell Systems
49872	(18-A)	Visual	121	11 Cell Systems
49873	(18-A)	Visual	122	11 Cell Systems
49874	(18-B)	Visual	120	20 Cell Systems
49875	(18-B)	Visual	121	20 Cell Systems
49876	(18-B)	Visual	122	20 Cell Systems

STROMBERG-CARLSON

Cords



Cords, in themselves, are humble pieces of telephone equipment which can be responsible for reliable operation or endless trouble. It is just good business to select cords that will give satisfactory service year in and year out. There is a complete line of Duratex* Cords for Stromberg-Carlson switchboard and telephone products as well as the products of other manufacturers. Duratex Cords have an enviable reputation for dependable and economical service under all kinds of operation conditions.

***Registered Trade Mark.**

CONTENTS

SECTION G

DURATEX CORDS

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Convenience System Cords	10g
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Terminal Cords	14g
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Cotton Sleaving	14g
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SPECIAL CORDS

If your needs are not met in the following descriptions, send the Stromberg-Carlson Company at 100 Carlson Rd., Rochester, N. Y., a sample or a detailed description of your specific needs, and they will be glad to make up your cord requirements in the well-known Duratex Way.

DURATEX SWITCHBOARD CORDS

The conductors of these 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 Stromberg-Carlson 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.

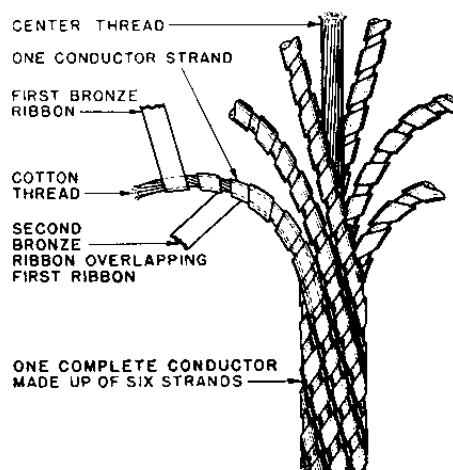
3 - Two servings of celanese are next applied and then an outer cotton braid with a colored tracer. This provides a moisture proof insulation which remains flexible and offers effective resistance to dampness and moisture caused by constant handling.

4 - The insulated conductors are then twisted together like the strands of a rope with proper fillers to form a round core.

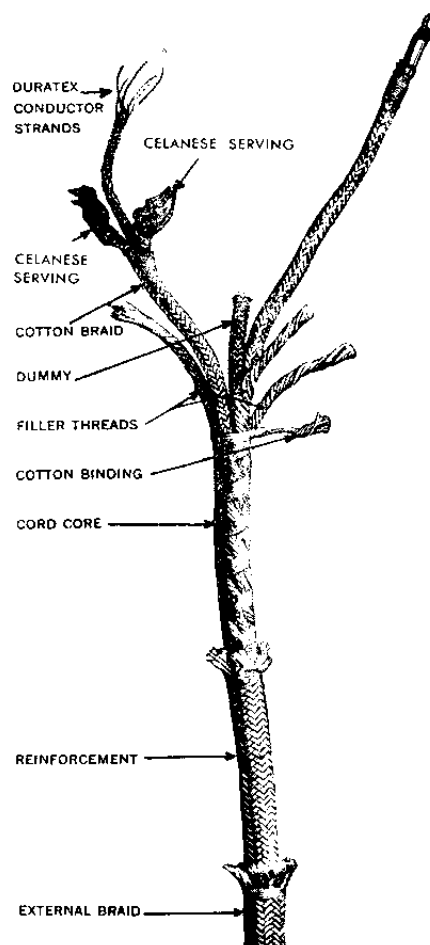
5 - The core thus formed is kept in its original shape by the application of a cotton binder.

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 glazed long-fibre thread in standard colors of white, red, or green is then applied over the entire length of the cord, with the exception of the conductor terminating ends.



Single Conductor — Enlarged 10 Times



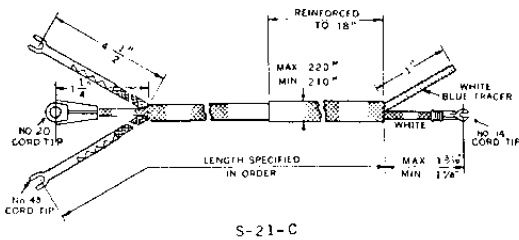
The two illustrations show more clearly than words that Stromberg-Carlson Duratex Cords are built to last. It will be appreciated, however, that any cord no matter how well made will fail if used improperly. These cords, with their ribbon wire construction, are much easier to re-butt than either steel or tinsel cords. Repairs if they become necessary can be made with a minimum of lost time.

STROMBERG-CARLSON

DURATEX SWITCHBOARD CORDS (Cont.)

White Duratex Switchboard Cords will be furnished unless otherwise specified, but red or green cords are also standard. Black cords are made only on special orders.

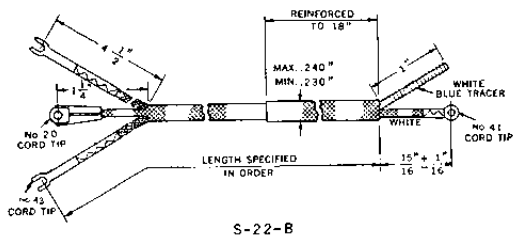
In the coding of these cords, the letter "S" denotes Switchboard, and the first numeral denotes the number of conductors. The rest of the code has to do with diameter and finish.



(2 Conductor — 6, 7, 8 Ft.)

Stock No.	Code	Color	Length
44042	(S-21-C)	White	6 Ft.
44043	(S-21-C)	Red	6 Ft.
44044	(S-21-C)	Green	6 Ft.
44045	(S-21-C)	White	7 Ft.
44046	(S-21-C)	Red	7 Ft.
44047	(S-21-C)	Green	7 Ft.
44048	(S-21-C)	White	8 Ft.

Used with Nos. 33 and 39 Plugs.

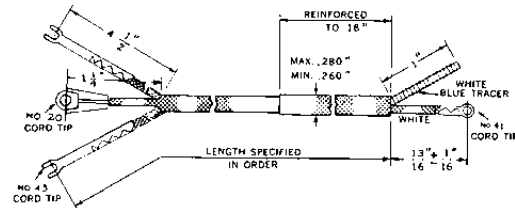


(2 Conductor — 3, 6, 7 Ft.)

Stock No.	Code	Color	Length
	(S-22-B)	White	3 Ft.
	(S-22-B)	Red	3 Ft.
	(S-22-B)	Green	3 Ft.
44051	(S-22-B)	White	6 Ft.
44053	(S-22-B)	Red	6 Ft.
44054	(S-22-B)	Green	6 Ft.
47843	(S-22-B)	White	7 Ft.
44056	(S-22-B)	Red	7 Ft.
44057	(S-22-B)	Green	7 Ft.

Used with Nos. 36 and 57 Plugs.

Stromberg-Carlson Duratex Cords which replace equivalent cords of all types made by other manufacturers are shown in a list beginning on page 15G. These cords may be used without any modification, and will justify the change over a period of time.



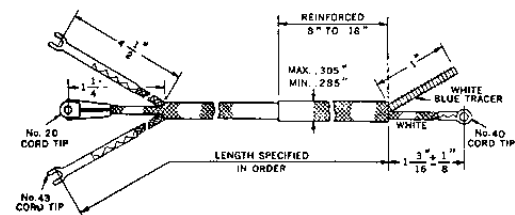
S-22-F

(2 Conductor — 3, 5, 6 Ft.)

Stock No.	Code	Color	Length
	(S-22-F)	White	3 Ft.
	(S-22-F)	Red	3 Ft.
	(S-22-F)	Green	3 Ft.
44061	(S-22-F)	White	5 Ft.
44062	(S-22-F)	Red	5 Ft.
44063	(S-22-F)	Green	5 Ft.
800604	(S-22-F)	White	6 Ft.
44065	(S-22-F)	Red	6 Ft.
803068	(S-22-F)	Green	6 Ft.

Equivalent to Kellogg 324-TO.

Used with 56 and 56-X Plugs, Kellogg No. 211 Plug and Gardford two-Conductor Plugs.

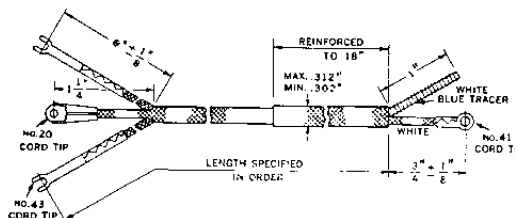


S-23-G

(2 Conductor — 2, 3, 5, 6 Ft.)

Stock No.	Code	Color	Length
44067	(S-23-G)	White	2 Ft.
44068	(S-23-G)	White	3 Ft.
44071	(S-23-G)	White	5 Ft.
44072	(S-23-G)	Red	5 Ft.
44073	(S-23-G)	Green	5 Ft.
44074	(S-23-G)	White	6 Ft.
44075	(S-23-G)	Red	6 Ft.
44076	(S-23-G)	Green	6 Ft.

Used with Nos. 10, 32, 42 and 43 Plugs.



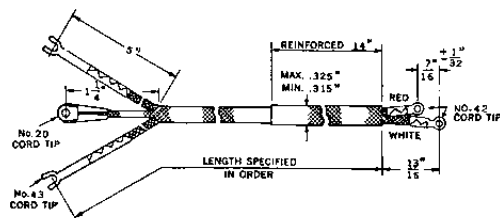
S-23-P

(2 Conductor — 5, 6, 7 Ft.)

Stock No.	Code	Color	Length
44077	(S-23-P)	White	5 Ft.
44078	(S-23-P)	Red	5 Ft.
44079	(S-23-P)	Green	5 Ft.
800589	(S-23-P)	White	6 Ft.
47865	(S-23-P)	Red	6 Ft.
44081	(S-23-P)	Green	6 Ft.
44082	(S-23-P)	White	7 Ft.

Used with S-1 Plug, Kellogg Nos. 3, 42, 70, 109, 138 and Leich No. 3 Plug.

DURATEX SWITCHBOARD CORDS (Cont.)

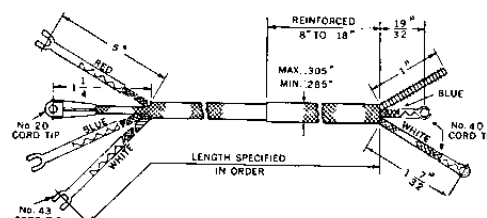


S-24-K

(2 Conductor — 5, 6, 7 Ft.)

Stock No.	Code	Color	Length
800587	(S-24-K)	White	5 Ft.
45378	(S-24-K)	White	6 Ft.
42516	(S-24-K)	Red	6 Ft.
42517	(S-24-K)	Green	6 Ft.
803079	(S-24-K)	White	7 Ft.

Used with Nos. 61 and 62 Plugs. Also W. E. Co.'s Nos. 27, 32, 47, 53 and 65 Plugs.

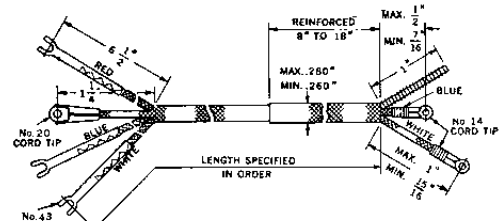


S-33-NS

(3 Conductor — 5, 6 Ft.)

Stock No.	Code	Color	Length
44131	(S-33-NS)	White	5 Ft.
44132	(S-33-NS)	Red	5 Ft.
44133	(S-33-NS)	Green	5 Ft.
800582	(S-33-NS)	White	6 Ft.
44135	(S-33-NS)	Red	6 Ft.
44136	(S-33-NS)	Green	6 Ft.

Used with No. 59 Plug. Also W. E. Co.'s No. 110 and Kellogg No. 191 Plug.



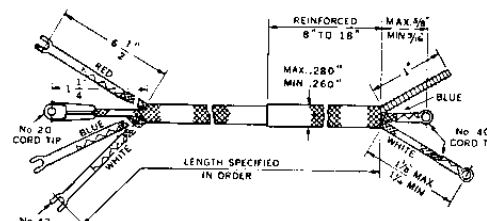
S-32-K

* (3 Conductor — 3, 5, 6, 7 Ft.)

Stock No.	Code	Color	Length
42934	(S-32-K)	White	3 Ft.
800583	(S-32-K)	White	5 Ft.
42457	(S-32-K)	Red	5 Ft.
42456	(S-32-K)	Green	5 Ft.
801544	(S-32-K)	White	6 Ft.
801543	(S-32-K)	Red	6 Ft.
801582	(S-32-K)	Green	6 Ft.
801583	(S-32-K)	Black	6 Ft.
44101	(S-32-K)	White	7 Ft.
44109	(S-32-K)	Black	7 Ft.

Used with Nos. 53, 53-X, 54, 54-G, 54-N, 55, 55-N Plugs.

*S-32-K Cords are replaced with S-32-P Cords when used in assembly with No. 65 Plugs.

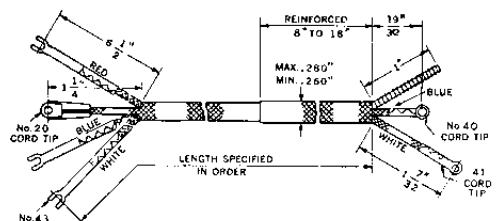


S-32-P

(3 Conductor — 3, 5, 6 Ft.)

Stock No.	Code	Color	Length
202225	(S-32-P)	White	3 Ft.
202226	(S-32-P)	White	5 Ft.
800588	(S-32-P)	White	6 Ft.
44125	(S-32-P)	Red	6 Ft.
44126	(S-32-P)	Green	6 Ft.
202227	(S-32-P)	Black	6 Ft.

Used with No. 63, 64 and 65 Plugs.



S-32-N

(3 Conductor — 6, 6 1/2 Ft.)

Stock No.	Code	Color	Length
800586	(S-32-N)	White	6 Ft.
44114	(S-32-N)	Red	6 Ft.
44115	(S-32-N)	Green	6 Ft.
44117	(S-32-N)	White	6 1/2 Ft.
44119	(S-32-N)	Red	6 1/2 Ft.
44118	(S-32-N)	Green	6 1/2 Ft.

Used with W. E. Cos. No. 109 Plug.

Switchboard Patching Cords for Two-Way Night Connections. Duratex Patching Cords for connecting a number of telephones to a trunk for two-way night service are made only as required. They consist of a single cord and plug for a trunk at one end, which is bridged to as many cords and plugs at the other end as there are lines to be connected for night service.

Two patching cords have proved so generally applicable that they have been coded. In ordering, specify code number and length.

S-32-R, 3 Conductor White. Finished for one plug No. 63, 64 or 65 at one end, and one No. 65 Plug at the other.

S-32-5, 3 Conductor White. Finished for one plug No. 63, 64 or 65, and three No. 65 Plugs at the other end.

Since most patching cords are made only to required specifications, as complete information as possible should be furnished, including overall length, length of protruding conductors and type of plug.

A sketch showing these details or an actual sample will assure the correct type of cord being furnished.

SWITCHBOARD CORDS WITH PLUGS ATTACHED



The following switchboard cords with plugs attached are carried in stock as standard items:

Two Conductor Cords and Plugs

Stock No.	Cord	Plug
44050 S-22-B	5 Ft. White Cord assembled to	No. 57 Plug
44052 S-22-B	6 Ft. White Cord assembled to	No. 57 Plug
42623 S-22-F	5 Ft. White Cord assembled to	No. 56-X Plug
42462 S-23-G	5 Ft. White Cord assembled to	No. 42 Plug
42463 S-23-G	6 Ft. White Cord assembled to	No. 42 Plug
42513 S-24-K	3 Ft. White Cord assembled to	No. 61 Plug
38368 S-24-K	5 Ft. White Cord assembled to	No. 61 Plug
42515 S-24-K	6 Ft. White Cord assembled to	No. 61 Plug



Three Conductor Cords and Plugs

Stock No.	Cord	Plug
44094 S-32-K	6 Ft. White Cord assembled to	No. 54 Plug
44102 S-32-K	7 Ft. White Cord assembled to	No. 54 Plug
44104 S-32-K	7 Ft. Red Cord assembled to	No. 54 Plug
44108 S-32-K	7 Ft. Green Cord assembled to	No. 54 Plug
44110 S-32-K	7 Ft. Black Cord assembled to	No. 49 Plug
44089 S-32-P	3 Ft. White Cord assembled to	No. 65-X Plug
42936 S-32-P	5 Ft. White Cord assembled to	No. 65-X Plug
42935 S-32-P	6 Ft. White Cord assembled to	No. 65-X Plug
44096 S-32-P	6 Ft. Red Cord assembled to	No. 65-X Plug
44098 S-32-P	6 Ft. Black Cord assembled to	No. 65-X Plug
44100 S-32-P	6 Ft. Green Cord assembled to	No. 65-X Plug
44124 S-32-P	6 Ft. White Cord assembled to	No. 54 Plug

Note — S-32-K Cords are replaced by S-32-P when used in assembly with No. 65 Plugs. The No. 53 Plug, which has been superseded by the No. 65 Plug, should not be used with the S-32-P Cord.

STROMBERG-CARLSON

DURATEX INSTRUMENT CORDS

All instrument cords of Stromberg-Carlson manufacture are made with straight-lay conductors and an external braid of mercerized cotton.

Waterproof line and handset cords with black mercerized cotton braid are used on all current types of Stromberg-Carlson telephones. In these cords the conductors are individually insulated with extruded vinylite 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 operator's telephone sets and miscellaneous use, are also made with straight-lay conductors. These cords have a distinguishing external braid of brown mercerized cotton and each conductor has a 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:

Coding of Instrument Cords

First letter — W or M shows type of braid.

W — Denotes waterproof cord with black braid

M — Denotes mercerized brown cotton braid

Second letter — D, C, O or R shows class of service.

D — Denotes desk type line cords for handset telephones and desk stands

C — Denotes cords for combination telephones and handset pieces

O — Denotes operator's cords

R — Denotes receiver cords

The numeral — Denotes number of conductors

Final letter — Denotes trim and type of terminals

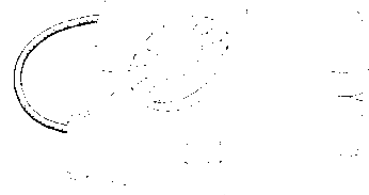
Coding for Special Uses

MISCELLANEOUS CORDS: In classifying these cords the second letter is omitted and in this case the letter "M" indicates miscellaneous use rather than the type of braid. For example, the M-2-L, 16" cord which is used with the iron-clad telephones has a braid of glazed cotton rather than mercerized cotton.

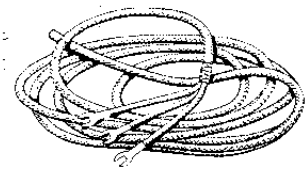
TERMINAL CORDS: In this type of cord the second letter is also omitted and the letter "T" indicates use for various terminal purposes.

Line drawings and other data on Duratex Instrument Cords will be found on succeeding pages under the following headings:

- Desk stand (line) cords
- Handset (combination) cords
- Operator's cords
- Receiver cords
- Miscellaneous cords
- Terminal cords



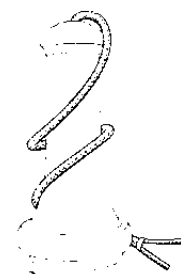
Desk stand (line) cords



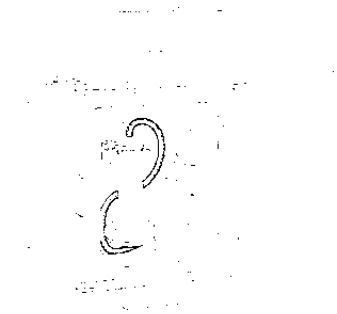
Handset (combination) cords



Operator's cords



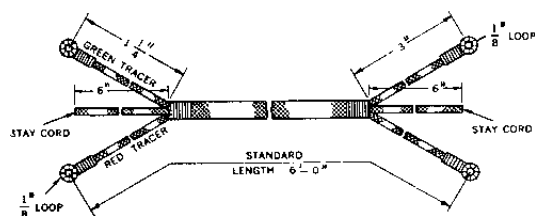
Receiver cords



Miscellaneous cords

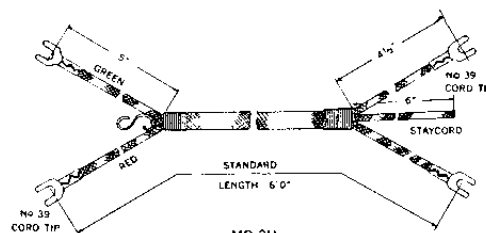
STROMBERG-CARLSON

DURATEX DESK STAND CORDS



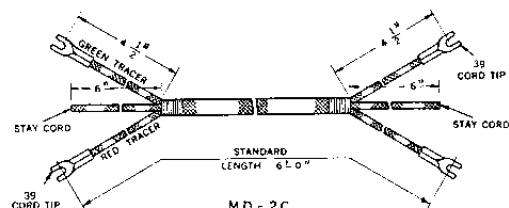
MD-2B

Stock No. Code Description
800544 (MD-2-B) 6' 2 Conductors
 Used with No. 20-A Receiver and No. 23 Plug



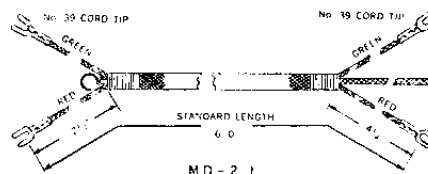
MD-2H

Stock No. Code Description
800598 (MD-2-H) 6' 2 Conductors
800608 (WD-2-H) waterproof type, 6' 2 Conductors
 Used with No. 1222 Handset Telephone



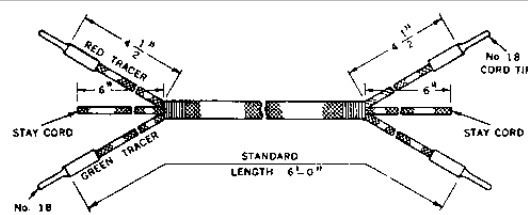
MD-2C

800545 (MD-2-C) 6' 2 Conductors
 Used with No. 1179 Handset, also American Electric Desk
 Stands



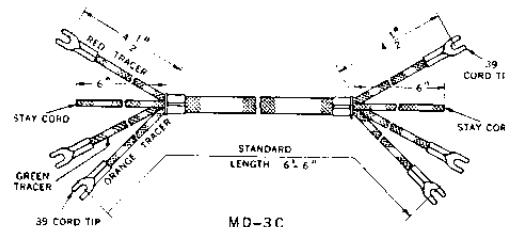
MD-2J

803487 (MD-2-J) 6' 2 Conductors
803489 (WD-2-J) waterproof type, 6' 2 Conductors
 Used on No. 1242 Telephone (Line Cord)



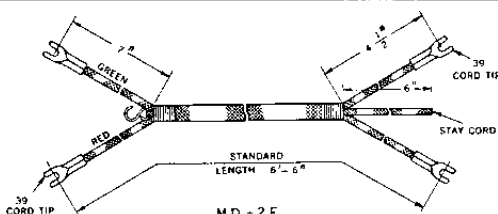
MD-2D

800592 (MD-2-D) 6' 2 Conductors
 Used with Garford Type Desk Telephones



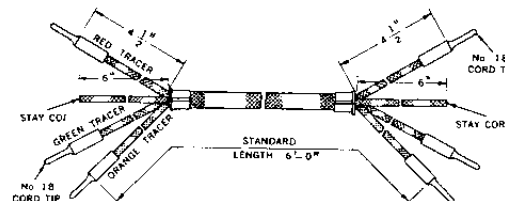
MD-3C

800546 (MD-3-C) 6' 6" 3 Conductors
 Used with Nos. 992, 1168, 1170, 1171, 1173, 1174, 1176 Tele-
 phones, 1177 and 1178 Handsets, also W.E. Co's 51 Type
 Desk Stands, Kellogg Nos. F-115-A, F-118-B, F-135, F-138, 301
 Telephones and American Electric Desk Stands.



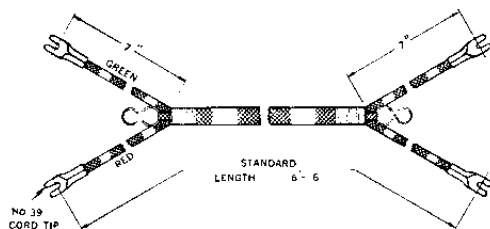
MD-2F

44227 (MD-2-F) 5' 3" 2 Conductors
800596 (MD-2-F) 6' 6" 2 Conductors
800606 (WD-2-F) waterproof type, 6' 6" 2 Conductors
 Used with No. 1179 Handset, also American Electric Desk Stands



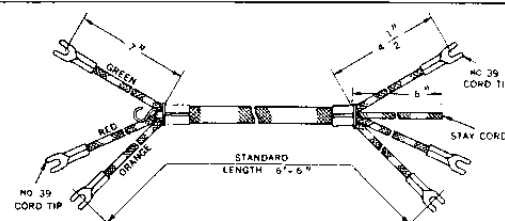
MD-3D

44299 (MD-3-D) 6' 3 Conductors
 Used with Garford Type Desk Telephones



MD-2G

800597 (MD-2-G) 6' 6" 2 Conductors
200790 (WD-2-G) waterproof type, 6' 6" 2 Conductors
 Used with Nos. 1202 and SK 3400 Telephones

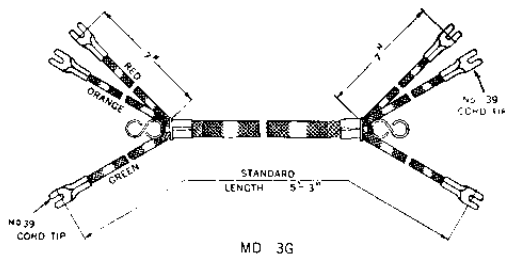


MD-3F

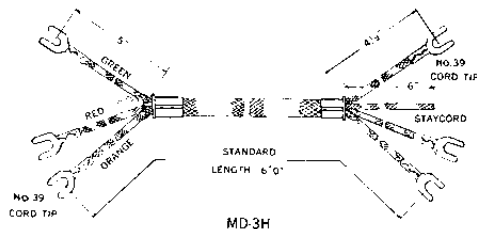
800600 (MD-3-F) 6' 6" 3 Conductors
800607 (WD-3-F) waterproof type, 6' 6" 3 Conductors
 Used with Nos. 1197, 1182, 1208 and 1212 Telephones

STROMBERG-CARLSON

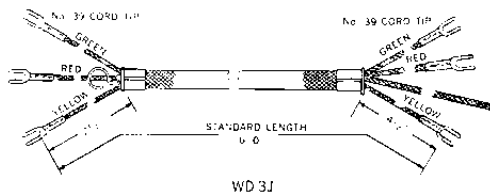
DURATEX DESK STAND CORDS (Cont.)



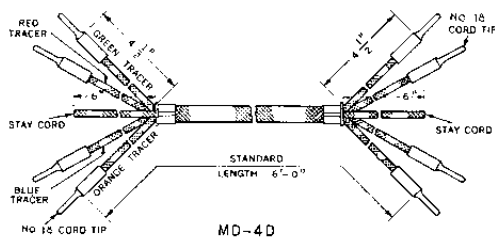
Stock No. Code Description
800601 (MD-3-G) 5' 3" 3 Conductors
 Used with Nos. 1197, 1198 and 1207 Handset Telephones



800599 (MD-3-H) 6' 3 Conductors
800609 (WD-3-H) waterproof type, 6' 3 Conductors
 Used with No. 1223 Handset Telephones

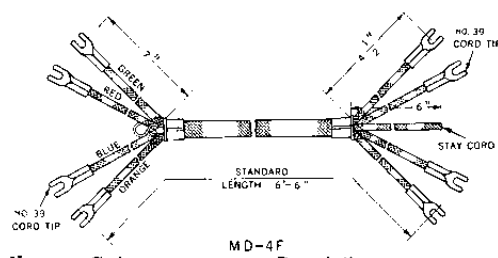


803488 (MD-3-J) 6' 3 Conductors
803490 (WD-3-J) waterproof type, 6' 3 Conductors
 Used on No. 1243 and 1243-W Telephones

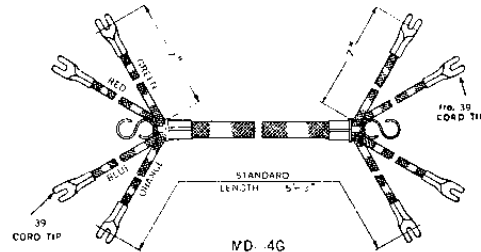


800591 (MD-4-D) 6' 4 Conductors
 Used with Garford Type Desk Telephones

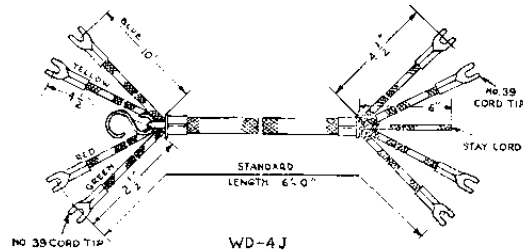
Stromberg-Carlson Duratex Desk Stand Cords, because of their straight-lay construction, resist the tendency to kink or knot. This not only prevents wear from abrasion, but also adds to the convenience of the user of the instrument, and increases his ultimate satisfaction.



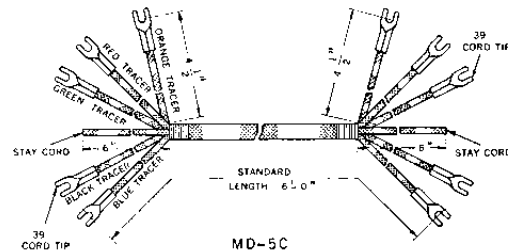
Stock No. Code Description
800602 (MD-4-F) 6' 6" 4 Conductors
 Used with Nos. 1182-A and 1208-A Telephones



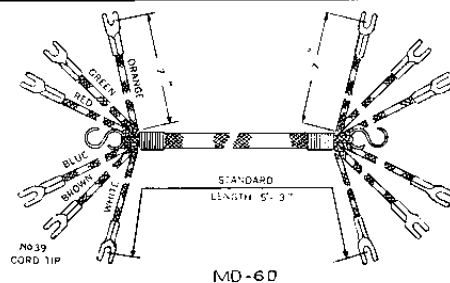
44344 (MD-4-G) 5' 3" Used with No. 1198-A Telephone
800603 (MD-4-G) 6' 6" Used with No. 1197-A Telephone
201374 (WD-4-G) 6' 6" waterproof type, used with No. 1244-W Telephone



202236 (WD-4-J) 6' 4 Conductor, waterproof type
 Used with No. 1248 Telephone



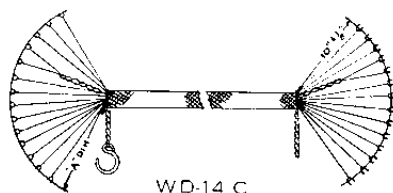
800594 (MD-5-C) 6' 5 Conductors
 Used with Nos. 990, 1128-B, 1128-C, 1169, 1175, 1176, 1179-L, 1183 and 1189 Telephones



800610 (MD-6-D) 5' 3" 6 Conductors
 Used with No. 1244-T and 1222-T Telephones

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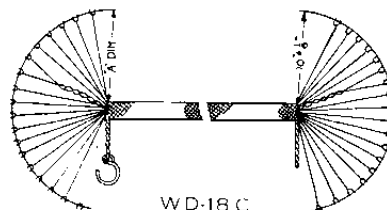
DURATEX DESK STAND CORDS (Cont.) FOR CONVENIENCE SYSTEMS



WD-14 C

"A" Dimension—7½"

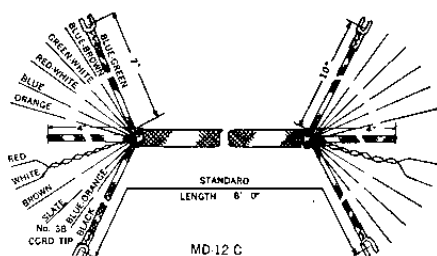
Stock No. Code Length Description
202325 (WD-14-C) 5'5" Butt to Butt 14 Conductors
 Used with new style No. 1270 Telephones in current No. 2-6 Convenience Systems.



WD-18 C

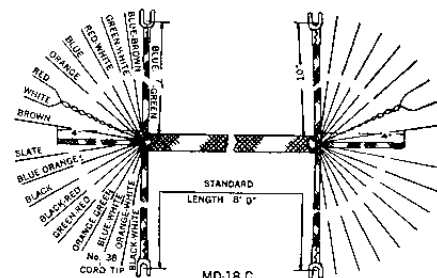
"A" Dimension—7½"

Stock No. Code Length Description
202326 (WD-18-C) 5'5" Butt to Butt 18 Conductors
 Used with new style No. 1271 and No. 1272 Telephones in current No. 2-10 and No. 3-9 Convenience Systems.



MD-12 C

* **23811 (MD-12-C)** 8' 12 Conductors
 Used with No. 1195 Telephones in older No. 2-6 Type Convenience Systems.

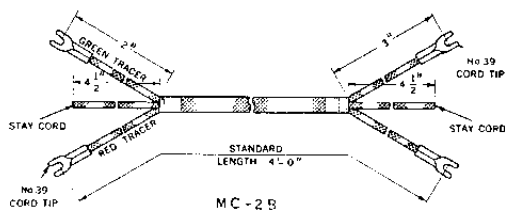


MD-18 C

* **28629 (MD-18-C)** 8' 18 Conductors
 Used with No. 1215 and No. 1216 Telephones in older No. 2-10 and No. 3-9 Convenience Systems.

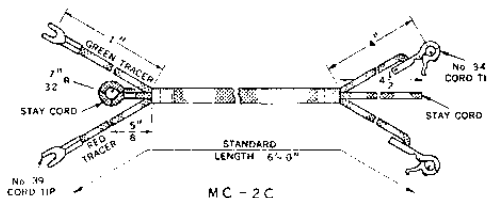
*For cords used with streamlined telephones in the new No. 2-6, 2-10 and 3-9 Systems see WD-14-C and WD-18-C Types.

DURATEX HANDSET CORDS



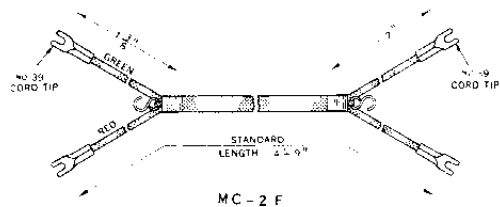
MC-2 B

Stock No. Code Description
800611 (MC-2-B) 4' 2 Conductors
 Used with Nos. 10-PC, 10-D, 10-S, 14, 1181-A, 1181-B, 1181-D, 1181-DJ, 1181-E Handsets.



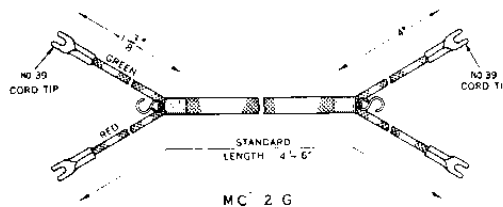
MC-2 C

Stock No. Code Description
800612 (MC-2-C) 6' 2 Conductors
 Used with Nos. 11-C, 11-D, 11-E, 19-C and 19-D Handsets



MC-2 F

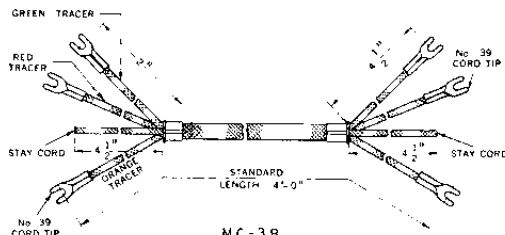
800613 (MC-2-F) 4' 9" 2 Conductors
 Used with Nos. 17 and 22-A Handsets



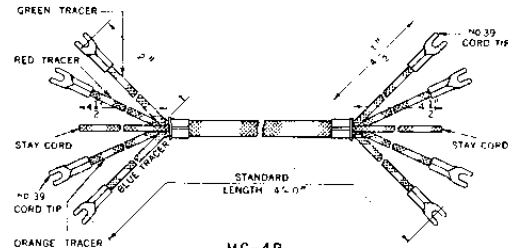
MC-2 G

800614 (MC-2-G) 4' 6" 2 Conductors
 Used with No. 22 Handset

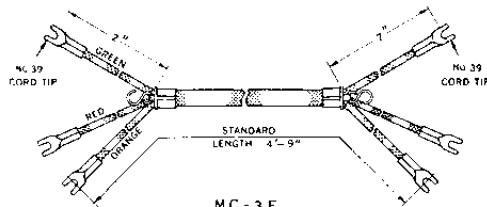
DURATEX HANDSET CORDS (Cont.)



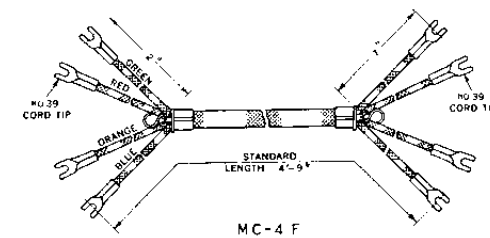
Stock No. Code Description
800615 (MC-3-B) 4' 3 Conductors
 Used with Nos. 10, 12 and 19-L Handsets
44209 (MC-3-B) 6' 3 Conductors
 Used with No. 11-L, 19-L and 1181-C Handsets



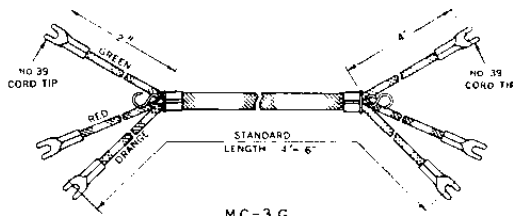
Stock No. Code Description
800619 (MC-4-B) 4' 4 Conductors
 Used with Nos. 10 and 13 Handsets



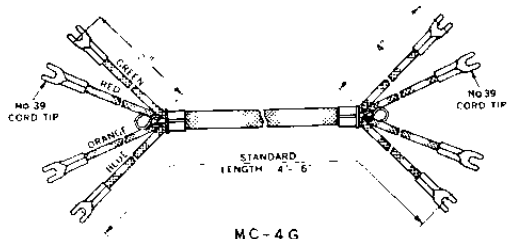
800617 (MC-3-F) 4' 9" 3 Conductors
800624 (WC-3-F) waterproof type 4' 9"
 Used with Nos. 15 and 20-A Handsets, 1201-C, 1201-CA, 1191-B, 1195, 1197, 1197-A, 1202, 1210-A, 1211-M, 1212, 1215 and 1216 Telephones



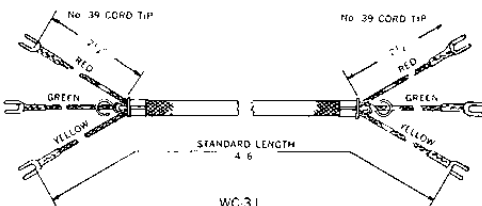
800621 (MC-4-F) 4' 9" 4 Conductors
 Used with No. 16 and 21-A Handsets and No. 1192, 1193, 1198-A, 1207 Telephones
201497 (WC-4-F) waterproof type 4' 9"
 Used with 21-W Handset and D-2843 Telephone



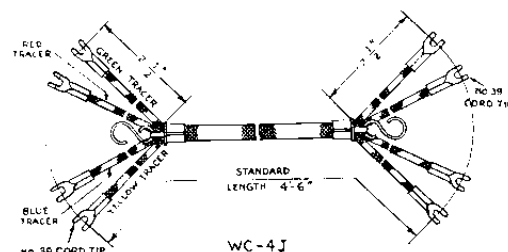
800618 (MC-3-G) 4' 6" 3 Conductors
800625 (WC-3-G) waterproof type 4' 6"
 Used with No. 20 Handset and Nos. 1222, 1223, 1224-A Telephones



800622 (MC-4-G) 4' 6" 4 Conductors
 Used with No. 21 Handset (D-2843 Telephone)



803551 (MC-3-J) 4' 6" 3 Conductors
 Used on No. 23 Handset which has been replaced by No. 23-W with waterproof cord
803552 (WC-3-J) waterproof type 4' 6"
 Used on No. 23-W Handset and Nos. 1243-W, 1244-B and 1250-W Telephones

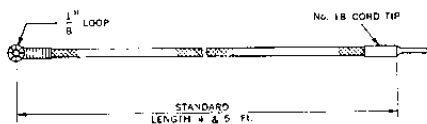


202235 (WC-4-J) 4' 6" 4 Conductors, waterproof type
 Used on No. 24-W Handset and Nos. 1248-W and 1258-W Telephones.

Colored Cords

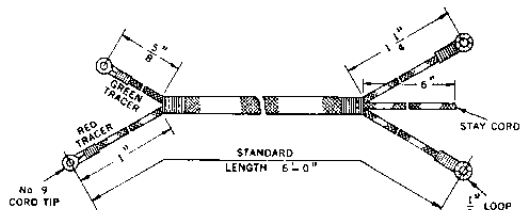
When Duratex Cords are required for colored handsets the number of conductors should be specified as well as the color of the telephone.

DURATEX OPERATOR'S CORDS



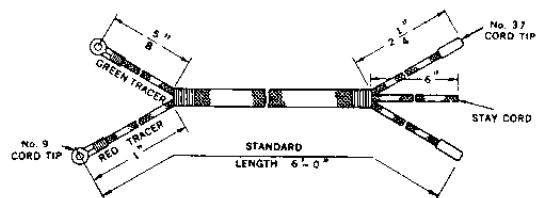
MO-1A

Stock No. Code Description
800632 (MO-1-A) 5' Single Conductor
 Used with operator's suspended type transmitters.



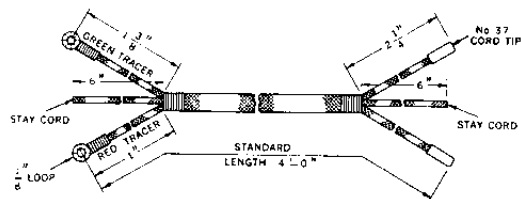
MO-2F

800636 (MO-2-F) 6' 2 Conductors
 Used with Nos. 20 Operator's Receiver and 40 Plug.



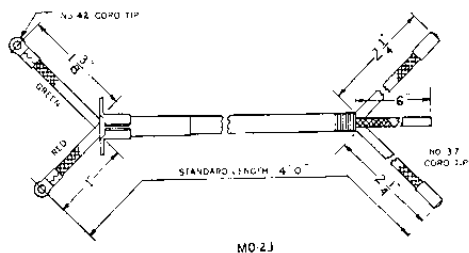
MO-2H

800638 (MO-2-H) 6' 2 Conductors
 Used with No. 29 Operator's Receiver and No. 40 Plug.



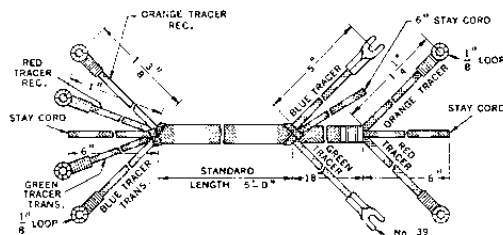
MO-2I

44269 (MO-2-I) 4' 2 Conductors
 Used with No. 29 Receiver and No. 23 Plug.



MO-2J

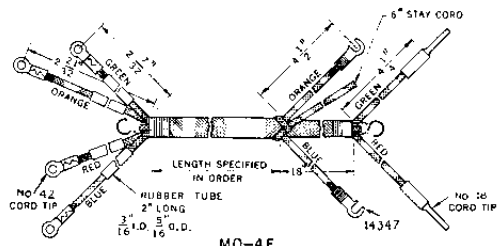
202926 (MO-2-J) 4' 2 Conductors
 Used with No. 66 Plug and No. 29 Receiver.



MO-4C

Stock No. Code Description
800640 (MO-4-C) 5' 4 Conductors

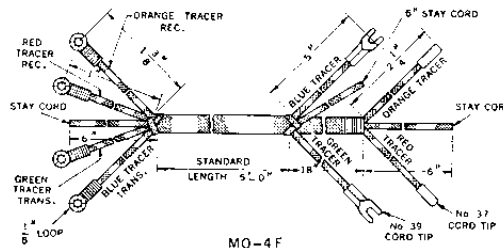
Used with Operator's Breast Plate Telephone Set with No. 20 Receiver and No. 18 Transmitter using No. 23 Plug, also Garford Type Operator's Plug.



MO-4E

800644 (MO-4-E) 5' 4 Conductors

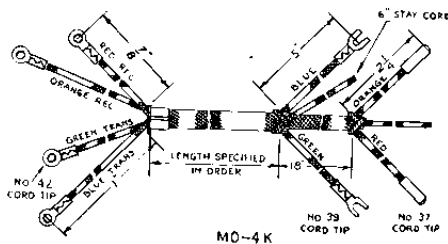
Used on W.E. Co's Operator's Sets (No. 87 or L-4-B) with Nos. 103, 112 or 137 Plugs.



MO-4F

800645 (MO-4-F) 5' 4 Conductors
44273 (MO-4-F) 6' 4 Conductors

Used with No. 4 Operator's Breast Plate Sets that have old style No. 23 Plug.

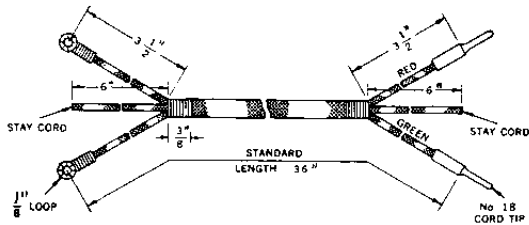


MO-4K

201829 (MO-4-K) 5' 4 Conductors
202245 (MO-4-K) 6' 4 Conductors

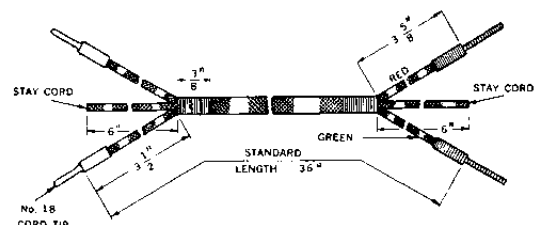
Used with Operator's Breast Plate Sets that have new style No. 66 Plug.

DURATEX RECEIVER CORDS



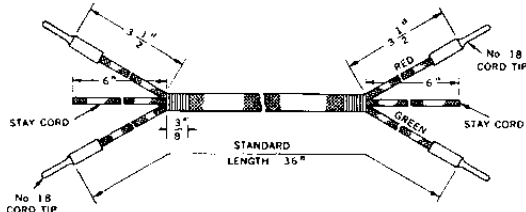
MR-2B

Stock No. Code Description
800650 (MR-2-B) 36" 2 Conductors
 Brown Mercerized Cotton.



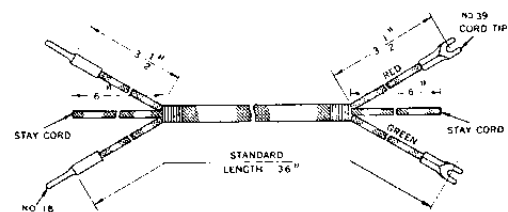
MR-2H

Stock No. Code Description
800653 (MR-2-H) 36" 2 Conductors
 Brown Mercerized Cotton.



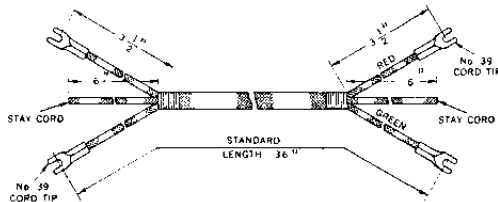
MR-2D

800651 (MR-2-D) 36" 2 Conductors
 Brown Mercerized Cotton.



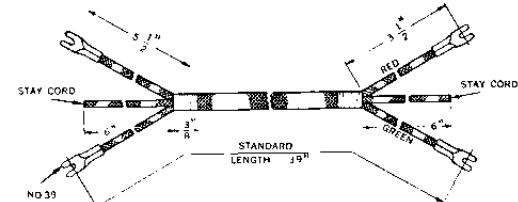
MR-2I

800654 (MR-2-I) 36" 2 Conductors
 Brown Mercerized Cotton.



MR-2G

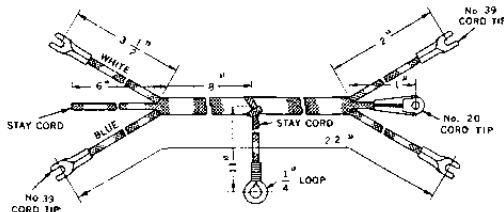
800652 (MR-2-G) 36" 2 Conductors
 Brown Mercerized Cotton.
 Used with No. 27-A Receiver.



MR-2J

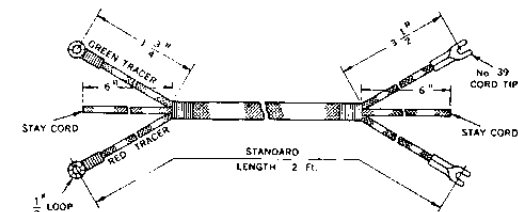
800655 (MR-2-J) 39" 2 Conductors
 Brown Mercerized Cotton.
 Used with No. 30-A Receiver.

DURATEX MISCELLANEOUS CORDS



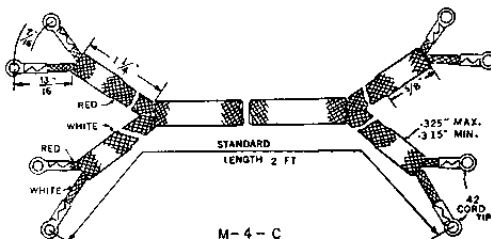
M-2-I

Stock No. Code Description
800627 (M-2-I) 22" 2 Conductors
 Glazed Cotton Outer Braid. Used with Nos. 890 Mine-A-Phone
 and 950 Iron Clad Telephone Receivers.



M-2-J

Stock No. Code Description
800626 (M-2-J) 24" 2 Conductors
 Brown Cotton Mercerized Outer Braid. Used with No. 844
 Test Set.



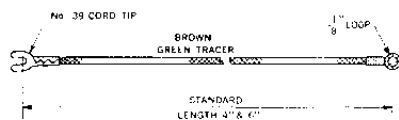
M-4-C

880628 (M-4-C) 24" 4 Conductors
 Used with No. 62 Test Plug.

Stromberg-Carlson Duratex Cords of all types have met the test of service for over half a century. True economy can only be measured over a period of years. More and more telephone executives who think in terms of continuous operations have become convinced that there is no substitute for quality.

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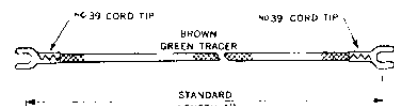
DURATEX TERMINAL CORDS



T-1-A

Stock No.	Code	Description
800656	(T-1-A) 6"	1 Tinsel Conductor
	(T-1-A) 4"	1 Tinsel Conductor

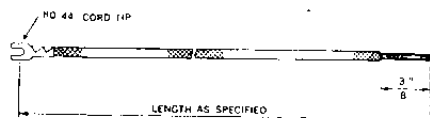
Used miscellaneously. Brown braid with green tracer.



T-1-B

800657	(T-1-B) 4"	1 Tinsel Conductor
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Used with No. 10 Transmitter. Brown braid with green tracer.



T-1-D

44155	(T-1-D) 9"	1 Stranded Conductor
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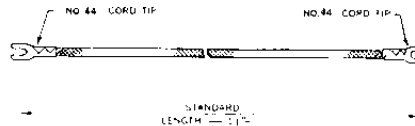
Used miscellaneously. Brown braid.



T-1-E

800659	(T-1-E) 9"	1 Stranded Copper Conductor
44174	(T-1-E) 11"	1 Stranded Copper Conductor
44175	(T-1-E) 15"	1 Stranded Copper Conductor

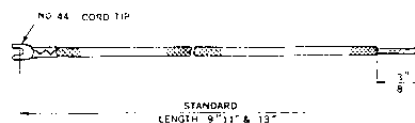
Used with No. 12, 13, 14 Handsets, No. 896 Tel. (9").



T-1-F

Stock No.	Code	Description
800660	(T-1-F) 11"	1 Stranded Copper Conductor

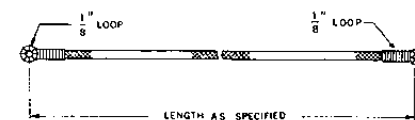
Brown braid with tracer.



T-1-G

800661	(T-1-G) 9"	1 Stranded Copper Conductor
44194	(T-1-G) 11"	1 Stranded Copper Conductor
44195	(T-1-G) 13"	1 Stranded Copper Conductor

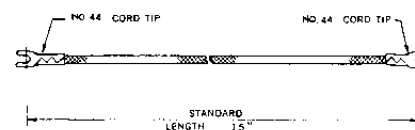
Brown braid with tracer. Used on wall and desk telephones.



T-1-H

800662	(T-1-H) 9"	1 Tinsel Conductor
44354	(T-1-H) 11"	1 Tinsel Conductor
44355	(T-1-H) 15"	1 Tinsel Conductor

Brown braid with green tracer. Used miscellaneously.



T-1-I

800663	(T-1-I) 15"	1 Stranded Copper Conductor
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Brown braid with red tracer. Used with handsets.

M.D.F. TEST CORDS

M-6-D. This is a 6 Conductor Cord terminated on one end with No. 14 Cord tips, for attaching to a No. 35 or No. 38 Plug and with straight wire-wound conductors at the other end for use with Cook Nos. 8, 10, 21, 44, and 444 Test Plugs.

800630	(M-6-D) 15'	Duratex Cord
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M-6-E. This is a 6 Conductor Cord terminated on one end with No. 39 Cord tips, for connecting to screw terminals and with straight wire-wound conductors at the other end for use with Cook No. 3800 Test Plug.

800631	(M-6-E) 6'	Duratex Cord
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M.D.F. Test Cords may be made in other lengths depending on test conditions. Prices for special lengths quoted on request.

CORDAGE

Stromberg-Carlson Duratex Cordage covered with brown mercerized cotton is available to those who wish to make up their own cords in off-standard lengths.

Stock No.	Description
20118	Single Conductor Duratex Cordage
20101	Two Conductor Duratex Cordage
20102	Three Conductor Duratex Cordage
20114	Four Conductor Duratex Cordage
20115	Five Conductor Duratex Cordage

COTTON SLEEVING

Brown cotton sleeving — not waxed unless specified.

Stock No.	Inside Diameter	Feet Per Lb. Approx.
20031	3/64 in.	1250
20032	1/8 in.	380
20033	5/32 in.	300

STROMBERG-CARLSON

GENERAL APPLICATION OF DURATEX CORDS

The Switchboard and Instrument Cords shown on the preceding pages are standard for use with Stromberg-Carlson products. Many of them are the equivalent in application to cords made by other manufacturers. The list of Stromberg-Carlson replacements for such other cords which is shown below covers only those which are currently standard and therefore immediately available for our customer's convenience.

We believe that any type of cord made the Duratex way will more efficiently and economically serve our customer's needs. We have made and will continue to make cords to fit your own requirements. A complete sketch, or an actual sample, will aid in rendering this service promptly.

We invite a trial of Stromberg-Carlson cords, whether with our own equipment or the equipment of others, for this is the only convincing proof that money can actually be saved by the use of Duratex Switchboard and Instrument Cords.

Stromberg-Carlson Replacements for Other Cords (Specify length and color in the order)

For Automatic Electric Co. Equipment

To Replace Automatic Cord	Type	Order Stromberg-Carlson Cord
AD-43	Desk Stand	MD-2C
AD-44	Desk Stand	MD-2D
AD-45	Desk Stand	MD-3C
AD-46	Desk Stand	MD-3D
AH-14	Handset	MC-2B
DT-13	Operators	MO-1A
DA-14	Operators	MO-2F
DB-16	Operators	MO-4C
DS-43, 44, 45	Switchboard	S-22-B
DS-54, 55, 56	Switchboard	S-22-F
DS-46, 47, 48, 49	Switchboard	S-23-G
DS-34, 35, 36	Switchboard	S-23-P
DS-50, 51, 52, 53	Switchboard	S-32-K
DS-65	Switchboard	S-32-N
DS-61, 63	Switchboard	S-33-NS
DS-37, 38	Switchboard	SK-3450-SC
AR-19	Receiver	MR-2B
AR-20	Receiver	MR-2D
AR-21	Receiver	MR-2G
AR-22	Receiver	MR-2I
DT-12	Terminal	SK-3450-TA
DT-11	Terminal	SK-3450-TB

For Western Electric Co. Equipment

To Replace W. E. Cord	Type	Order Stromberg-Carlson Cord
D4U	Desk Stand	No. 42,897
D3AK	Desk Stand	No. 202,602
D5J	Desk Stand	No. 201,372
H3C	Handset	No. 202,601
H3P	Handset	MC-3H
L2K	Operator's	No. 202,249
S2A	Switchboard	SK-3453-SB
S2B	Switchboard	SK-3453-SC
S3A	Switchboard	SK-3453-SD
S3B	Switchboard	SK-3453-SE
437	Terminal	SK-3450-TB

For Runzel Cord and Wire Co. Products

To Replace Runzel Cord	Type	Order Stromberg-Carlson Cord
37	Desk Stand	MD-3C
4	Switchboard	S-22-B
3	Switchboard	S-22-F
1	Switchboard	S-23-P
2	Switchboard	S-24-K
8	Switchboard	S-32-K
8A	Switchboard	S-33-NS
6	Switchboard	SK-3450-SC
7	Switchboard	SK-3450-SD
63	Receiver	MR-2B
61-A	Receiver	MR-2D
62	Receiver	MR-2G
61	Receiver	MR-2I
92	Terminal	T-1-B
93	Terminal	T-1-E
94	Terminal	T-1-G
90	Terminal	SK-3450-TA
91	Terminal	SK-3450-TB

For Kellogg Switchboard and Supply Co. Equipment

To Replace Kellogg Cord	Type	Order Stromberg-Carlson Cord
F-704-G	Handset	MC-3B
F-621-G	Handset	MC-3G
F-742-G	Handset	MC-4F
741-O	Operators	MO-4F
324-TO	Switchboard	S-22-F
301-TO	Switchboard	S-23-P
397-TO	Switchboard	S-24-K
326-TO	Switchboard	SK-3450-SC
309-TO	Switchboard	SK-3450-SD
390-TO	Switchboard	SK-3450-SE
391-TO	Switchboard	SK-3450-SF
F-642-TR	Receiver	MR-2I
499-T	Terminal	SK-3450-TA
465-T	Terminal	SK-3450-TB
F-730-D	Desk Stand	No. 203045

STROMBERG-CARLSON

CORD ADJUSTERS

Provides a means to neatly adjust cord lengths so that cord weights hold cords taut. Made of black fibre— $4\frac{1}{8}$ ins. long, by 1 in. wide.



No. 6 Cord Adjuster

Stock No.	Code	Description
12018	(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

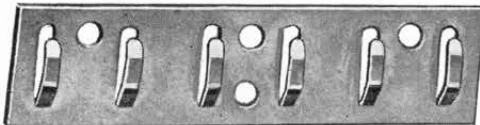


No. 5 Cord Fastener

Stock No.	Code	For Use On	Length
800667	(4)	Terminal Racks	$1\frac{9}{16}$ in.
800668	(5)	Switchboards	$1\frac{3}{8}$ in.

CORD HOOKS

To suspend switchboard cords from tip of stay cord and thereby remove strain from conductors. No. 4 Type mounts hooks on $\frac{1}{2}$ centers.



No. 4A Cord Hooks

Stock No.	Code	Description
7921	(2)	Standard switchboard cord, single hook
16008	(4-A)	Standard switchboard cords, six hooks
16357	(4-B)	Standard switchboard cords, four hooks
16358	(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— $4 \times 1\frac{29}{32} \times \frac{3}{8}$ in. Wheel— $\frac{7}{8} \times \frac{1}{4}$ in.



No. 6

Stock No.	Code	Description
800707	(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	(9)	For Nos. 10, 32, 42, 56, and 57 Type Plugs. Uses P-5729 or No. 2 Screw. Hole Drill—No. 43, Opening— $\frac{3}{32}$ in.
5171	(14)	For Nos. 33, 34, 53, 54 and 55 Type Plugs. Uses P-8300 or No. 1 Screw. Hole Drill, No. 48, Opening— $\frac{5}{64}$ in.
6916	(17)	Used on old style desk set cords. Connects to Magneto Desk Set Boxes using lock nut binding post. Spade opening $\frac{3}{16}$ in. Fits Screws Nos. 8 or 10.
8312	(18)	For Stromberg-Carlson Receiver and Desk Set Cords and on telephone cords of other manufacture. Tip diameter—.081 in.



No. 20



No. 22



No. 25

Stock No.	Code	Description
8446	(20)	For switchboard cord, stay cord. Holds cords on cord hooks. Hole— $\frac{7}{32}$ in.
8313	(22)	For transmitter cords connecting transmitter to telephone. Spade opening— $1\frac{3}{64}$ in. Fits No. 4 Screw.
8899	(25)	For stay cords. Connects cord to receiver cord tip.



No. 34



No. 35

Stock No.	Code	Description
28856	(34)	Used as Test Clip on Combination Telephone line cords.
11870	(35)	For desk and handset telephone cords. Spade opening— $\frac{1}{8}$ in. Fits No. 4 Screw.



No. 36



No. 37

Stock No.	Code	Description
15377	(36)	For switchboard cord to cord fasteners on cord racks. Spade opening— $\frac{7}{64}$ in. Fits Nos. 4 and 5 Cord Fasteners.
15642	(37)	Used on radio receiver cords and special cordage terminals.

CORD TIPS (Cont.)



No. 39



No. 40



No. 43

Stock No.	Code	Description
	(38)	Replaced by 33198 (39) Cord Tip.
33198	(39)	Used on desk, receiver and hand set cords. Non-soldering type. Connections are made by sharp tangs punched from the barrel of the tip which pierce the outer insulation and make contact with the metallic conductor. Nickel finish. Spade opening .128. Takes No. 4 screw.
38336	(40)	Non-soldering piercing type, used at plug end of switchboard cords. Screw hole drill size $\frac{3}{32}$ ", length $2\frac{7}{16}$ ". Takes No. 2 screw.

Stock No.	Code	Description
38334	(43)	Non-soldering piercing type, used on switchboard cords at cord fastener terminals. Spade opening slot $\frac{7}{64}$ ", length $1\frac{9}{32}$ ". Takes No. 4 screw.



No. 44



No. 45

Stock No.	Code	Description
200947	(44)	Non-soldering piercing type, spade tip. Used on dial cords. Spade opening slot $\frac{1}{8}$ ", length $1\frac{9}{32}$ ". Takes No. 4 screw.
200948	(45)	Non-soldering piercing type, eyelet tip. Used on dial cords. Screw hole drill size $\frac{1}{8}$ ", length $3\frac{7}{16}$ ". Takes No. 4 screw.



No. 41



No. 42

Stock No.	Code	Description
38337	(41)	Non-soldering piercing type, used at plug end of switchboard cords. Screw hole drill size $\frac{3}{32}$ ", length $1\frac{7}{32}$ ". Takes No. 2 screw.
38338	(42)	Non-soldering piercing type, used at plug end of switchboard cords. Screw hole drill size $\frac{1}{8}$ ", length $2\frac{7}{16}$ ". Takes a No. 4 screw.

Consult your nearest Stromberg-Carlson representative for advice on combining orders to take advantage of quantity price discounts.

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Blocks	
Connecting	9q
Discharge, Sawtooth	8q
Pulley	19t
Tackle	17t
Blow Torches	20p, 21p, 22p
Blow-Rite Fuse Wire	13q
Fuses	13q
Boards, Test, Linen	6p
Bolt Cutters	27t

GENERAL INDEX—SUPPLIES DIVISION (Cont.)

Bolts

Angle	13m
Bracket	12m
Carriage	12m
Cross Arm	12m
Double Arming	13m
Eye	13m
Fork, Insulated . . . . .	.7s
Hook, Crossover Bracket	16m
Hubeye	13m
Lag (Screws)	12m
Machine	12m
Straight Hubeyes	14m
Through	12m
Toggle	19w

Booths, Telephone 5u, 6u

Boxes

Battery	22w
Interior Junction	12q
Stuffing, Cable Terminal	5q
Terminal, Building	11q

Boxwood Rules 33t

Brace Drills, Wood Boring 28t

Braces

Alley Arm	17m
Angle	17m
Back	16m
Bit	32t
Cross Arm	17m
Diagonal	16m
Vertical	16m, 17m

Bracket Bolts 12m

Clip Washers 6n

Brackets

Corner, Galvanized	15m
Corner, Pay Station	10u
Corner, Presteel	19m
Corner, Telephone	15m
Crossover, Highway	16m
Dead End . . . . .	.7s
Distributing	15m
House	15m
Pay Station	10u
Pole	18m, 19m
Shelf, Pay Station	10u
Straps	6n
Transposition	18m, 19m
Wood	5n

Braid Strippers 15t

Brazing Outfits, Prest-O-Lite 36t

Breast Drills 31t

Plates 9m

Bridge Test Sets, Fault Location 40t

Bridging Connectors 13w

Bridle Rings 17w

Wire 4r, 6r

Broad Hatchets 27t

Buckets

Canvas 25t

Non-Metallic, Collapsible 25t

Buffalo Grips 16t

Building Terminal Boxes 11q

Terminals 12q

Burnishing Paste 17p

Buzzers 6w

C

C-A Wood Preserver 6n

C-R Connectors, Service 13w

Cabinet Booths, Telephone 5u

Cabinets

Steel 23w, 24w

Cable

Convenience Systems 5p

Generator 5p

Inter-Comm 5p

Lead Covered 3p

Switchboard 5p, 6p

Toll 5p

Cable Benders 9p

Cars, Safety, Linemen's 10p

Clamps 14p

Compound 16p

Conduit 6p

Duct Shields 10p

Feeders and Straighteners, Aerial 8p

Grips 15p

Hangers 14p

Insulating Sleeves 16p

Lashing wire 12p

Locator 38t

Pasters 20p

Plastic 4p

Rack Hook Insulators, Underground 10p

Rack Hooks, Underground 10p

Racks, Underground 10p

Reel Jacks 8p

Ring Saddles 13p

Rings 13p

Rollers 11p

Saws 5t

Sheath Splitting Knives 20p

Slitter 11p

Spinners 11p, 12p

Splicers' Tents, Aerial 13p

Straps 14p

Supports 14p

Suspension Clamps 8m

GENERAL INDEX—SUPPLIES DIVISION (Cont.)

Terminals 3q, 4q, 5q, 6q, 12q
 Testers 38t
 U Guards 15m
Cable and Wire Tensioning Jacks 18t
Cablemen's Thermometers 16p
Calculagraph Pedestals 7w
 Ribbons 7w
 Transformers 7w
Calculagraphs 7w
Candles
 Plumbers' 16p
 Wickless 16p
Cant Hook Handles 9t
 Hooks 9t
Canvas Buckets 25t
Car Bits 28t, 29t
Carbolineum 6n
Carbon, Arrester and Protector 8q, 11q
Card Holder Assemblies, Pay Station 9u
Carriage Bolts 12m
Carrier Systems Section v
Carrying Hook Handles 9t
 Hooks 9t
Cars, Safety Cable 10p
Cases, Tool, Hip Pocket 22t, 23t
Cash Books 8w
 Compartment Door Locks, Pay Station 10u
Catch Cloths 18p
Cells, Dry 21w, 22w
Central Office Protectors 15q, 16q
Chain Hoists 17t, 18t, 19t
 Tapes 33t
Chairs
 Posture, Operators' 3u, 4u
Chicago Grips 16t
 Linemen's Tools 16t
Chisels
 Cold 33t
 Framing, Socket 26t
Chucks and Points, Drill 31t
Clamps
 Cable 14p, 15p
 Conduit 14p, 15p
 Cross-Over 6m
 Drop Wire 12w
 Grade 8m
 Ground, Station 6m

Ground Rod 5m, 6m
 Guy 7m
 Kling 6m
 Span 7m
 Splicing 15t
 Suspension, Cable 8m
 Wire 15t
 Wire and Sleeve 15t
Clay Conduit 7p
Cleaner, Thread 24t
Cleaners, Vacuum 5w
Clevises, Insulated 6s, 7s
Climber Pads 20t
 Straps 20t
Climbers 21t, 22t
Clip Tools, Guy Wire 12w
 Washers, Bracket 6n
Clippers, Bolt 27t
Clips
 Alligator 14w
 Crosby 7m
 Drop Wire 12w, 13w
 Guy 12w
 Test 14w, 15w
 Wire, Guy 12w
 Wire Rope 7m
Clothing, Rubber 11w
Cloths
 Catch 18p
 Wiping 18p
Coil, Repeating 14q
Coil Protectors and Housing 14q
Coils Heat 13q
Coin Receptacles, Pay Station 10u
Cold Chisels 33t
Collapsible Non-Metallic Buckets 25t
Columbia Dry Cells 21w
Common Nails 19w
Commutator Burnishing Paste 17p
Compound
 Beeswax 16p
 Cable 16p
Compression Couplings 3q
Conduit
 Cable 6p, 7p
 Clay 7p
 Fibre 6p

GENERAL INDEX—SUPPLIES DIVISION (Cont.)

Wood, Creosoted	7p
Conduit Clamps	14p
Joint Tape	6p
Straps	14p
Cone Anchors	3m
Connecting Blocks	9q
Connectors	
Bridging	13w
Service	13w
Strand	18w
Testerm, Drop Wire	9q
Con-Nect-Tites, Telephone	13w
Construction Wire	7r
Convenience Systems Cable	5p
Coppers, Soldering	20p
Soldering Handles	20p
Copperweld Line Wire	8r
Strand	8r
Cord, Retractable	11w
Corner Brackets, Galvanized	15m
Brackets, Pay Station	10u
Brackets, Presteel	19m
Brackets, Telephone	15m
Pins	6n
Cotton Sleeves	16p
Counters, Telephone	5w
Couplings, Compression	3q
Cover Hooks, Manhole	9p
Covers and Frames, Manhole	9p
Crapo Strand, Galvanized Steel	9r
Wire	7r, 9r
Creosoted Wood Conduit	7p
Crocodile Clips	14w
Crosby Clips	7m
Cross Arm Arresters	8q
Bits	28t
Bolts	12m
Braces	17m
Cross Arms	5n
Crossover Bracket Hook Bolts	16m
Brackets, Highway	16m
Clamps	6m
Crow and Digging Bars	6t
Current Flow Test Sets	41t
Curved Lift Plates	10m
Washers	11m
Cutters, Bolt	27t

D

Dating Nails, Pole	11m
Dead-Ends	11s
Deadmen	10t
Desiccant, Protek-Sorb.	18p
Detecto-Meters	37t
Diagonal Braces	16m
Digger Handles	7t
Diggers, Post Hole	7t
Digging Bars	6t
Spuds	6t
Discharge Blocks, Sawtooth	8q
Dischargers, Tru-Gap	11q
Distributing Brackets	15m
Frames	14q, 15q
Knob Racks	7s
Wire, Outside	3r, 4r, 5r, 6r
Double Arming Bolts	13m
Arming Eyebolts	13m
Tube Splicing Sleeves	8s
Dowel Pins	6p
Draw Knives	28t
Dressers, Hardwood	18p
Drift Plugs	20p
Drill Holders	27t
Points and Chucks	31t
Drills	
Automatic (Push)	30t
Bell Hangers'	29t
Brace, Wood Boring	28t
Breast	31t
Electric	34t, 35t
4-Point	28t
Hand	31t
Masonry	28t
Radio	31t
Star	28t
Twist	27t
Drive Anchors, Hammer	17w
Hooks	15m
Rings	17w
Drivers, Screw	29t, 30t, 31t, 32t
Staple	6w
Drop Wire	3r, 4r
Drop Wire Clamps	12w
Clips	13w

GENERAL INDEX—SUPPLIES DIVISION (Cont.)

Connectors	9q
Grips	12w
Hooks	15m
Drum Jacks	8p
Dry Batteries	21w, 22w
Drying Material (Desiccant)	18p
Duct Shields, Cable	10p
Dynamometers	35t

E

Earth Augers	7t
Electric Digging Spuds	6t
Drills	34t, 35t
Hammers and Drills	35t
Light Arms	5n
Tamping Bars	6t
Electricians' Knives	4t
Scissors	15t
Escutcheon Pins	11m
Eveready Batteries	21w, 22w
Expanding Anchors	3m, 4m
Expanding and Tamping Bars	7t
Expansion Shields	17w
Extension Fixtures, Side, Pole	16m
Ladders	12t
Extensions, Bit	32t
Extinguishers, Fire	6w
Eye Nuts	14m
Eyebolts, Standard	13m
Double Arming	13m
Oval Eye	13m
Eyes	
Bolt	13m, 14m
Screw, Insulated . . . . .	.6s

F

Factory Howlers	3w
Fault Location Bridge Test Sets	40t
Feeders and Straighteners, Aerial Cable	8p
Fibre Conduit	6p
Test Boards (Linen)	6p
Figures, Aluminum, Embossed	11m
Files, Mill	26t
Fire Alarm Howlers	4w
Extinguishers	6w
Extinguishing Liquid	6w
Pots	21p, 22p

Fixtures, Extension, Side Pole	16m
Flare, Big Beam	8w
Flat Cross Arm Brace	17m
Lift Plates	9m
Flexible Pulling Grips	15p
Folding Rules	33t
Take-Up Reels	11t
Windshields	22p
Fork Bolts, Insulated . . . . .	.7s
Forks	
Insulated . . . . .	.7s
Raising	10t
Forms, Blank	8w
Frames, Distributing	14q, 15q
Frames, Hack Saw	5t
Frames and Covers, Manhole	9p
Framing Chisels, Socket	26t
Friction Tape	16w, 17w
Furnaces, Soldering	22p
Fuse Wire, Blow-Rite	13q
Fuses	
Blow-Rite	13q
Fibre	13q, 14q
Heat Coil	13q
Mica	13q
Wood	14q

G

Gaff Protectors	22t
Sharpening Gage	24t
Gas Tanks, Prest-O-Lite	36t
Generator Cable	5p
Glass Insulators	3s, 4s
Glove Bags, Linemen's	11w
Gloves, Rubber Linemen's	11w
Grade Clamps	8m
Gray Label Dry Cells	21w
Gray Pay Stations	6u, 7u, 8u
Grinder, Bench	34t
Grip-Flex Insulator Ties	10r
Grips	
Buffalo	16t
Cable	15p, 16t
Chicago	16t
Drop Wire	12w
Haven's	16t
Wire	15p, 16t

GENERAL INDEX—SUPPLIES DIVISION (Cont.)

Ground Clamps, Station	6m
Rod Clamps	5m, 6m
Rods	6m
Tents	13p
Wire	4r
Guard Rails, Manhole	9p
Guards	
Guy	9m
Hub	10m
Pike Pole	10t
U-Cable	15m
Gun, Solder	10w
Guy Clamps	7m
Clips	12w
Guards	9m
Hook Strain Plates	9m
Hooks	10m
Plates	8m, 9m
Shims	10m
Strand	8r, 9r
Thimbles	15m
Wire Clip Tools	12w
Wire Clips	12w
Wire Protectors	9m

H

Habidure Wire	5r
Habirshaw Wire	3r, 4r, 5r, 6r
Hack Saw Blades	5t
Frames	5t
Hammer Drills	35t
Drive Anchors	17w
Hammers	
Ball Pein	26t
Electric	35t
Nail	26t
Hand Drills	30t, 31t
Lines	17t
Saws	5t
Tally Counters	5w
Handles	
Auger, Telescope	7t
Cant Hook	9t
Carrying Hook	9t
Digger	7t
Lug Hook	9t
Peavey	9t
Pike Pole	10t

Raising Fork	10t
Shovel	7t, 8t
Slick	6t
Soldering Copper	20p
Spoon	8t
Tamping Bar	6t
Tree Trimmer	3t, 4t
Hangers	
Cable	14p
Messenger	11m
Hardwood Dressers	18p
Hatchets, Broad	27t
Haven's Grips	16t
Heat Coil Fuses	12q, 13q
Highway Crossover Brackets	16m
Hoists	
Chain	17t, 18t, 19t
Lever, Ratchet	17t
Holders	
Drill	27t
Soldering Iron	9w, 10w
Wire	7s, 8s
Hole Diggers, Post	7t
Holgun Drill	34t
Holsters, Tool	12s
Hook Bolts, Crossover Bracket	16m
Hook Type Strain Plates	9m
Hooks	
Cable Rack, Underground	10p
Cant	9t
Carrying	9t
Drive	15m
Drop Wire	15m
Guy	10m
House and Pole	15m
Lug	9t
Manhole Cover	9p
Shave	20p
Storm Guy	10m
House Brackets	15m
Hooks	15m
Howes Wire Tools	16t
Howlers	
Factory	3w
Fire Alarm	4w
Mine Type	4w
Weatherproof	3w, 4w

GENERAL INDEX—SUPPLIES DIVISION (Cont.)

Hub Guards	10m
Hubeye Bolts	13m, 14m
Nuts	14m
Hubeyes	13m

I

Identification Tags	17p
Indoor Arresters	10q
Inside Wiring Nails	15w
Insulated Clevises	6s, 7s
Fork Bolts . . . . .	.7s
Forks . . . . .	.7s
Nails	15w
Screw Eyes . . . . .	.6s
Staples	15w
Wire	3r, 4r, 5r, 6r
Insulating Sleeves, Lead	16p
Sleeves, Nicopress . . . . .	.9s, 10s
Tape	16w, 17w
Insulator Ties	10r
Insulators	
Cable	16p
Glass	3s, 4s
Hook, Cable Rack, Underground	10p
Non-Breakable . . . . .	.5s
Porcelain . . . . .	.5s
Split . . . . .	.5s
Inter-Comm Cable	5p
Interior Junction Box	12q
Wire	3r, 4r, 6r
Iron Wood Screws	20w
Irons	
Pulling-In	10p
Soldering	9w, 10w

J

Jacks	
Cable Reel	8p
Drum	8p
Pole	18t, 19t
Pushing and Pulling, Pipe	19t
Ratchet	18t, 19t
Reel	8p
Screw	8p
Tensioning, Cable and Wire	18t
Jenny Supports	10t
Joint Rules	33t

Tape, Conduit	6p
Journals	
Cash	8w
Toll	8w
Junction Box	12q

K

Kits, Tool	25t
Kling Klamps	6m
Knife Switches	16q
Knives	
Draw	28t
Electrician's . . . . .	.4t
Splitting, Cable Sheath	20p
Knob Racks, Distributing . . . . .	.7s
Screws . . . . .	.6s
Knobs	
Nail, Split . . . . .	.6s
Porcelain	5s, 7s
Self-Tying . . . . .	.6s
Korite Cable Compound	17p

L

Lacing Twine	18p
Ladder Shoes	12t
Ladders	
Extension	12t
Manhole	9p
Sectional	12t
Ladles, Pouring	17p, 18p
Lag Bolts	12m
Screws	12m
Screw Expansion Shields	17w
Lamps, Big Beam	8w
Lashing Wire	12p
Lead Covered Cable	3p
Sleeves	16p
and Rubber Covered Wire . . . . .	.7r
Leather Protectors, Lineman's Glove	11w
Ledgers	
General	8w
Rental and Tool, Subscribers'	8w
Toll	8w
Letters, Aluminum, Embossed	11m
Lever Hoists, Ratchet	17t
Lift Plates	9m, 10m
Lightning Arresters	8q, 10q

GENERAL INDEX—SUPPLIES DIVISION (Cont.)

Line Wire	7r, 8r
Linen Tapes	33t
Linemen's Belts	21t, 22t, 23t
Outfits, Prest-O-Lite	36t
Safety Cable Cars	10p
Safety Straps	23t
Tools, Chicago	16t
Wrenches	15t
Linen Test Boards	6p
Lines, Hand	17t
Links, Reinforcing	10m
Liquid	
Fire Extinguishing	6w
Soldering	19p
Load Binders	18t
Plates	9m
Loud Ringing Bells	6w
Luffing Grips	15p
Lug Hook Handles	9t
Hooks	9t

M

Machine Bolts	12m
Main Distributing Frames	15q
Manhole Cover Hooks	9p
Frames and Covers	9p
Guard Rails	9p
Ladders	9p
Warning Signs	10p
Marline Cable Hangers	14p
Twine	12p
Masonry Drill	28t
Measuring Tapes	33t
Melting Pots	17p, 18p
Message Timers	7w
Messenger Hangers	11m
Strand	9r
Metal Pouring Ladle	17p, 18p
Metal Rim Tags	17p
Meters	
Detecto	37t, 38t, 39t
Pocket	37t
Service, Telephone	41t
Mica Fuses	13q
Michigan Tapes, Chain	33t
Mill Files	26t
Milonite Nails	15w

Mine Type Howlers	4w
Moulding Strain Plates	8m
Mounting Straps, U-Cable	15m
Sub-Station Protector	7q
Mule Supports	10t
Muslin Tape	18p

N

Nail Hammers	26t
Knobs, Split . . . . .	.6s
Nails	
Common	19w
Dating, Pole	11m
Insulated	15w
Wiring	15w
Neoprene Wire	3r
Nicopress Dead-Ends	11s
Sleeves . . . . .	.9s, 10s
Tools	12s
Tool Holsters	12s
Nicotap Sleeves	10s
Non-Metallic Buckets, Collapsible	25t
Nuts	
Eye	14m
Hub Eye	14m

O

Off-Set Dead-Ends	11s
Ohmmeters	38t, 39t
Operator's Chairs, Posture	3u, 4u
Outdoor Arresters	8q
Outfits, Linemen's, Prest-O-Lite	36t
Outside Distributing Wire	3r, 4r, 5r

P

Pads, Climber	20t
Pails	
Canvas	25t
Non-Metallic, Collapsible	25t
Paraffin	16p
Paragon Battery Boxes	22w
Paste	
Burnishing	17p
Soldering	19p
Pasters, Cable	20p
Pay-Out Reels	11t
Pay Station Accessories	9u, 10u

GENERAL INDEX—SUPPLIES DIVISION (Cont.)

Signs	6u
Pay Stations	6u, 7u, 8u
Peavey Handles	9t
Peavies	8t
Pedestals, Calculagraph	7w
Pee-Wee Clips	15w
Perfection Nails	15w
Phillips Screwdrivers	30t, 32t
Screwdriver Bits	33t
Pike Pole Guards	10t
Pole Handles	9t, 10t
Poles	9t, 10t
Pins	
Corner	6n
Dowel	6p
Escutcheon	11m
Transposition	6n
Turn	20p
Western Union	20m
Wood	5n, 6n
Wood Top	20m
Pipe Pushing and Pulling Jacks	18t
Plastic Cable	4p
Plates	
Guy	10m
Lift	9m, 10m
Load	9m
Strain	8m, 9m
Plier Pockets	22t
Pliers	13t, 14t, 15t
Plug Burnishing Paste	17p
Plugs, Drift	20p
Plumbers' Candles	16p
Pocket Meters	37t
Pockets, Plier	22t, 23t, 24t
Points and Chucks, Drill	31t
Point Type Transposition Brackets	18m
Pole Balconies	20m
Bits	28t
Brackets	18m, 19m
Dating Nails	11m
Hooks	15m
Jacks	18t, 19t
Letters	11m
Pushers	18t
Seats	20m

Sights (Bisectors)	35t
Steps	16m, 6n
Poles	
Cedar	3n, 4n
Pike	9t, 10t
Pine	3n, 4n
Pony Arms	5n
Porcelain Insulators	5s
Knobs	5s, 7s
Tubes	5s
Wire Holders	7s, 8s
Post Hole Digger Handles	7t
Diggers	7t
Posture Chairs, Operator's	3u, 4u
Pots	
Fire	21p, 22p
Melting	17p, 18p
Solder	18p
Pouring Ladles	17p, 18p
Preserver, Wood	6n
Prest-O-Lite Outfits	36t
Linemen's Outfits	36t
Tanks, Gas	36t
Protector Units, Transmount	6q
Protectors	
Central Office	15q, 16q
Guy Wire (Shields)	9m
Leather, Linemen's Glove	11w
Station	7q, 9q, 10q
Sub-Station	7q
Protek-Sorb Desiccant	18p
Pruners	3t, 4t, 5t
Pruning Saws	3t, 5t
Pullers	
Pole	18t, 19t
Slack	11p, 17t, 18t
Pulley Blocks	19t
Pulling and Pushing Jacks, Pipe	18t, 19t
Pulling Grips, Wire	15p
Pulling-In Irons	10p
Pushers, Pole	18t, 19t
Pushing and Pulling Jacks, Pipe	18t, 19t
Pyramid Cone Anchors	3m
Pyrene Extinguishers, Fire	6w
Liquid, Fire Extinguishing	6w

R

Rack Insulators, Cable	10p
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GENERAL INDEX—SUPPLIES DIVISION (Cont.)

Racks

Cable, Underground	10p
Knob, Distributing7s
Telephone, Knobs . . . . .	.7s

Radio Drills 31t

Rails, Guard, Manhole 9p

Raising Fork Handles 10t

Forks	10t
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Rare Gas Relays (Tubes) 9w

Ratchet Bit Braces 32t

Hand Drills	31t
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Jacks	19t
-----------------	-----

Lever Hoists	17t
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Screwdrivers	30t, 31t, 32t
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Tap Wrenches	30t
------------------------	-----

Receptacles, Coin, Pay Station 10u

Record Blanks 8w

Reducing Sleeves, Nicopress 10s

Reel Jacks 8p

Wire	12t
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Reels

Barrow	11t
------------------	-----

Pay-Out	11t
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Pay-Out and Take-Up	11t
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Reinforcing

Links	10m
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Reinforcing and Safety Straps 10m

Relays

Rare Gas	9w
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Telecode	4w, 5w
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Rental and Toll Ledgers 8w

Repair Sleeves 10s

Repeaters, Voice Section v

Repeating Coils and Housing 14q

Retractable Cords 11w

Ribbons, Calculagraph 7w

Ringling Tool 11p

Rings

Bridle	17w
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Cable	13p
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Drive	17w
-----------------	-----

Rods

Anchor, Threaded	4m
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Ground	6m
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Ground Clamps	5m, 6m
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Roll-A-Reel 6p

Rollers, Cable 11p

Rope Clips, Wire 7m

Thimbles, Wire	15m
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Rosin Core Solder 19p

Round Washers 11m

Rubber Clothing 11w

Glove Bags, Linemen's	11w
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Gloves, Linemen's	11w
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Insulated Wire	5r, 6r
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Tape	16w, 17w
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Rules

Boxwood	33t
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Folding	33t
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Spring Joint	33t
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S

Saddles

Cable Ring	13p
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Safety Belts 21t, 22t, 23t

Cable Cars, Linemen's	10p
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Shields	22p
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Straps, Linemen's	23t, 24t
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Straps, Reinforcing	10m
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Salts, Soldering 19p

Saw Blades, Hack 5t

Frames, Hack	5t
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Saws

Cable	5t
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Pruning	3t, 5t
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Tree Trimmer	3t, 5t
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Sawtooth Discharge Blocks 8q

Scissors, Electricians' 15t

Scotch Tape 16w

Screw Anchors 18w

Eyes, Insulated6s
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Jacks	8p
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Screwdriver Bits 32t, 33t

Screwdrivers

Plain	29t
-----------------	-----

Phillips	30t
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Ratchet	30t
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Ratchet, Offset	31t, 32t
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Screws

Angle6s
-----------------	-----

Knob6s
----------------	-----

Lag	12m
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Wood	20w
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GENERAL INDEX—SUPPLIES DIVISION (Cont.)

Seats

Chair	4u
Pole	20m

Sectional Ladders	12t
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Self-Tying Knobs6s
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Service Connectors	13w
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Meters	41t
------------------	-----

Wire Holders8s
------------------------	-----

Servisleeves	13w
------------------------	-----

Sharpening Gage, Gaff	24t
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Shave Hooks	20p
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Shelf Brackets, Pay Station	10u
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Shields

Cable Duct	10p
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Expansion	17w
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Guy	9m
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Wind, Folding	22p
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Shims, Guy	10m
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Ship Auger Car Bits	29t
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Shoes, Ladder	12t
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Shovel Handles	7t, 8t
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Shovels	7t, 8t
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Side Extension Fixtures, Pole	16m
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Signal Pins	20m
-----------------------	-----

Transmitter, Pay Station	9u
------------------------------------	----

Signals

Factory	3w, 4w
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Fire Alarm	4w
----------------------	----

Signs

Pay Station	6u
-----------------------	----

Warning, Manhole	10p
----------------------------	-----

Slack Pullers	11p, 17t, 18t
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Sleeve and Wire Clamps	15t
----------------------------------	-----

Sleeves

Cotton	16p
------------------	-----

Insulating	16p
----------------------	-----

Lead	16p
----------------	-----

Nicopress9s, 10s
---------------------	----------

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--------------------	-----

Repair	10s
------------------	-----

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--------------------	-----

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----------------------------	----------

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-------------------------	-----

Slitter, Cable	11p
--------------------------	-----

Socket Wrench	4q, 27t
-------------------------	---------

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Acid Core	19p
---------------------	-----

Bar	19p
---------------	-----

Rosin Core	19p
----------------------	-----

Wiping	19p
------------------	-----

Wire	19p
----------------	-----

Solder Guns	10w
-----------------------	-----

Pots	18p
----------------	-----

Pouring Ladle	18p
-------------------------	-----

Soldering Copper Handles	20p
------------------------------------	-----

Coppers	20p, 9w, 10w
-------------------	--------------

Furnaces	20p, 21p, 22p
--------------------	---------------

Iron Stands	10w
-----------------------	-----

Iron Tips	9w, 10w
---------------------	---------

Irons	9w, 10w
-----------------	---------

Liquid	19p
------------------	-----

Paste	19p
-----------------	-----

Salts	19p
-----------------	-----

Span Clamps	7m
-----------------------	----

Spikes	19w
------------------	-----

Spinners, Cable	11p, 12p
---------------------------	----------

Spinning Wire	12p
-------------------------	-----

Spintite Socket Wrenches	27t
------------------------------------	-----

Splicing Clamps	15t
---------------------------	-----

Sleeves	8s, 9s
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Splints, Tie	10r
------------------------	-----

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-----------------------	-----

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---------------------------------	-----

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----------------------	-----

Splitting Knives, Cable Sheath	20p
--	-----

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-------------------------	-----

Spoons8t
------------------	-----

Spring Joint Rules	33t
------------------------------	-----

Springin Toggle Bolts	19w
---------------------------------	-----

Spuds, Digging6t
--------------------------	-----

Square Washers	11m
--------------------------	-----

Stands, Soldering Iron	10w
----------------------------------	-----

Staple Drivers	6w
--------------------------	----

Staples, Insulated	15w
------------------------------	-----

Star Drills	28t
-----------------------	-----

Station Ground Clamps	6m
---------------------------------	----

Protectors	7q, 9q, 10q
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Stations, Pay	6u, 7u, 8u
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Stazrite Guy Guards	9m
-------------------------------	----

Stearine Candles	16p
----------------------------	-----

Steel Cabinets	23w, 24w
--------------------------	----------

Steel Cable Lashing Wire	12p
------------------------------------	-----

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------------------	----------

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GENERAL INDEX—SUPPLIES DIVISION (Cont.)

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 Grips 15p
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 Reel 12t
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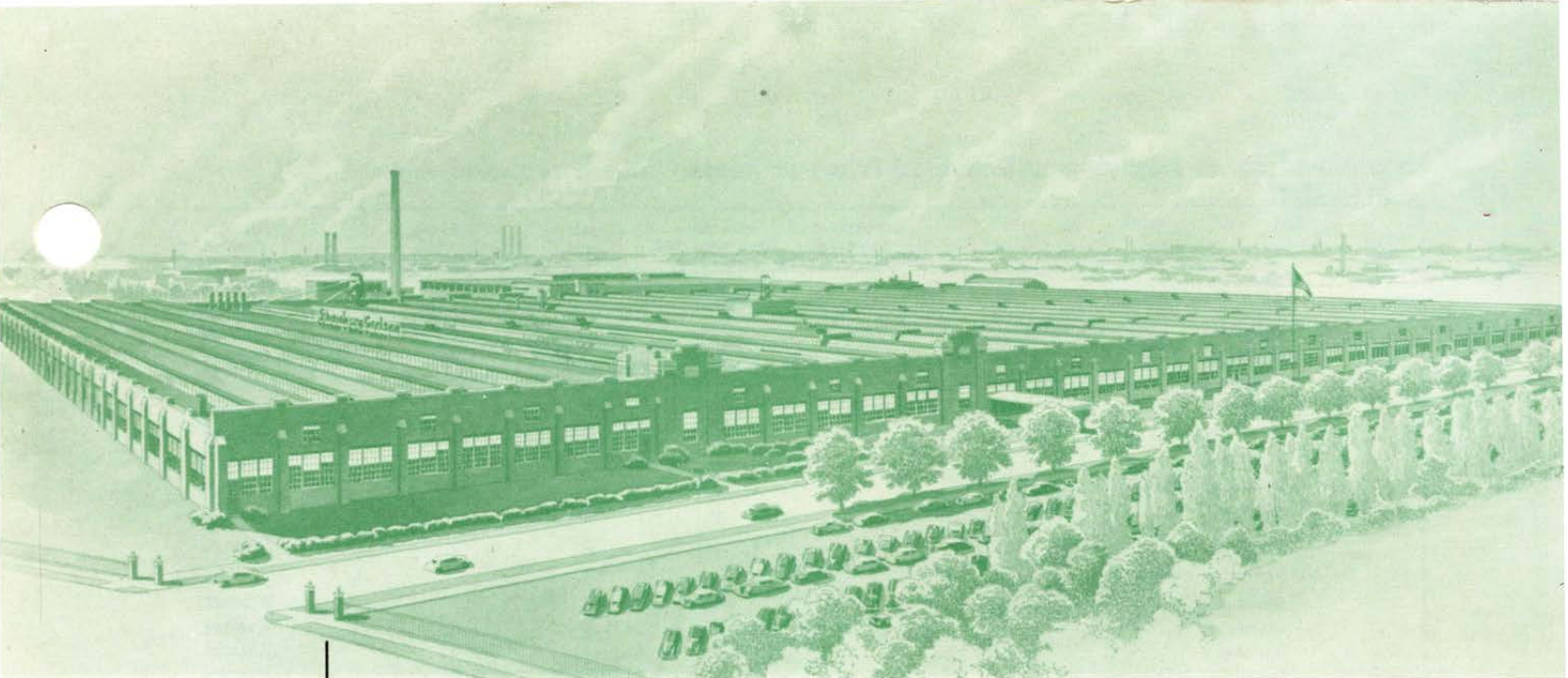
Wire and Sleeve Clamps 15t
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Wood Boring Brace Drills 28t
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Y

Yankee Tools 29t, 30t, 31t, 32t



STROMBERG-CARLSON

POLE LINE MATERIALS

PROTECTION EQUIPMENT

CABLE, WIRE, INSULATORS

TOOLS, CHAIRS, BOOTHS

CARRIER SYSTEMS AND PARTS

STROMBERG-CARLSON COMPANY

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

Location of Zones Applying to Delivered Prices of Items • Listed on the Following Pages

	Standard Porcelain Telephone Knobs	Pole Line Hardware and Specialties	Construc- tion Tools	Rubber Covered Telephone Wires	Anchor, Augers and Parts
Alabama	2	2	3	5	Eastern
*Alaska				7	Western
Arizona	4		4	7	Western
Arkansas	2	2	2	6	Eastern
California			4	7	Western
Colorado	***4	3	3	7	Western
Connecticut	1	1	2	1	Eastern
Delaware	1	1	2	2	Eastern
District of Columbia	1	1		2	Eastern
Florida	2	2	4	6	Eastern
Georgia	2	2	3	5	Eastern
*Hawaiian Islands				7	
Idaho	4	*4	4	7	Western
Illinois	1	1	1	4	Eastern
Indiana	1	1	1	3	Eastern
Iowa	1	1	1	5	Eastern
Kansas	††3	†3	2	6	Eastern
Kentucky	1	1	1	4	Eastern
Louisiana	2	2	3	6	Eastern
Maine	1	1	2	2	Eastern
Maryland	1	1	2	2	Eastern
Massachusetts	1	1	2	1	Eastern
Michigan	1	1	1	3	Eastern
Minnesota	1	1	1	5	Eastern
Mississippi	2	2	3	6	Eastern
Missouri	1	1	1	5	Eastern
Montana	4	‡3	4	7	Western
Nebraska	‡‡3	***3	2	6	Eastern
Nevada	4	§4	4	7	Western
New Hampshire	1	1	2	2	Eastern
New Jersey	1	1	2	1	Eastern
New Mexico	4	3	4	7	Western
New York	1	1	2	1	Eastern
North Carolina	2	2	3	4	Eastern
North Dakota	§§3	3	2	6	Eastern
Ohio	1	1	1	3	Eastern
Oklahoma	3	3	3	6	Eastern
Oregon			4	7	Western
*Panama Canal Zone				7	
Pennsylvania	1	1	2	1	Eastern
*Puerto Rico				7	
Rhode Island	1	1	2	1	Eastern
South Carolina	2	2	3	5	Eastern
South Dakota	****3	3	2	6	Eastern
Tennessee	2	2	2	5	Eastern
Texas	††3	†3	3	6	Eastern
Utah	4	4	4	7	Western
Vermont	1	1	2	2	Eastern
Virginia	1	1	2	2	Eastern
Washington			4	7	Western
West Virginia	1	1	1	3	Eastern
Wisconsin	1	1	1	4	Eastern
Wyoming		3	3	7	Western

*Except Counties of Boundary, Bon-
ner, Kootenai, Benewah, Shoshone,
Latah, Clearwater, Nez Perce,
Lewis and Idaho.

†Kansas City is in zone 1.

††Arkansas is in zone 2.

*For U. S. Possessions delivery, quote F.O.B. Steamer Dock at point of embarkation, freight allowed to destination.

‡Except Northern half of Lake County
and the Counties of Flathead and
Lincoln.

§Counties of Elko, Eureka, White Pine
and Lincoln only.

**Omaha is in zone 1.

***Denver and Pueblo are in zone 3.

†††Kansas City is in zone 1.

‡‡Lincoln and Omaha are in zone 1.

†††El Paso is in zone 4.

§§ Fargo is in zone 1.

****Sioux Falls is in zone 1.

STROMBERG-CARLSON

Pole Line Hardware



All the necessary items for good pole line construction and maintenance: anchors, clamps, brackets, plates, bolts, washers.

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SECTION M

POLE LINE HARDWARE

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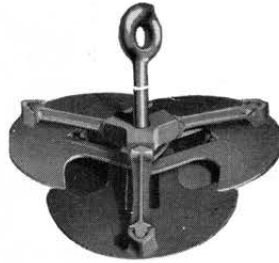
ANCHORS AND RODS

EVERSTICK EXPANDING ANCHORS

Less Rods

Ease of installation, ease of expansion, maximum power and long life are the result of years of experience and improvements in these anchors.

The exclusive Everstick guides hold the plates in perfect alignment during expansion of the anchor.



3-Way—Expanded

Anchors are made of certified malleable iron.

2-Way Anchors

Cat. No.	Stock No.	Anchor and Size Hole In.	Rod In.	Area Expanded Sq. In.	Anchor Wt. Lb.	Holding Power Pounds—	
						Sand	Hardpan
62	(890002)	6	5/8	55	7	3000	7000
82	(890003)	8	3/4	100	11	6000	16000

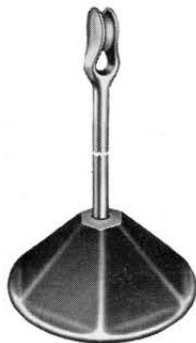
3-Way Anchors

633	(890004)	6	5/8	65	7 1/2	5000	11000
834	(890005)	8	5/8	90	11	6000	14000
836	(890006)	8	3/4	110	14	8000	18000
8310	(890007)	8	3/4	125	15	12000	24000
8312	(890008)	8	1	125	16	12000	24000
10316	(890009)	10	1	175	29	18000	45000

4-Way Anchors

64	(890010)	6	5/8	70	10	5000	12000
84-3/4	(890011)	8	3/4	125	16 1/2	12000	24000
84-1	(890012)	8	1	132	16 1/2	12000	24000
104	(890013)	10	1	210	30 1/2	20000	50000
124	(890014)	12	1 1/4	310	55	30000	70000

CHANCE PYRAMID CONE ANCHORS



Their flat opposing faces increase the action of the wedging portion by elimination of rotation. The action is just the same as a flat wedge and equally effective.

The nut retaining feature not only securely retains the nut in event it is desired to reclaim the rod any time after installation, but locks the anchor on the rod and aids installation by making it possible to force the anchor down into the hole.

Cat. No.	Stock No.	Size	Rod Diam.	Rod Lgth.	Approx. Wt./C
6	(890015)	6"	1/2", 5/8"	6'	326
8	(890016)	8"	5/8", 3/4"	7'	654
10	(890017)	10"	5/8", 3/4"	7'	955
12	(890018)	12"	5/8", 3/4"	8'	1742
16	(890019)	16"	3/4", 1"	9'	3158
19	(890020)	19"	1", 1 1/4"	10'	5530
23	(890021)	23"	1", 1 1/4"	10'	7408

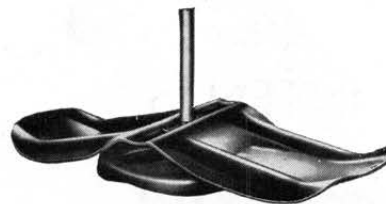
KEARNEY EXPANDING ANCHORS

Type P-L

These all-steel expanding type earth anchors are exceptionally rugged and possess tremendous holding power. There are no arms, joints or pinned hinges to jam, shear or break. Kearney P-L Anchors require no assembly. They are stored and used just as they are received, a few blows of the spreading tool and the installation is complete.

Blades are deeply ribbed for extra strength, with sharp edges to cut a path in the solid, undisturbed earth.

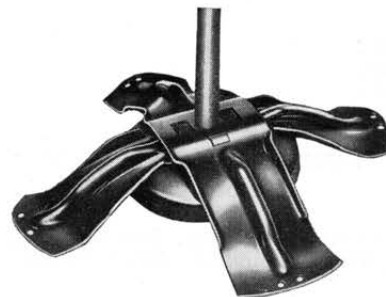
The 4-Way Anchor is especially recommended to furnish proper holding strength in sand or light soils.



2-Way Anchor—Expanded

2-Way Anchors

Cat. No.	Stock No.	Base Plate Dia. In.	Rod Size Inches	Expanded Area Sq. Inches	Approx. Wt. Lbs./each
KPL-62-2-5	(895168)	6	5/8	58	4.2
KPL-62-4	(895169)	6	5/8	76	6
KPL-82-6	(895170)	8	3/4	126	8.10
KPL-82-8	(895171)	8	3/4	130	8.25
KPL-82-10	(895172)	8	1	135	10.25
KPL-82-12	(895173)	8	1	138	10.50



4-Way Anchor—Expanded

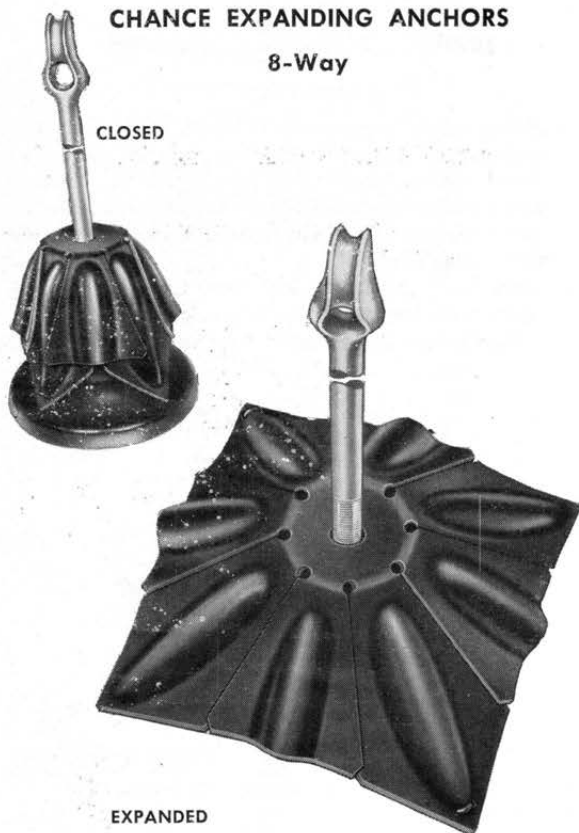
4-Way Anchors

Cat. No.	Stock No.	Base Plate Dia. In.	Rod Size Inches	Expanded Area Sq. In.	Approx. Wt. Lbs./each
KPL-84-100-6	(895174)	8	3/4	100	8
KPL-84-115-8	(895175)	8	3/4	115	8.25
KPL-84-135-10	(895176)	8	1	135	8.75
KPL-104-200-20	(895177)	10	1	200	19

Revised 6-15-51

CHANCE EXPANDING ANCHORS

8-Way



EXPANDED

This new anchor was designed to eliminate the non-holding area between blades. The one-piece top plate expands to form a solid square. Each blade carries only one-eighth of the total load, whereas each blade of the 2-way anchor must support four times this amount. Reinforcing ribs provide additional strength.

Cat. No.	Stock No.	Size Hole	Rod Dia.	Rod Length	Area Square"	Approx. Wt./C
88100	(894942)	8"	5/8"-3/4"	7'	100	825
88115	(894943)	8"	5/8"-3/4"	7'	115	950
88135	(894944)	8"	3/4"	7'	135	1150

HUBBARD ANCHOR RODS

Hot Galvanized

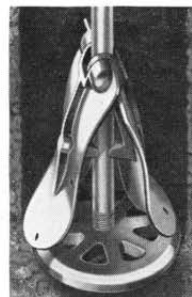


Standard oval eye anchor rod used to form the dead-man type of anchorage. The eye is drop forged and is stronger than the rod itself. Diameters of 3/4 inch or under have rolled threads, larger diameters have cut threads. All rods threaded 3 1/2 inches.

Cat. No.	Stock No.	Diam. Rod	Overall Length	Eye Width	Eye Length	Shipping Wt. Lb. per 100
7355	(891883)	1/2"	5	1 1/4"	1 1/2"	350
7356	(891884)	1/2"	6	1 1/4"	1 1/2"	405
7357	(891885)	1/2"	7	1 1/4"	1 1/2"	510
7415	(891886)	5/8"	5	1 1/2"	2	550
*7416	(891887)	5/8"	6	1 1/2"	2	650
†7417	(891888)	5/8"	7	1 1/2"	2	750
*7418	(891889)	5/8"	8	1 1/2"	2	850
7426	(891890)	3/4"	6	1 1/2"	2	910
7427	(891891)	3/4"	7	1 1/2"	2	1060

*EEI Standard †ARA Standard

KEARNEY MALLEABLE IRON EXPANSION ANCHORS



Special blade contour provides additional holding power by exerting an outward as well as an upward pressure against the earth. Blades expand easily without disturbing solid earth. A recessed socket in reinforced anchor disc permits easy salvaging of rod.

Cat. No.	Stock No.	Type	Size Hole	Rod* Dia."	Area Square"	Approx. Wt/c
37533	(890074)	2-Way	3 3/4"	1/2-5/8	34	350
6076	(890076)	2-Way	6"	1/2-5/8	75	800
8090	(890079)	3-Way	8"	1/2-3/4	90	1000
8110	(890080)	3-Way	8"	1/2-3/4	110	1075
84090	(890082)	4-Way	8"	1/2-3/4	90	1175
84110	(890083)	4-Way	8"	1/2-3/4	110	1250
84125	(890084)	4-Way	8"	5/8-1	125	1450

*Special Disc can be furnished for larger size rods.

HUBBARD STEELWING ANCHORS

Hot Galvanized



Large bearing surface and sharp edged entering blades enable anchor to be easily installed and provide efficient and substantial anchorage against undisturbed earth; will not creep. No parts can come loose during installation or salvage.

Three Hubeye

Cat. No.	Stock No.	Wing Dia. In.	Rod Dia. In.	Overall Ft.	Approx. Wt/c
7524	(890053)	4	3/4	4 1/2	800
*7526	(890054)	6	3/4	5 1/2	1040
7527	(890055)	7	1	5 1/2	1852
7528	(890056)	8	1	5 1/2	1900

*R.E.A. Std. "Z"

STROMBERG-CARLSON

HUBBARD HUBEYE ANCHOR RODS Hot Galvanized



Designed to provide a smooth curve with an ample radius for protection to the strand at the bend, thereby eliminating the use of a guy thimble. The strength of the Hubeye is greater than that of the rod.



The Tu-Hubeye, for two guys, is forged with the same generous radius as the Hubeye.

Hubeye Only							
1/2" Diameter Rod				5/8" Diameter Rod			
Cat. No.	Stock No.	Ship. Wt. Lb. per 100	Overall Length Feet	Cat. No.	Stock No.	Ship. Wt. Lb. per 100	
8405	(894005)	370	5	8415	(894008)	550	
8406	(894006)	440	6	8416	(894009)	654	
8407	(894007)	500	7	8417	(894010)	758	
	()		8	8418	(894011)	862	

Hubeye				Tu-Hubeye			
		3/4" Diameter Rod					
8426	(894012)	960	6	8526	(894018)	1000	
8427	(894013)	1145	7	8527	(894019)	1195	
8428	(894014)	1400	8	8528	(894020)	1440	
8429	(894015)	1460	9	8529	(894021)	1500	
		1" Diameter Rod					
8438	(894016)	2300	8	8538	(894022)	2400	
8440	(894017)	2800	10	8540	(894023)	2860	

HUBBARD COPPERWELD GROUND ROD CLAMPS

Type A


 No. 9492
Type A Clamp
With Safety Set
Screw

 No. 9592
Type A Clamp
With Square Head
Set Screw

Type B


 No. 6492
Type B
With Safety Set
Screw

 Safety
Screw
Wrench

 No. 6592
Type B
With Square Head
Set Screw

The great strength and high elastic limit of these non-ferrous clamps enable them to maintain permanently low resistance ground connections. They accommodate solid or stranded ground wires and are furnished with either safety set screws or square head set screws.

Type "B" Clamps are designed to allow the use of Hubbard-Copperweld Ground Rods and Clamps at a lower assembly cost. They provide a permanent high pressure connection which is made quickly without the use of solder.

Safety Screw Type No.	Stock No.	Rod Dia. In.	Wire Size	Approx. Ship. Wt. Lbs., 100 Pcs.
9490	(891956)	3/8	6 to 12 AWG Solid	15
9491	(891957)	1/2	4 to 10 AWG Solid	25
9492	(891958)	5/8	2 to 8 AWG Solid	35
9493	(891959)	3/4	2 to 8 AWG Solid	45
9495	(891960)	1	2 to 8 AWG Solid	50

Safety Screw Type No.	Stock No.	Rod Dia. In.	Wire Size	Approx. Ship. Wt. Lbs., 100 Pcs.
6490	(891968)	3/8	6 to 14 AWG Solid	8
6491	(891969)	1/2	2 to 10 AWG Solid	15
6492	(891970)	5/8	2 to 8 AWG Solid	30
6493	(891971)	3/4	2 to 8 AWG Solid	40

Sq. Hd. Bolt Type No.	Stock No.	Rod Dia. In.	Wire Size	Approx. Ship. Wt. Lbs., 100 Pcs.
9590	(891962)	3/8	6 to 12 AWG Solid	15
9591	(891963)	1/2	4 to 10 AWG Solid	25
9592	(891964)	5/8	2 to 8 AWG Solid	35
9593	(891965)	3/4	2 to 8 AWG Solid	45
9595	(891966)	1	2 to 8 AWG Solid	50

Sq. Hd. Bolt Type No.	Stock No.	Rod Dia. In.	Wire Size	Approx. Ship. Wt. Lbs., 100 Pcs.
6590	(891972)	3/8	6 to 14 AWG Solid	8
6591	(891973)	1/2	2 to 10 AWG Solid	15
6592	(891974)	5/8	2 to 8 AWG Solid	30
6593	(891975)	3/4	2 to 8 AWG Solid	40

HUBBARD STEEL GROUND RODS

Hot Galvanized With Copper Wire

The wired rod has a length of No. 12 gage copper wire bonded firmly to upper end with five inches free for making ground wire connection.

All possibility of wire stripping loose is eliminated by the top turn being looped under itself, relieving the bond from carrying strain concentrated at that point. Special lengths of wire can be furnished.

Cat. No.	Stock No.	Diam. Inches	Lgth. Feet	Shipping Wt. Lb. per 100
*9505	(891952)	1/2	5	365
9506	(891953)	1/2	6	418
9516	(891954)	5/8	6	660
9538	(891955)	1	8	2420

*A. T. & T. Co. Std.

Without Copper Wire

Ground rod without wire has a hole at the upper end for attaching ground wire. Hole is located 1 inch from the upper end of rod.

Cat. No.	Stock No.	Diameter In.	Hole Inches	Length Feet	Shipping Wt. Lb. per 100
9555	(891943)	3/8	1/8	5	203
9556	(891944)	3/8	1/8	6	245
9565	(891945)	1/2	5/32	5	346
9566	(891946)	1/2	5/32	6	415
9567	(891947)	1/2	5/32	7	484
9576	(891948)	5/8	3/16	6	650
9577	(891949)	5/8	3/16	7	750
9578	(891950)	5/8	3/16	8	850

Without
Copper
Wire

HUBBARD-COPPERWELD GROUND RODS

Offers the permanence of copper plus the strength of steel. Made by molten weld process which assures a permanent bond between the copper and the steel.

With Wire Tail

3/8-In. Diam.				
Cat. No.	Stock No.	Lgth. Ft.	Approx. Ship. Wt. per 100	
7775	(891937)	5	225	
7776	(891938)	6	265	
1/2-In. Diam.				
7795	(891939)	5	365	
7796	(891940)	6	435	
7797	(891941)	7	505	
7798	(891942)	8	575	

Without Wire Tail (Cont.)

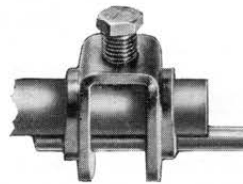
1/2-In. Diam.				
Cat. No.	Stock No.	Lgth. Ft.	Approx. Ship. Wt. per 100	
9425	(891912)	5	340	
9426	(891913)	6	410	
9427	(891914)	7	480	
9428	(891915)	8	550	
9429	(891916)	9	615	
9430	(891917)	10	685	
5/8-In. Diam.				
9435	(891918)	5	535	
9436	(891919)	6	640	
9437	(891920)	7	750	
9438	(891921)	8	855	
9439	(891922)	9	960	
9440	(891923)	10	1070	

Ground Rods Without Wire Tail

3/8-In. Diam.				
Cat. No.	Stock No.	Lgth. Ft.	Approx. Ship. Wt. per 100	
9415	(891908)	5	200	
9416	(891909)	6	240	
9387	(891910)	7	280	
9388	(891911)	8	320	

3/4-In. Diam.				
9445	(891924)	5	775	
9446	(891925)	6	930	
9447	(891926)	7	1085	
9448	(891927)	8	1240	
9449	(891928)	9	1395	
9450	(891929)	10	1550	
1-In. Diam.				
9466	(891930)	6	1650	
9467	(891931)	7	1925	

RELIABLE GROUND ROD CLAMPS



Reliable ground rod clamps provide high pressure contact directly between wire and rod—giving maximum conductivity and maintaining a fine joint under all conditions at very low cost. The design of this clamp makes economical use of a tough, corrosion resistant material. The heavy embossed everdur body springs slightly under stress and tends to lock the threads. This clamp will not vibrate loose and will stand repeated re-use. Clearly marked with rod size.

Made of everdur for copper and copperweld ground rods. Made of steel, galvanized and tinner, for steel ground rods.

Bronze Clamps for Copper and Copperweld Rods

Cat. No.	Stock No.	Rod Size		Wire A.W.G.		Std. Pkg.	Ship. Wt. Lb. per C
		Max.	Min.	Max.	Min.		
E48	(891760)	1/2"	3/8"	1	14	100	10
E58	(891762)	5/8"	1/2"	3/0	14	100	17
E68	(891764)	3/4"	5/8"	3/0	14	100	20

Galvanized Steel Clamps For Steel Rods and Pipes

Cat. No.	Stock No.	Rod Size		Wire A.W.G.		Std. Pkg.	Ship. Wt. Lb. per C
		Max.	Min.	Max.	Min.		
S48	(891761)	1/2"	3/8"	1	14	100	10
S58	(891763)	5/8"	1/2"	3/0	14	100	17
S68	(891765)	3/4"	5/8"	3/0	14	100	20

STATION GROUND CLAMPS For Grounding of Communication Circuits

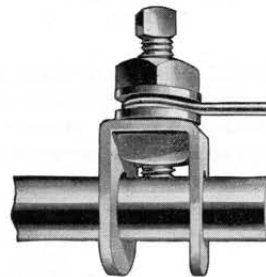


For telephone, radio and signal circuit station grounds. For 3/8" to 1 1/4" pipe. Made of round edge copper strip. The screws and nuts have close fitting threads.

Cat. No.	Stock No.	Rod Size		Std. Pkg.	Ship. Wt. Lb. per C
		Max.	Min.		
1	(891759)	1 1/4"	3/8"	100	6

GALVANIZED STEEL KLING KLAMPS

Reliable Kling Klamps are heavily galvanized and provided with tinned washers to clamp small copper or iron ground wires. Galvanized steel set screws have cupped points to bite into rods and insure good contact.



Cat. No.	Stock No.	Rod Size		Wire A.W.G.		Std. Pkg.	Ship. Wt. Lb. per C
		Max.	Min.	Max.	Min.		
K48	(891766)	1/2"	3/8"	2	14	100	14 1/2
K58	(891767)	5/8"	1/2"	2	14	100	15

CROSS-OVER CLAMPS Hot Galvanized

Used for joining two cable messengers when they cross each other at right angles. For telephone work where cables turn corners, or where branch cables leave line at points distant from poles.



Cat. No.	Stock No.	Size Inches	Ship. Wt. Lb. per 100
8930	(891696)	3 1/4 x 1 1/2 x 1/2	162

Revised 6-1-53

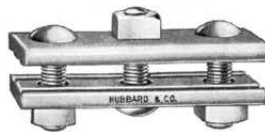
GUY CLAMPS

Hot Galvanized

This guy clamp is hot rolled to 3/8-inch thickness from steel plate.

Clamp bolts are made of special steel to prevent elongation and to eliminate stripping. Heads are made large to provide maximum clamping area and shoulders trap the bolts to prevent turning while tightening.

All sizes with three or more bolts are shipped with bolts reversed.



Heavy Type—5/8-Inch Clamp Bolts

Cat. No.	Stock No.	No. of Bolts	Lgth. of In.	Width Inches	Size Strand	Approx. Ship. Wt. Lb. per 100
7460	(891712)	3	6	2 1/8	3/8-5/8	365
*7461	(891713)	3	6	1 1/2	5/16-1/2	284
7462	(891714)	2	4	1 1/2	5/16-1/2	174
7464	(891715)	4	8	1 1/2	5/16-1/2	365

Medium Type—1/2-Inch Clamp Bolts

7447	(891716)	1	17/16	1 9/16	1/4-7/16	63
†7448	(891717)	2	3 3/8	1 9/16	1/4-7/16	132
7449	(891718)	3	4	1 9/16	1/4-7/16	185
†7450	(891719)	3	6	1 9/16	1/4-7/16	246

Light Type—1/2-Inch Clamp Bolts

7401	(891720)	1	1 3/4	1 1/32	1/8-1/4	48
7402	(891721)	2	3 3/4	1 1/32	1/8-1/4	106
7403	(891722)	3	5 3/4	1 1/32	1/8-1/4	160
7404	(891723)	4	7 3/4	1 1/32	1/8-1/4	210
7445	(891724)	1	1 1/4	1 1/4	1/8-7/32	52

*A. T. & T. Co. Std. †Western Union Std. ‡E. E. I. Standard.
§A. R. A. Standard.

GUY CLAMPS

Hot Galvanized



Furnished with high carbon, heat-treated track bolts. Galvanized insures clean threads.

One and two bolt clamps are for 1/4-inch and larger strand. All others are for 5/16-inch and larger strand.

No. J931 has reversible center bolts.

Smooth Groove

Cat. No.	Stock No.	Description	Size Bolt In.	Size Plate Inches	Wt. Lb. per 100
J1061	(891728)	1 Bolt 1 5/8 Inch	1/2	1 1/16 x 3/8	62
J1030	(891729)	2 Bolt 3 3/8 Inch	9/16	1 1/16 x 3/8	132
J930	(891730)	3 Bolt 6 Inch Std.	9/16	1 5/8 x 11/32	246
J931	(891731)	3 Bolt 6 Inch Heavy	5/8	1 1/2 x 3/8	284
J933	(891733)	4 Bolt 8 Inch Heavy	5/8	1 1/2 x 3/8	366

CROSBY CLIPS

Drop Forged—Hot Galvanized

Cat. No.	Stock No.	Size Inches	Std. Pkg.	Wt. Lb. per 100
J1038	(891739)	1/4	500	30
J1039	(891740)	5/16	500	29
J1040	(891741)	3/8	500	32
J1041	(891742)	7/16	200	67
J1042	(891743)	1/2	200	68
J1043	(891744)	5/8	150	97

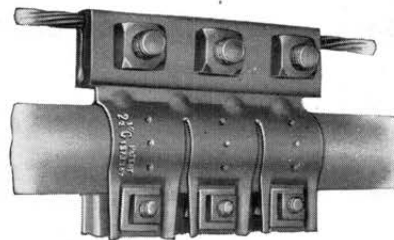


HUBBARD WIRE ROPE CLIPS



Cat. No.	Stock No.	Size Strand In.	Wt. Lb. per 100
8480	(891749)	1/4	14
8481	(891750)	5/16	16
8482	(891751)	3/8	22
8484	(891752)	1/2	40
8485	(891753)	5/8	55

DIAMOND GRADE CLAMPS

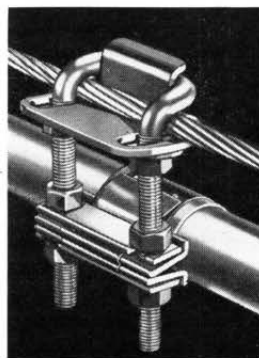


Used two on each side of a pole to overcome the tendency of cables to slide when the messenger is set on a grade.

Three upper bolts and guy clamp are standard equipment which is not regularly furnished with the grade clamp, the same usually being supplied by the telephone company or its supplier.

Size Inches	Stock No.	Maximum Cable Diameter Inches	No. in Carton	Ship. Wt. Lb. per 100 Complete
2 1/2 A	(891706)	1 1/2	25	110
2 1/2 B	(891707)	1 11/16	25	112
2 1/2 C	(891708)	1 15/16	25	114
3	(891709)	2 1/2	25	130
3 1/2	(891710)	2 5/16, 2 3/8	20	140
4	(891711)	2 11/16, 3 1/4	15	165

KEARNEY GRADE CLAMPS



This clamp is completely adjustable to fit all sizes strand, cable rings and cable.

It is rigid and easily develops the full strength of cable sheath without tipping.

The Kearney Grade Clamp is exceptionally easy to install being entirely a one-piece unit. No nuts or bolts are taken apart for any of the placing operations.

All of the clamps will securely hold the smallest cables and will accommodate the maximum sizes shown below:

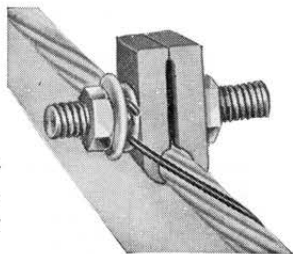
Cat. No.	Stock No.	Maximum Cable Size (Outside Diameter)	Approx. Ship. Wt. per 100
7551	(891703)	1" O.D.	110 lbs.
7551-1	(891704)	1 3/8" O.D.	112 lbs.
7551-2	(891705)	2 3/8" O.D.	114 lbs.

STROMBERG-CARLSON

Revised 6-1-53

DIAMOND CABLE LASHING CLAMP

Used for securing cable lashing wire at the end of span. Bolt end peined over to prevent nuts from running off.



Cat. No.	Stock No.	Std. Package	Wt./C
900	(895032)	100	15½ Lbs.

HUBBARD CABLE SUSPENSION CLAMPS Hot Galvanized



No. 8901

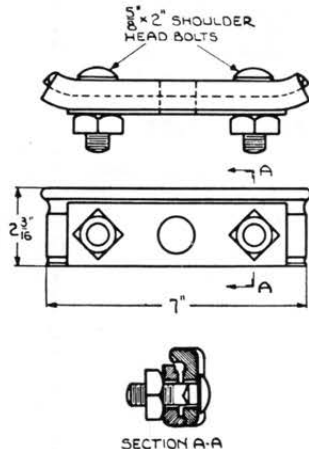


No. 8903

For use over a through bolt which is also employed as a clamp bolt. One or more nuts or washers are generally used between clamp and pole to provide clearance.

Cat. No.	Stock No.	Length Overall	Strand Size	Ship. Wt. Lbs./C
8901	(891694)	2¾"	¼-⅞"	84
8903	(891695)	5¾"	¼-⅞"	224

NO. 8902 CORNER CABLE SUSPENSION CLAMPS



SECTION A-A

For power or communication cable messengers. Used for heavy strains at corners where the included angle of the messenger is approximately 110° or over up to 180°.

It is used with the curved ends pointing toward the pole when the pull is toward the pole and with the curved ends away from the pole when the pull is away.

Used on 6000 and 10000-pound strand with the cable groove of the clamp below the pole bolt and on 16000-

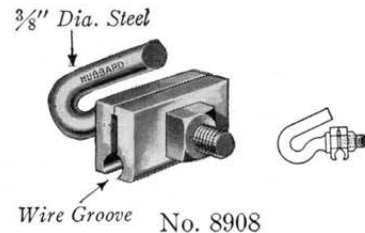
pound strand with the groove above the pole bolt. A reinforcing strap is recommended when 16000-pound strand is used. Clamp is drop forged from high carbon steel.

Three-bolt type. Overall length, 7 inches. Mounting hole diameter, 1⅜ inches. Strand size, ¼ to ⅞ inch inclusive.

Shipping weight per 100, 375 pounds.

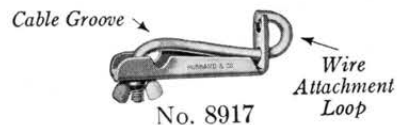
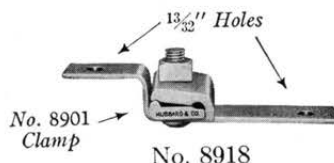
Catalog No. 8902 Stock No. (894473)

HUBBARD SPAN CLAMPS



No. 8908 Span Clamps are attached to the messenger, and a telephone service clamp is engaged over the hook. Used for taking off service connections between spans.

Cat. No.	Stock No.	Strand Size	Steel Size	Ship. Wt. Lbs./C
8908	(894975)	¼-¾"	¾" Dia.	41

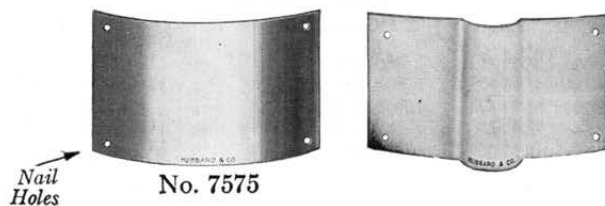


No. 8918 Span Clamp is used with No. 9225 Knob for taking off telephone service connections between spans. It consists of a clamp and spacer with holes for two knobs.

No. 8917 is for the same purpose but is used in connection with wire clamps which attach through the wire attachment loop.

Cat. No.	Stock No.	Strand Size	Groove to Loop	Insulation Spacing	Ship. Wt. Lbs./C
8917	(891737)	¼-¾"	3¼"		144
8918	(891738)	¼-⅞"		5¾"	152

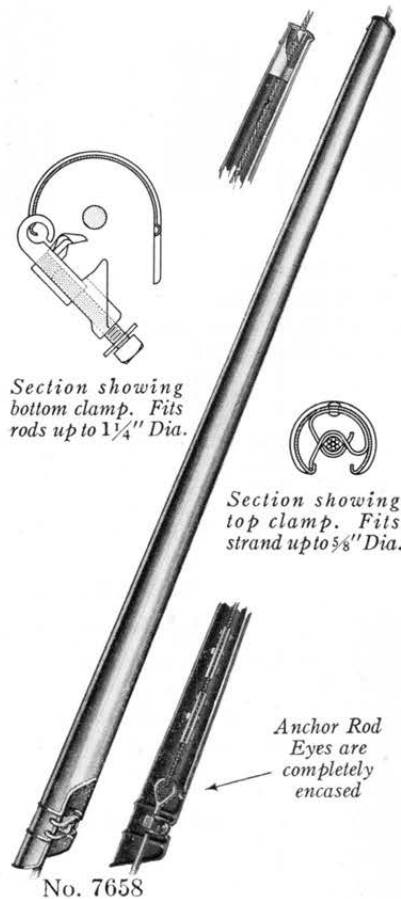
HUBBARD STRAIN PLATES



Used to protect the pole fibres from being cut by messenger or guy strand. Furnished standard, or with offset to fit 1¼-inch maximum diameter ground wire moulding. Diameter nail holes, 7/32 inch.

Cat. No.	Stock No.	Type	Size In.	Ship. Wt. Lbs./C
7575	(891847)	Standard	4 x 8	95
7576	(891848)	Molded	4 x 8	95

GUY WIRE PROTECTORS Hot Galvanized



No. 7658

Loxfast Type

Top attachment accommodates strand up to 5/8-inch diameter. Bottom clamps are adjustable to fit rods up to 1 1/4 inches in diameter.

Loxfast-Light

Cat. No.	Stock No.	Overall Length Feet	Diameter, In. Inside Top Bottom	Steel Gage	Ship. Wt. Lb. per 100
7657	(891980)	7	2 3 3/4	18	1100
7658	(891981)	8	1 3/4 3 3/4	18	1200

Loxfast-Heavy

27657	(891982)	7	2 3 3/4	16	1400
27658	(891983)	8	1 3/4 3 3/4	16	1550

HUBBARD LOAD OR BREAST PLATES Hot Galvanized

Used as back bearing plates when either the guy loop and saddle or the straight-away loop and saddle are subject to heavy strains.

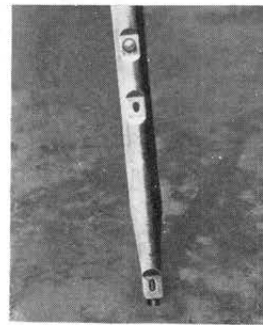
The curved plate is provided with one hole and one slot on four-inch centers.

Catalog No.	8877	8878
Stock No.	(891809)	(891810)
Bolt Hole	in. 3/4	7/8
Bolt Slot	in. 3/4 x 1 1/4	7/8 x 1 1/2
Hole Spacing	in. 4	4
Size Steel	in. 7 x 2 1/2 x 1/4	7 x 2 1/2 x 1/4
Ship. Wt. per 100	lb. 112	112



No. 8877

MATTHEWS STAZRITE GUY GUARDS Hot Galvanized



This guy guard cannot be turned or twisted or torn off the guy wire under the most severe conditions. Available in two types, half-round and full-round.

Designed so that it will cover the guy rod and guy wire to the ground line even if guy rod extends above the ground as much as 3 feet.

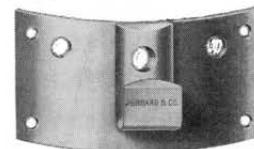
One-piece construction. Requires no special tools for installing. The patented upper clamping member is an integral part of the

guard and securely locks on the guy wire without damage to the galvanizing on the guy wire or guard.

Complete ventilation is provided around the guy wire to prevent accumulation of moisture which would tend to corrode guy wire and guard.

Cat. No.	Stock No.	Description	Overall Length Feet	Gage	No. in Std. Pkg.	Wt. Lb. per 100
1473	(891984)	Half Round	7	14	5	900
1483	(891985)	Half Round	8	14	5	1100
7016	(891986)	Full Round	7	16	3	1200
7118	(891987)	Full Round	7	18	3	1000
8016	(891988)	Full Round	8	16	3	1300
8118	(891989)	Full Round	8	18	3	1100

HUBBARD HOOK TYPE STRAIN PLATE



No. 7577

Used to protect the pole fibers from being cut by messenger or guy strand.

No. 7577 has a welded hook, one 1 1/16-inch guy hook and hole, and two 7/16-inch lag screw holes.

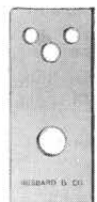
Catalog No.	7577
Stock No.	(891849)
Type	Heavy Guy Hook
Dimensions	inches 4 x 8
Gage	14
Ship. Wt. per 100	lb. 134

HUBBARD FLAT LIFT PLATES

No. 8891 measures 7 x 2 1/2 x 5/16 inches and has two 7/16-inch holes, one 1 1/16-inch hole, and one 1 1/32-inch hole.

Catalog No.	*8891
Stock No.	(891814)
Bolt Diameter	in. 1
Size Bolt Hole	in. 1 3/32
Plate Thickness	in. 5/16 Flat
Approx. Ship Wt. per 100	lb. 151

*A. T. & T. Co. Std.



No. 8891

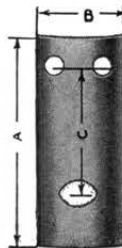
HUBBARD CURVED LIFT PLATES

Hot Galvanized



These plates are used under the eye of Hubeye angle bolts to distribute the strain of down-guys over a greater area.

Dimensions, 7 x 2½ in.
All plates curved.



No. 8887

No. 8837

Cat. No.	Stock No.	Diam. Bolt In.	Size Bolt Hole In.	Thick Plate Inches	At. Plate No.	Holes Diam. In.	Ship. Wt. Lb. per 100
8887	(891811)	5/8	1 1/16 x 1 5/16	3/16	1	9/16	99
8888	(891812)	3/4	1 3/16 x 1 1/16	1/4	1	9/16	128
8889	(891813)	1	1 1/16 x 1 5/16	5/16	1	9/16	151
8897	(891815)	5/8	1 1/16 x 1 5/16	3/16	2	9/16	95
8898	(891816)	3/4	1 3/16 x 1 1/16	1/4	2	9/16	124
8899	(891817)	1	1 1/16 x 1 5/16	5/16	2	9/16	148

HUBBARD GUY SHIMS

Hot Galvanized



Six or more guy shims are used per pole to prevent messenger or guy strand from cutting into the wood.

Diameter of nail holes, ¼-inch.

Catalog No.	7570	7571
Stock No.	(894075)	(891808)
Dimensions	inches 1 7/32 x 7/32 x 8	1 1/4 x 3/16 x 8
Ship. Wt. per 100	pounds 57	68

STORM GUY HOOKS

Hot Galvanized

Necessary to meet the needs of various operating companies, both power and communication.

Generally mounted back to back.

Constructed with rounded wire grooves to give the strand a safe bending radius.

Made of steel.



No. 6001

Cat. No.	Stock No.	Description	Length Steel Inches	Hole Diam. Inches	Approx. Ship. Wt. Lb. per 100
*6001	(891803)	Storm	¼ x 1 ½ x 7	9/16	13/16 107
6002	(891804)	Storm	¼ x 2 x 7 ¼	9/16	13/16 170
6004	(891805)	Crossarm	¼ x 1 ½ x 4 ½	—	1 1/16 100

*A. T. & T. Co. standard.

REINFORCING LINKS

Hot Galvanized

Used to relieve side strains at angles in the line. Will stand strains of 4000 pounds.



No. 8929

Cat. No.	Stock No.	Length Over All In.	Size Steel In.	Diam. Hole, In.	Approx. Ship. Wt. Lb. per 100
8919	(891806)	5 ¾	½	9/16	102
8929	(891807)	8 ¾	½	9/16	125

HUBBARD GUY HOOKS

Hot Galvanized



No. 7584



No. 7585



No. 7586

Necessary to meet the needs of various operating companies, both power and communication.

Constructed with rounded wire grooves to give the strand a safe bending radius. Made of steel.

Catalog No.	7583 ½	7584	7585	7586
Stock No.	(891799)	(891800)	(891801)	(891802)
Description	Light	Med.	Hvy.	Hvy.
Material	inches ¼ x 1 ¼	¾ x 1 ¾	¾ x 1 ½	¾ x 1 ½
Length	inches 3 ¾	4	3 ½	6
Upper Hole Diameter	inches 9/16	1 1/16	9/16	9/16
Lower Hole Diameter	inches 9/16	1 1/16	9/16	9/16
Ship. Wt. per 100	pounds 40	89	65	91

HUB GUARDS

Hot Galvanized



Used on wood poles to protect them from the hubs of vehicles. The dimensions given below are those of the flat plates, before bending, the 14-inch guards having a 5½-inch radius, and the 16-inch guards, a 7½-inch radius.

All holes are 9/16-inch diameter for ½-inch lag screws.

Cat. No.	Stock No.	Dimensions Inches	Approx. Ship. Wt. Lb. per 100
*7101	(891790)	16 x 18 x ½	1200
†7102	(891791)	14 x 30 x 3/16	2300
†7103	(891792)	16 x 30 x 3/16	2500

*A. T. & T. Co. standard.
†Western Union standard.

REINFORCING AND SAFETY STRAPS

Hot Galvanized



This strap is used as an added safeguard for cable suspension clamps at points of extreme stress.

No. 8905 is employed to reinforce the messenger bolt. No. 8906 is a safety strap to prevent the cable from falling if the messenger gives away. No. 8907 combines the two items in one piece.

Cat. No.	Stock No.	Description	Size Steel In.	Approx. Ship. Wt. Lb. per 100
8905	(891725)	Reinforcing Strap	1 ½ x ½	36
8906	(891726)	Safety Strap	1 ¾ x ½	76
8907	(891727)	Combination Strap	1 ¾ x ½	116

UNIVERSAL MESSENGER HANGERS

Hot Galvanized



Forged from new, open hearth steel, with a curved wire groove, which permits its use on curves as well as straight runs.

Two 1/2-inch clamp bolts hold the messenger securely in place. The hanger is mounted by means of a 5/8-inch through bolt and a 1/2-inch lag screw.

Cat. No.	Stock No.	Size Steel Inches	Length Legs In.	Size Strand In.	Approx. Ship. Wt. Lb. per 100
8911	(891795)	2 x 1/2	4 7/8 x 4 1/4	5/16-1/2	338
8912	(891796)	1 3/4 x 3/8	4 7/8 x 3 3/4	5/16-1/2	243

NON-BREAKABLE MESSENGER HANGERS

Hot Galvanized

This hanger combines spacer and clamp. It is used over a 5/8-inch through bolt and is curved to fit the pole. Messenger is held in place while stringing by the vertical finger.

Made of certified malleable iron.



Cat. No.	Stock No.	Length Clamping Surface, In.	Size Strand Inches	Approx. Ship. Wt. Lb. per 100
8914	(891793)	3	5/16 to 3/8	150
8915	(891794)	3	7/16 to 1/2	150

PREMAX EMBOSSED ALUMINUM LETTERS AND FIGURES



Made of 99% pure aluminum rolled especially for this purpose, will neither rust, tarnish nor corrode. Plain finish. Being perfectly smooth, letters and figures do not catch or hold dirt. Standard packing, 100 per carton.

Size In.	Stock No.	Type
1/2	(891357)	Roman Letters and Figures
3/4	(891358)	Roman Letters and Figures
1	(891359)	Roman Letters and Figures
1 1/2	(891360)	Roman Letters and Figures
1 1/2	(891361)	Gothic Figures only
2	(891362)	Roman Letters and Figures
3	(891363)	Roman Letters and Figures
4	(891364)	Roman Letters and Figures
6	(891365)	Roman Letters and Figures

ESCUTCHEON PINS

Size In.	Stock No.	Description	No. per Lb.
1	(891366)	No. 15 Galvanized Steel	900
1	(891367)	No. 15 Brass	700
3/4	(891368)	No. 15 Brass	950
5/8	(891369)	No. 15 Brass	1100
5/8	(891370)	No. 15 Cadmium Plated Steel	1200

Smaller or special sizes of pins furnished on request.

HUBBARD POLE DATING NAILS



Used for indicating the year or pole heights. Any two numerals may be ordered.

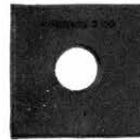
Square head, 9/16-inch. Square shank, 1/4-inch. Length, 2 1/2 inches.

Approximate shipping weight per 100 pieces, 5.5 pounds.

Ordering Note: Use Stock No. (891818) for nails of any date; be sure to specify last two digits of date on the order.

HUBBARD SQUARE WASHERS

Hot Galvanized



Cleanly cut and smoothly galvanized. There are no irregularities of the zinc coating to interfere with the proper seating of bolt heads or nuts.

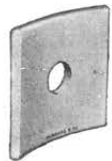
Can be supplied with nail holes at slight extra cost.

Cat. No.	Stock No.	Size Inches	Diameter Hole Inches	Bolt Inches	Shipping Wt. Lb. per 100
7811	(892051)	2 x 2 x 1/8	9/16	1/2	16
7812	(892052)	2 x 2 x 1/8	1 1/16	5/8	16
7812 1/2	(892053)	2 x 2 x 3/16	1 3/16	3/4	19
7813	(892054)	2 1/4 x 2 1/4 x 3/16	1 1/16	5/8	25
7813 1/2	(892055)	2 1/4 x 2 1/4 x 3/16	9/16	1/2	25
7814	(892056)	2 1/4 x 2 1/4 x 3/16	1 3/16	3/4	25
7816	(892057)	3 x 3 x 3/16	1 3/16	3/4	53
7817	(892058)	3 x 3 x 1/4	1 3/16	3/4	69
7818	(892059)	4 x 4 x 3/16	1 3/16	3/4	96
7819	(892060)	4 x 4 x 1/4	1 5/16	3/4 & 7/8	127
7819 1/2	(892061)	4 x 4 x 1/2	1 3/16	3/4	218
7820	(892062)	4 x 4 x 1/2	1 3/16	1	251
7826	(892063)	3 1/2 x 3 1/2 x 3/8	1 5/16	3/4 & 7/8	136
7827	(892064)	6 x 6 x 3/8	1 3/16	1	407

HUBBARD CURVED WASHERS

Hot Galvanized

Cleanly cut and smoothly galvanized. There are no irregularities of the zinc coating to interfere with the proper seating of bolt heads or nuts.



Cat. No.	Stock No.	Size Inches	Diameter Hole Inches	Bolt Inches	Shipping Wt. Lb. per 100
7822	(892048)	2 1/2 x 2 1/2 x 3/16	1 1/16	5/8	34
7823	(892049)	3 x 3 x 1/4	1 3/16	3/4	66
7824	(892050)	3 x 3 x 5/16	1 1/8	1	94
7825	(891872)	3 1/4 x 3 1/4 x 1/4	1 3/16	3/4	85

HUBBARD ROUND WASHERS

Hot Galvanized



Cleanly cut and smoothly galvanized. There are no irregularities of the zinc coating to interfere with the proper seating of bolt heads or nuts.

Can be supplied with nail holes at slight extra cost.

Cat. No.	Stock No.	O.D. In.	Gage No.	Diameter Hole Inches	Bolt Inches	Shipping Wt. Lb. per 100
7801	(892043)	1	14	7/16	3/8	1.8
7802	(892044)	1 1/4	14	1/2	3/8 Carriage	2.9
7803	(892045)	1 3/8	12	9/16	1/2	4.6
7805	(892046)	1 3/4	10	1 1/16	5/8	9.2
7806	(892047)	2	9	1 3/16	3/4	11.0

HUBBARD LAG SCREWS Hot Galvanized



Gimlet Point Lag Screw



Fetter Drive Lag Screw

Unless otherwise specified, fetter drive lag screws will be furnished on all orders except for 1/4 and 5/16 inch diameters, which are furnished with gimlet point thread only.

1/4-Inch Diameter				
Cat. No.	Stock No.	Length Inches	Length Thread Inches	Approx. Ship. Wt. Lb. per 100
9722	(891990)	2	1 3/8	3.5
9722 1/2	(891991)	2 1/2	1 3/4	5.0
5/16-Inch Diameter				
9732	(891992)	2	1 3/4	5.2
9732 1/2	(891993)	2 1/2	2	6.2
9733	(891994)	3	2 1/4	7.5
9733 1/2	(891995)	3 1/2	2 1/2	9.7
3/8-Inch Diameter				
9742 1/4	(891996)	2 1/4	2	8.8
9742 1/2	(891997)	2 1/2	2	9.7
9743	(891998)	3	2	11.0
9743 1/2	(891999)	3 1/2	2 1/2	12.8
9744	(892000)	4	2 3/8	14.6
9744 1/2	(892001)	4 1/2	3	16.4
9745	(892002)	5	3	16.9
1/2-Inch Diameter				
9752 1/2	(892003)	2 1/2	2	18.4
9753	(892004)	3	2 1/2	20.9
9753 1/2	(892005)	3 1/2	3	23.4
9754	(892006)	4	2 1/2	26.0
9754 1/2	(892007)	4 1/2	2 3/4	27.8
9755	(892008)	5	3 1/4	32.1
9756	(892009)	6	3	38.3

HUBBARD CARRIAGE BOLTS Hot Galvanized



Carriage Bolt

Used in attaching braces to cross arms. Furnished with standard heads, shoulders, nuts and rolled threads.

3/8-Inch Diameter				
Cat. No.	Stock No.	Length Inches	Length Thread Inches	Approx. Ship. Wt. Lb. per 100
9633	(891552)	3	1 3/4	14.5
9633 1/2	(891553)	3 1/2	1 3/4	16.5
*††\$9634	(891554)	4	1 3/4	18.3
*††\$9634 1/2	(891555)	4 1/2	1 3/4	20.0
\$9635	(891556)	5	1 3/4	21.1
9635 1/2	(891557)	5 1/2	1 3/4	22.5
9636	(891558)	6	1 3/4	23.3
1/2-Inch Diameter				
9643	(891559)	3	2 1/2	26.7
9643 1/2	(891560)	3 1/2	3	29.2
9644	(891561)	4	3	33.3
9644 1/2	(891562)	4 1/2	3	36.7
9645	(891563)	5	3	38.6
9645 1/2	(891564)	5 1/2	3	41.2
9646	(891565)	6	3	44.0

†A. T. & T. Co. Std. *Western Union Std. §E. E. I. Std.
*A. R. A. Std.

HUBBARD MACHINE AND CROSSARM BOLTS Hot Galvanized



Bolts over 6 inches in length are drive pointed. Nuts are included.

3/8-Inch Diameter				
Cat. No.	Stock No.	Length Inches	Length Thread In.	Ship. Wt. Lb. per 100
9603	(891566)	3	3	13.8
9603 1/2	(891567)	3 1/2	3	16.8
9604	(891568)	4	3	18.4
9604 1/2	(891569)	4 1/2	3	18.9
9605	(891570)	5	3	20.1
9605 1/2	(891571)	5 1/2	3	22.8
9606	(891572)	6	3	23.5
1/2-Inch Diameter				
9704 1/2	(891573)	4 1/2	3	36.6
9704 3/4	(891574)	4 3/4	3	38.5
9705	(891575)	5	3	41.6
9706	(891576)	6	3	45.1
9707	(891577)	7	3	51.9
9708	(891578)	8	4	60.6
9710	(891579)	10	4	76.2
9712	(891580)	12	6	85.8
9714	(891581)	14	6	91.6
9716	(891582)	16	6	106.0
9718	(891583)	18	6	121.0
9720	(891584)	20	6	133.0
5/8-Inch Diameter				
9806	(891585)	6	3	80
9807	(891586)	7	3	90
9808	(891587)	8	4	100
9810	(891588)	10	4	113
9812	(891589)	12	6	127
9814	(891590)	14	6	131
9816	(891591)	16	6	157
9818	(891592)	18	6	180
9820	(891593)	20	6	195
9822	(891594)	22	6	213
9824	(891595)	24	6	237
9826	(891596)	26	6	242
9828	(891597)	28	6	259
3/4-Inch Diameter				
9908	(891598)	8	4	165
9910	(891599)	10	4	183
9912	(891600)	12	6	202
9914	(891601)	14	6	228
9916	(891602)	16	6	257
9918	(891603)	18	6	268
9920	(891604)	20	6	303
9922	(891605)	22	6	336
9924	(891606)	24	6	360
9926	(891607)	26	6	382
9928	(891608)	28	6	466

BOLTS FOR TELEPHONE BRACKETS

Hot Galvanized



No. 9603

No. 9232

Used for attaching porcelain knob insulators to Hubbard Pole or House Brackets.

Cat. No.	Stock No.	Type Bolt	Diameter Inches	Length Inches	Approx. Ship. Wt. Lb. per 100
9232	(891222)	Stove	5/16	2	6.6
9233	(891223)	Stove	5/16	3	8.6
9603	(891566)	Machine	3/8	3	13.8
9605 1/2	(891571)	Machine	3/8	5 1/2	22.9

Revised 6-1-53

HUBBARD DOUBLE ARMING BOLTS

Hot Galvanized

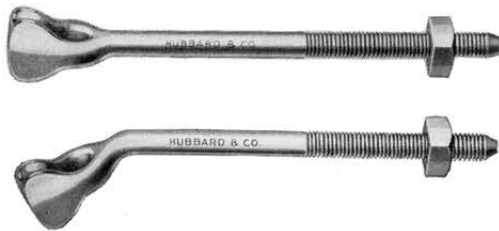


Furnished with full length thread and four nuts.

Cat. No.	Stock No.	Diameter Inches	Length Overall In.	Ship. Wt. Lb. per 100
9844	(891610)	1/2	14	120
9846	(891611)	1/2	16	129
9848	(891612)	1/2	18	138
9850	(891613)	1/2	20	146
9852	(891614)	1/2	22	163
9854	(891615)	1/2	24	172
9864	(891617)	5/8	14	194
9866	(891618)	5/8	16	200
9868	(891619)	5/8	18	218
9870	(891620)	5/8	20	235
9872	(891621)	5/8	22	253
9874	(891622)	5/8	24	271
9884	(891624)	3/4	14	279
9886	(891625)	3/4	16	301
9888	(891626)	3/4	18	350
9890	(891627)	3/4	20	372
9892	(891628)	3/4	22	383
9894	(891629)	3/4	24	427

HUBBARD HUBEYE BOLTS

Hot Galvanized



Hubbard drop forged straight and angle Hubeye bolts are designed to provide a smooth curve through the eye with a large radius for protection to the strand at the bend, thereby eliminating the use of guy thimbles.

The eyes of the angle Hubeye bolts are forged at a 45° angle to the shank.

Sizes shown are roll-threaded.

All Hubeye bolts are drive pointed.

5/8" Diameter

Straight		Angle		Dimensions, Inches		
Cat. No.	Stock No.	Cat. No.	Stock No.	Lgth. Under Eye	Lgth. of Thread	Ap. prox. Ship. Wt. Lb. per 100
9058	(891630)	9150	(891637)	8	6	132
9060	(891631)	9151	(891638)	10	6	154
9062	(891632)	9152	(891639)	12	6	176
9064	(891633)	9153	(891640)	14	6	198
9065	(891634)	9153 1/2	(891641)	15	6	209
9066	(891635)	9154	(891642)	16	6	220
9068	(891636)	9155	(891643)	18	6	242

3/4" Diameter

Straight		Angle		Dimensions, Inches		
Cat. No.	Stock No.	Cat. No.	Stock No.	Lgth. Under Eye	Lgth. of Thread	Ap. prox. Ship. Wt. Lb. per 100
9078	(891644)	9160	(891651)	8	6	204
9080	(891645)	9161	(891652)	10	6	229
9082	(891646)	9162	(891653)	12	6	255
9084	(891647)	9163	(891654)	14	6	280
9085	(891648)	9163 1/2	(891655)	15	6	306
9086	(891649)	9164	(891656)	16	6	319
9088	(891650)	9165	(891657)	18	6	344

HUBBARD EYE BOLTS

Hot Galvanized

Standard Oval Eye Bolts



1/2-Inch Diameter

Cat. No.	Stock No.	Length Under Eye Inches	Width Eye Inches	Length Eye Inches	Shipping Wt. Lb. per 100
39937	(891666)	6	1 1/4	1 1/2	82
39939	(891667)	8	1 1/4	1 1/2	94
39941	(891668)	10	1 1/4	1 1/2	107
39943	(891669)	12	1 1/4	1 1/2	120
39945	(891670)	14	1 1/4	1 1/2	134
39947	(891671)	16	1 1/4	1 1/2	147
39949	(891672)	18	1 1/4	1 1/2	160
39951	(891673)	20	1 1/4	1 1/2	162

5/8-Inch Diameter

39956	(891675)	6	1 1/2	2	131
39958	(891676)	8	1 1/2	2	145
39960	(891677)	10	1 1/2	2	169
39962	(891678)	12	1 1/2	2	179
39964	(891679)	14	1 1/2	2	192
39966	(891680)	16	1 1/2	2	205
39968	(891681)	18	1 1/2	2	229
39970	(891682)	20	1 1/2	2	242
39972	(891683)	22	1 1/2	2	267
39974	(891684)	24	1 1/2	2	280

3/4-Inch Diameter

39976	(891686)	6	1 1/2	2	195
39978	(891687)	8	1 1/2	2	213
39980	(891688)	10	1 1/2	2	231
39982	(891689)	12	1 1/2	2	248
39984	(891690)	14	1 1/2	2	277
39986	(891691)	16	1 1/2	2	308
39988	(891692)	18	1 1/2	2	345
39990	(891693)	20	1 1/2	2	374

HUBBARD EXTRA NUTS

For Machine Bolts, Anchor Rods

(Specify use when ordering)

1/2" Thread.....	Stock No. (894148)
5/8" Thread.....	Stock No. (894468)
3/4" Thread.....	Stock No. (894484)

HUBBARD DROP FORGED ANGLE BOLT HUBEYES

Hot Galvanized



Used almost exclusively for down guys. Eliminates the use of strain plates, guy hooks, guy thimbles, nails and lag screws and saves from three to five feet of guy strand. Often used on the nut end of a bolt for a down guy attachment with a straight bolt eye under the head of the bolt as a dead-end.

Nos. 1100 and 1101 will take strand 1/2-inch diameter and under.

Catalog No.	1100	1101
Stock No.	(891844)	(891845)
Diameter Bolt	inches 5/8	3/4
Bolt Hole	inches 3/4	7/8
Width Eye	inches 5/8	3/4
Length Eye	inches 1	1
Ship. Wt. per 100	lb. 140	162

STROMBERG-CARLSON

Revised 6-15-51

HUBBARD DROP FORGED BOLT EYES

Hot Galvanized



No. 7514



No. 7515

Used extensively for dead-ending and guying. The standard bolt eye may be used for attaching dead-ending insulators to the crossarm. The long type is often used for supporting suspension insulators with a hook in the cap of the upper unit.

Unthreaded slot provides clearance for the insertion of bolt.

Standard Bolt Eye

Cat. No.	Stock No.	Diam. Bolt In.	Bolt Hole Inches	Width Eye Inches	Length Eye Inches	Ship. Wt. Lb. per 100
7514	(891839)	5/8	1 1/16 x 1 3/16	1 1/8	12 1/32	83

Long Bolt Eye

7515	(891840)	5/8	1 1/16 x 1 3/16	1 3/8	3 9/32	117
7516	(891841)	3/4	1 3/16 x 1 1/16	1 3/8	3 9/32	119
7517	(891842)	5/8	1 1/16 x 1	1 5/16	2 13/32	109
7518	(891843)	3/4	1 3/16 x 1 1/16	1 5/16	2 13/32	112

HUBBARD DROP FORGED HUBEYE NUTS

Hot Galvanized



Used on through bolts, eye bolts, double arming bolts, straight and angle Hubeye bolts, crossarm bolts, anchor rods and for other attachments where it is desired to convert a standard, threaded bolt to a Hubeye bolt.

Commonly used for dead-ending a messenger wire or span guy on the threaded end of an angle Hubeye bolt on the opposite end of which is attached a down guy.

Cat. No.	Stock No.	Diam. Bolt In.	Width Eye In.	Length Eye In.	Ship. Wt. Lb. per 100
7509	(891826)	1/2	7/8	1 1/2	118
7510	(891827)	5/8	7/8	1 1/2	117
7511	(891828)	3/4	7/8	1 1/2	116
7512	(891829)	1	1 1/4	1 11/16	166

HUBBARD DROP FORGED STANDARD EYE NUTS

Hot Galvanized



No. 7503

This eye nut requires the use of a thimble. Used on through bolts, eye bolts, double arming bolts, etc. and for other attachments where it is desired to convert a standard threaded bolt to an eye bolt.

Commonly used for dead-ending a messenger wire or span guy on the threaded end of an angle hubeye bolt on the opposite end of which is attached a down guy.

Cat. No.	Stock No.	Diam. Bolt In.	Width Eye In.	Lgth. Eye In.	Ship. Wt. Lb. per 100
7500	(891830)	1/2	1 1/8	1 1/8	55
7501	(891831)	5/8	1 1/8	1 1/8	55
*7502	(891832)	5/8	1 1/2	1-11/16	65
7503	(891833)	3/4	1 1/2	1-11/16	65
7504	(891834)	3/8	1 1/8	1 1/8	40
7505	(891835)	1/2	1 1/8	1 1/8	40
7506	(891836)	5/8	1 1/8	1 1/8	40

*Western Union Std.

HUBBARD DROP FORGED STRAIGHT BOLT HUBEYES

Hot Galvanized



Has unthreaded slot to provide clearance for the insertion of bolts. Used for crossarm guying where a circuit has been dead-ended, although it is suitable for many other guying and dead-ending needs.

Follows the standard Hubeye design. Will take strand 1/2 inch diameter and under.

Catalog No.	7519	7520
Stock No.	(891837)	(891838)
Diameter Bolt	5/8	3/4
Bolt Hole	1 1/16 x 1	1 3/16 x 1 1/8
Width Eye	1 5/16	1 5/16
Length Eye	2 1/2	2 1/2
Shipping Weight per 100	pounds 138	138

STROMBERG-CARLSON

HUBBARD TELEPHONE DISTRIBUTING BRACKETS

Hot Galvanized

No. 9200 L House Type



No. 9200

Used at the house end of a telephone service for dead ending twisted pair telephone wires.

Size steel, $\frac{3}{16}$ x $1\frac{3}{4}$ inches. Length legs, $3\frac{7}{16}$ and 2 inches.

A. T. & T. Std.

Shipping Weight 56 Pounds per 100 Pieces.

Catalog No. 9200 Stock No. (891226)

L Pole Type

For taking off telephone services, or for short runs on poles.

Size steel, $\frac{1}{4}$ x 2 inches. Length legs, 4 x 2 inches. Approximate shipping weight, 100 pieces, 97 pounds.

Catalog No.	9202
Stock No.	(891227)
No. of Holes.....	3
Size Holes	inches $1\frac{5}{32}$

HUBBARD TELEPHONE CORNER BRACKETS

Hot Galvanized



Used where leads from the pole come to the building at an angle and to carry leads around the corner of a building.

Catalog No.	*9204	*9205
Stock No.	(891228)	(891229)
Mounting Hole Size	in. $1\frac{1}{32}$	in. $1\frac{1}{32}$
Insulated Holes	in. $1\frac{1}{32}$	in. $1\frac{1}{32}$
Size Steel	in. $7\frac{1}{32} \times 1\frac{7}{32}$	in. $7\frac{1}{32} \times 1\frac{7}{32}$
Length Overall	in. $4\frac{1}{2} \times 2\frac{1}{2}$	in. $8\frac{1}{2} \times 1\frac{5}{16}$
Ship. Wt. per 100	lb. 66	lb. 96

*Western Union Std.

NO. 1316 HUBBARD DRIVE HOOKS

Hot Galvanized



No. 1316

No. 1316 Drive Hooks are furnished with $7\frac{1}{16}$ " x 2" fether drive thread. $\frac{3}{4}$ " opening between hook and main shaft. Drive head allows the hook to be driven home by a hammer or sledge.

Catalog No.	Stock No.	Dia.	Length	Wt. Lbs.
1316	(894978)	$7\frac{1}{16}$ "	5-1/16"	29

NO. 1317 HUBBARD SCREW HOOK

Hot Galvanized



No. 1317

No. 1317 Screw Hooks are provided with $\frac{3}{8}$ " gimlet point rolled threads. Used for wire clamp attachments on poles, arms or buildings.

Catalog No.	Stock No.	Dia.	Length	Wt. Lbs.
1317	(894979)	$5\frac{1}{16}$ "	4"	14

KEARNEY HOUSE AND POLE HOOKS



The drop wire hook is a popular and inexpensive house hook, especially suited for use on hollow tile wall and similar construction. The drive hook has been designed for a variety of applications. It is made in the large size for pole use, and in a smaller size for house use.

Cat. No.	Stock No.	Description
8031	(893048)	Drop Wire Hook
6766-1	(893049)	Small Drive Hook, $3\frac{1}{2}$ " long, $\frac{5}{16}$ " dia.
6766-3	(893050)	Large Drive Hook, $4\frac{1}{2}$ " long, $\frac{7}{16}$ " dia.

HUBBARD U-CABLE GUARDS AND STRAPS

Hot Galvanized

When telephone or power cables enter the ground at the base of a pole or the side of a building, they are protected by U-cable guards. The guards are formed of No. 14 gage steel pressed to a U-shape which provides protection for pedestrians as well as providing stiffness for guard.

Nos. 7536 and 7537 have a $2\frac{1}{8}$ -inch inside diameter belled bottom to fit over ground conduit.

A. T. & T. Co. Standard.

U-Cable Guards

Cat. No.	Stock No.	Lgth. Feet	Inside Diam. Inches	Shipping Wt. Lb. per 100
7531	(891875)	6	$1\frac{1}{8}$ Top $1\frac{1}{8}$ Bottom	495
7532	(891876)	5	$2\frac{3}{16}$ Top $2\frac{3}{16}$ Bottom	825
7533	(891877)	8	$2\frac{3}{16}$ Top $2\frac{3}{16}$ Bottom	1408
7534	(891878)	5	$3\frac{3}{16}$ Top $3\frac{3}{16}$ Bottom	1210
7535	(891879)	8	$3\frac{3}{16}$ Top $3\frac{3}{16}$ Bottom	1925

Mounting Straps

Cat. No.	Stock No.	Size Steel Inches	Used with Cable Guard No.	Diam. In.	Ship. Holes per 100
7538	(891880)	$\frac{1}{8}$ x $\frac{3}{4}$	7531	$\frac{9}{32}$	19
7539	(891881)	$\frac{1}{8}$ x $\frac{3}{4}$	7532-3	$\frac{9}{32}$	23
7540	(891882)	$\frac{3}{16}$ x 1	7534-5	$1\frac{1}{32}$	61



HUBBARD GUY THIMBLES

Hot Galvanized



No. 7593

Cat. No.	Stock No.	Size Strand	Size Guy Rod	Ship. Wt. per 100	7593 (892065)	7594 (892066)	7595 (892067)
		inches	inches	lb.	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$
			$\frac{1}{2}$ & $\frac{3}{8}$		$\frac{5}{8}$ & $\frac{3}{4}$		1
					11	21	42

HIGHWAY CROSSOVER BRACKETS

Hot Galvanized

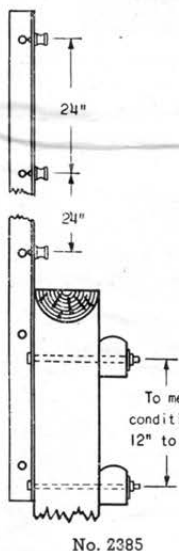
These extension angles are used to obtain clearance for carrying telephone wires to houses or over cross lines.

Holes $\frac{7}{16}$ -inch in diameter are provided for insulator attachments.

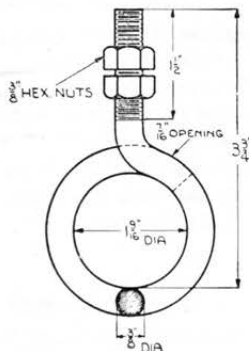
No. 2384 has two $\frac{11}{16}$ -inch pole mounting holes spaced 10 inches apart, and one $\frac{7}{16}$ -inch insulator attachment hole in each angle leg at the top.

No. 2385 is adaptable to crossarm spacings of 12, 18 or 24 inches.

Three sets of insulator attachment holes are provided spaced 24 inches apart.



Cat. No.	Stock No.	Dimensions, In. Size	Length	Approx. Ship. Wt. Lb.
2384	(891533)	$1\frac{1}{4} \times 1\frac{1}{4} \times \frac{1}{8}$	72	600
2385	(891534)	$1\frac{1}{2} \times 1\frac{1}{2} \times \frac{1}{4}$	90	1755



NO. 2390 HOOK BOLTS

For No. 2385 Crossover Brackets

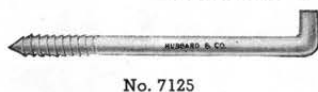
Size opening, $\frac{7}{16}$ inch. Size stock, $\frac{3}{8}$ inch.

Approximate shipping weight per 100 pieces, 33 pounds.

Stock No. (891535)

HUBBARD POLE STEPS

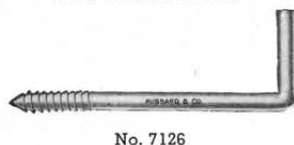
For Wood Poles Hot Galvanized



No. 7125



No. 7129



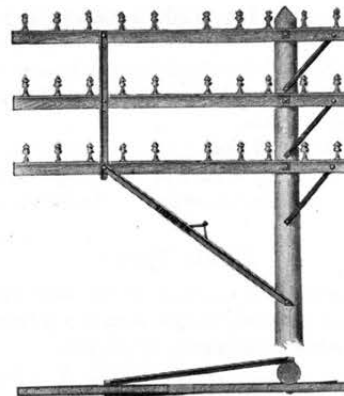
No. 7126

Made of open hearth steel and can be bent to an angle of 75° around its own diameter without fracture. Hook head step has drive head and fether drive threads. Button head step has twist drive threads and a square shoulder.

Cat. No.	Stock No.	Type Head	Diameter In.	Length Overall In.	Approx. Ship. Wt. Lb. per 100
7123	(891263)	Standard Hook	$\frac{9}{16}$	9	70
7124	(891264)	Standard Hook	$\frac{5}{8}$	9	88
7125	(891265)	Standard Hook	$\frac{5}{8}$	10	94
7126	(891266)	Long Hook	$\frac{5}{8}$	10	116
7128	(891267)	Button	$\frac{5}{8}$	$9\frac{5}{16}$	84
7129	(891268)	Button	$\frac{5}{8}$	$9\frac{11}{16}$	105

SIDE EXTENSION FIXTURES

Hot Galvanized



Showing Diagonal, Back and Vertical Braces Assembled

When it is necessary to clear buildings or trees without the use of high poles, these extension fixtures of the A. T. & T. design furnish a rigid and economical construction. Also used to offset arms on a pole where such construction will partially relieve the strain of a slight angle in the line. This method of offsetting is also useful where lines follow country roads with a great many slight bends in both directions. With extension fixtures, the poles may be set at the roadside, and by extending arms either toward the road or away from the road, to compensate for conditions, the wires may be strung in a straight line.

Diagonal Brace

Diagonal brace is intended for use on both 6 and 10-pin arms. It is provided with a 6-inch step for the lineman and may be used on either side of the pole. It is fastened to the side of the pole by a $\frac{1}{2}$ -inch lag screw and to the cross arm by a $\frac{1}{2}$ -inch machine bolt. Made of 2 by 2 by $\frac{3}{16}$ -inch angle steel. Bolts are not included.

Cat. No.	Stock No.	Dimensions, Inches Length Overall	Size Angle	Approx. Ship. Wt. Lb. per 100
8050	(891529)	83	$2 \times 2 \times \frac{3}{16}$	1720

Back Brace

No. 8051 back brace is used with 6-pin arms, and No. 8052 with 10-pin arms. These braces are attached to the pole by a $\frac{5}{8}$ -inch through bolt and to the cross arm by a $\frac{1}{2}$ -inch machine or carriage bolt. Made of 2 by 2 by $\frac{1}{4}$ -inch angle steel. Bolts are not included.

Cat. No.	Stock No.	Dimensions, Inches Length Overall	Size Angle	Approx. Ship. Wt. Lb. per 100
8051	(891530)	$54\frac{1}{2}$	$2 \times 2 \times \frac{1}{4}$	1240
8052	(891531)	$66\frac{7}{16}$	$2 \times 2 \times \frac{1}{4}$	1720

Vertical Brace—Communication Type

The vertical brace is designed for 3 arms spaced 12 inches apart, or 2 arms on 24-inch centers, additional arms being cared for by placing other vertical braces in series with the first.

Made of $1\frac{3}{4}$ by $1\frac{3}{4}$ by $\frac{1}{4}$ -inch angle and is provided with holes for $\frac{1}{2}$ -inch bolts. Bolts are not included.

Cat. No.	Stock No.	Dimensions, Inches Length Overall	Size Angle	Approx. Ship. Wt. Lb. per 100
8054	(891532)	$30\frac{5}{8}$	$1\frac{3}{4} \times 1\frac{3}{4} \times \frac{1}{4}$	720

HUBBARD FLAT CROSSARM BRACES

Hot Galvanized



No. 8020

Made from new open hearth steel punched for a 1/2-inch through bolt or lag screw at the pole end and 3/8-inch carriage bolts at the arm end.

All standard braces are made with rounded corners.

Cat. No.	Stock No.	Size Steel Inches	Length Over All In.	Ship. Wt. Lb. per 100
8020	(891487)	7/32x1 17/32	20	156
8022	(891488)	7/32x1 17/32	22	172
8024	(891489)	7/32x1 17/32	24	187
8026	(891490)	7/32x1 17/32	26	202
8028	(891491)	7/32x1 17/32	28	218
8030	(891492)	7/32x1 17/32	30	233
8032	(891493)	7/32x1 17/32	32	249
8120	(891494)	1/4 x 1 1/4	20	184
8122	(891495)	1/4 x 1 1/4	22	201
8124	(891496)	1/4 x 1 1/4	24	220
8126	(891497)	1/4 x 1 1/4	26	238
8128	(891498)	1/4 x 1 1/4	28	256
8130	(891499)	1/4 x 1 1/4	30	275
8132	(891500)	1/4 x 1 1/4	32	293

HUBBARD ALLEY ARM BRACES

Hot Galvanized



Used extensively on distribution lines in alleys or where obstructions make it necessary to support wires on one side of pole. Also used at points where poles must be sent slightly out of alignment. Arm being off-set in this case makes it possible to avoid a slight angle in the line.

Two holes for arm adjustment are supplied on Type A. Braces are attached to pole with 1/2-inch lag screws and to arm with 1/2-inch machine bolts. Furnished with steps.

Type B

This is the standard brace for side arm mounting.

Cat. No.	Stock No.	Length	Size Angle	Ship. Wt. Lb. per 100
7979	(891501)	5	1 3/4 x 1 3/4 x 3/16	1240
7981	(891502)	5	1 1/2 x 1 1/2 x 3/16	1000
7982	(891503)	6	1 1/2 x 1 1/2 x 3/16	1200
7983	(891504)	7	1 1/2 x 1 1/2 x 3/16	1400
7984	(891505)	7	1 3/4 x 1 3/4 x 3/16	1660
7985	(891506)	10	2 x 2 x 1/4	3800

HUBBARD VERTICAL BRACES

Standard Type

Hot Galvanized

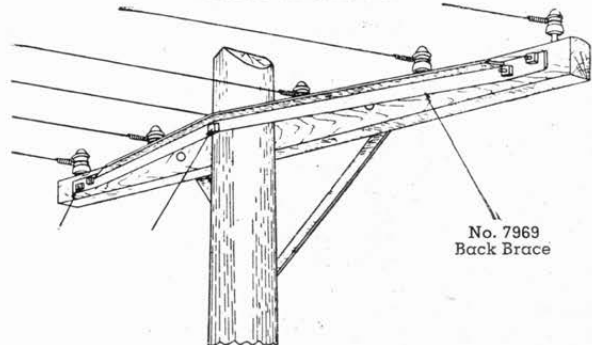


Cat. No.	Stock No.	No. of Arms	Spac- ing In.	Lgth. Overall Inches	Size Angle	Shipping Wt. Lb. per 100
7976	(891507)	2	18	20	1 1/2 x 1 1/2 x 3/16	300
7977	(891508)	3	18	38	1 1/2 x 1 1/2 x 3/16	520
7978	(891509)	4	18	56	1 1/2 x 1 1/2 x 3/16	840
*7986	(891510)	2	24	26	1 1/2 x 1 1/2 x 3/16	380
*7987	(891511)	3	24	50	1 1/2 x 1 1/2 x 3/16	700
7988	(891512)	4	24	74	1 1/2 x 1 1/2 x 3/16	1040

*E. E. I. Std.

HUBBARD CROSSARM BACK BRACES

Hot Galvanized



No. 7969
Back Brace

Used to reinforce crossarms at corners and terminal poles and in many cases eliminates the necessity for double arming.

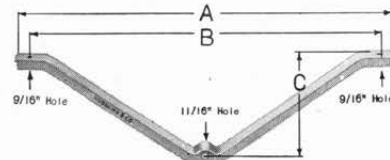
The angles are made of open hearth steel and are attached to the arm by means of two 1/2-inch machine bolts at each end. If vertical brace is not used, crossarm attachment may be made by using 1/2-inch carriage bolts.

Cat. No.	Stock No.	Angle Size In.	Overall Length Inches	Shipping Wt. Lb. per 100
7964	(891524)	1 1/2 x 1 1/2 x 3/16	48	550
7965	(891525)	1 1/2 x 1 1/2 x 3/16	60	825
7966	(891526)	1 1/2 x 1 1/2 x 3/16	72	1200
7967	(891527)	1 3/4 x 1 3/4 x 3/16	94	1540
*7969	(891528)	1 3/4 x 1 3/4 x 3/16	109	2204

*A. T. & T. Co. Std.

HUBBARD ANGLE CROSSARM BRACES

Hot Galvanized



In the construction of heavy pole lines, the one-piece angle steel crossarm brace is in general use. It fastens under the arm with 1/2-inch machine bolts and to the pole with a 3/8-inch through bolt or lag screw. Special sizes supplied on request. When ordering, state size of angle, A, B, and C dimensions, and hole sizes.

Cat. No.	Stock No.	Angle Size In.	A Dimensions In.	B Dimensions In.	C Dimensions In.	Lb. per 100	Ship. Wt.
7948	(891517)	1 1/2 x 1 1/2 x 3/16	51	48	14	974	
7950	(891518)	1 1/2 x 1 1/2 x 3/16	40	37	12	781	
7952	(891519)	1 1/2 x 1 1/2 x 3/16	51	48	14 3/4	979	
7953	(891520)	1 3/4 x 1 3/4 x 3/16	63	60	18	1408	
7954	(891521)	1 3/4 x 1 3/4 x 3/16	69	66	20	1551	
7955	(891522)	1 3/4 x 1 3/4 x 3/16	75	72	18	1639	
7956	(891523)	2 x 2 x 3/16	75	72	22	1958	

E. E. I. Standard

No. 7940. For use with E.E.I., 7 foot, 2-pin medium voltage cross-arm.

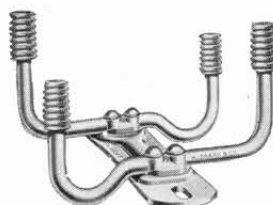
No. 7942. For use with E.E.I., 10 foot, 4-inch pin, medium voltage crossarm.

No. 7943. For use with E.E.I., special high voltage crossarms.

Cat. No.	Stock No.	Angle Size In.	A Dimensions In.	B Dimensions In.	C Dimensions In.	Lb. per 100	Ship. Wt.
7940	(891513)	1 1/2 x 1 1/2 x 3/16	45	42	12	858	
7941	(891514)	1 1/2 x 1 1/2 x 3/16	51	48	18	1067	
7942	(891515)	1 1/2 x 1 1/2 x 3/16	63	60	18	1210	
7943	(891516)	1 3/4 x 1 3/4 x 3/16	75	72	22	1716	

Revised 6-1-53

HUBBARD POINT TYPE TRANSPOSITION BRACKETS Hot Galvanized



Hubbard point type right and left hand transposition brackets are attached on standard crossarms through adjacent pin holes with $\frac{1}{2}$ x 6-inch crossarm bolts fitted with a clipped washer. Both attachment holes are slotted to provide a total of two inches of adjustment.

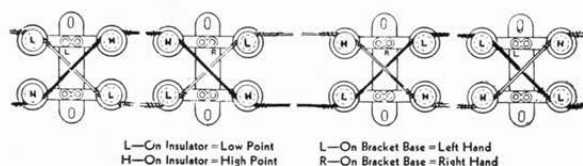
Mounting hole spacing 10 to 12 inches.

Line spacing $6\frac{3}{4}$ inches.

Base steel size, $\frac{1}{4}$ x 3 x $13\frac{5}{16}$ inches.

Point steel size, $\frac{3}{4}$ -inch round.

SYSTEM OF TRANSPOSITION (Patented)



In establishing a transposition of the right and left hand point type, a pair of brackets is employed as shown by the illustration in which one wire is black to distinguish it from the other.

Assuming that a complete transposition is the crossing of one wire over the other and then eventually back to its original position in relation to the other wire, two complete transpositions are shown by the illustration. Note that the first one is black over white and the second is black under the white, maintaining perfect balance. No cutting is necessary, and no tangles result when arms or poles are wrecked as is the case with the spiral type of transposing on the average bracket.

Mounting slots fit standard drilled arms with a 2-inch adjustment range.

Mounting bolts are furnished.

Lead thread or wood cobs are available.

Hubbard point type brackets listed were designed specifically for use with this system. The purchaser of Hubbard brackets is assured a license permitting the transposing of wires as covered by the above patent.

If further details are desired, communicate with the nearest Hubbard factory office.

Cat. No.	Stock No.	Description	*Approx. Ship. Wt. Lb. per 100
9272LT	(894392)	Right Hand Bracket, Lead Thread	900
9273LT	(894393)	Left Hand Bracket, Lead Thread	900
9272	(894390)	Right Hand Bracket, Wood Cob	800
9273	(894391)	Left Hand Bracket, Wood Cob	800

*Including bolts.

HUBBARD STANDARD TRANSPOSITION BRACKETS Hot Galvanized



These transposition brackets have a $\frac{3}{8}$ " hole for a wood screw (shown in the No. 9251 illustrated) and holes for a $\frac{3}{8}$ " carriage bolt.

All are fitted for pins having a $\frac{1}{2}$ " diameter short shank. Pins and carriage bolts are not included. These items are shown on other pages.

Cat. No.	Stock No.	Steel Size Inches	Crossarm Size Inches	Ship. Wt. Lb. per 100
9249	(891549)	$1\frac{1}{4}$ x $\frac{5}{16}$	$2\frac{3}{4}$ x $3\frac{3}{4}$	277
†9251	(891550)	$1\frac{1}{4}$ x $\frac{5}{16}$	$3\frac{1}{4}$ x $4\frac{1}{4}$	284

†A.T.&T. Co. Std.

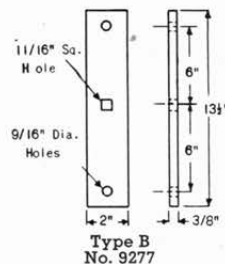
HUBBARD PRESSED STEEL POLE BRACKETS Hot Galvanized

Made with a curved back for pole mounting. Especially desirable for long span telephone and signal work. Made from No. 12 ga. steel. Equipped with Peirce 1-inch threads.

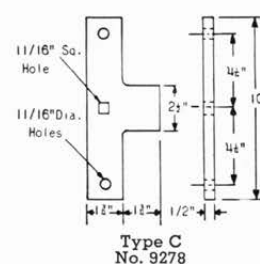


Cat. No.	Stock No.	Dimensions—Inches Steel Size Extension Mount. Ship. Wt.	Approx. Ship. Wt. Lb. per 100
20137	(891540)	12 Ga. 4 1/2 7/16	118

HUBBARD TANDEM TRANSPOSITION BRACKETS



Type B
No. 9277



Type C
No. 9278

Type B for use on Straight Line Transposition. $\frac{11}{16}$ " square hole is for crossarm mounting. Takes No. 8010 Pin. Made from $2\frac{1}{2}$ x $\frac{3}{8}$ " flat steel. Weight—280 pounds per 100 pieces.

Catalog No. 9277 Stock No. (894713)

Type C for Transposition at corners. The bracket lug is placed in the direction of the line strain and affords a greater bearing surface. $\frac{11}{16}$ " square hole is for crossarm mounting. Takes No. 8015 pin. Made from $\frac{1}{2}$ " flat steel. Weight—300 pounds per 100 pieces.

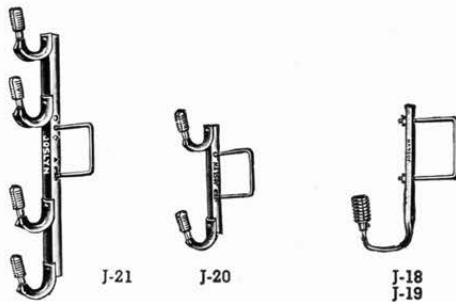
Catalog No. 9278 Stock No. (894714)

CARRIAGE BOLTS

Especially recommended for use with Tandem Transposition Brackets No. 9277 and 9278, shown above.

Cat. No.	Stock No.	Thread	Std. Pkg.	Wt. Lbs./C
9676	(895033)	$\frac{5}{8}$ "	100	70

TRANSPOSITION BRACKETS



Brackets Nos. J18, J19, J20 and J21, are furnished with "U" bolts for $3\frac{1}{4}$ x $4\frac{1}{4}$ -inch cross arms unless otherwise specified. Bracket No. J25 is mounted with one $\frac{3}{8}$ -inch bolt. The sharp prong drives into the wood and prevents rotation.

All brackets have Joslyn Pressed Steel Threads for insulators with 1-inch pin holes.

Cat. No.	Stock No.	No. of Wires	Spacing Inches	Extension In.	Size Points	Stock Back In.	Wt. Lb. per 100
J18	(891545)	1	—	$3\frac{7}{8}$	—	$\frac{3}{4}$	104
J19	(891546)	1	—	$3\frac{7}{8}$	—	1	148
J20	(891547)	2	10	$3\frac{1}{2}$	No. 12	1	206
J21	(891548)	4	$6\frac{1}{2}$ x10	$3\frac{1}{2}$	No. 12	$1\frac{1}{4}$	435

HUBBARD ONE PIECE TRANSPOSITION BRACKETS

Hot Galvanized

No. 9260 and No. 9261 are similar to bracket No. 9251 except that the end is turned up and fitted with a 1-inch wood cob. Nos. 9260 and 9261 are single point brackets made from $1\frac{1}{4}$ " x $\frac{5}{16}$ " flat steel. No. 9260 is for 3" x 4" arms; No. 9261 is for $3\frac{1}{4}$ " x $4\frac{1}{4}$ " arms. The sturdy No. 9262, made from $1\frac{1}{2}$ " x $\frac{3}{4}$ " steel, is mounted on any size arm by $\frac{1}{2}$ " Machine Bolts. Equipped with standard one inch wood cobs for insulator mounting.

Catalog No. . . .	9260	9261	9262
Stock No.	(894710)	(894711)	(894712)
No. of points . .	1	1	3
Steel Size	$1\frac{1}{4}$ x $\frac{5}{16}$	$1\frac{1}{4}$ x $\frac{5}{16}$	$1\frac{1}{2}$ x $\frac{3}{4}$
Crossarm Size . .	3x4	$3\frac{1}{4}$ x $4\frac{1}{4}$	All Sizes
Ship Wt. Lb. per 100 Pcs.	341	346	918



No. 9262

NO. 152 POLE BRACKET

Recommended for heavy work, such as electric railway feeders and where greater extension from pole is desired.

Channel size, $2\frac{1}{16}$ x $1\frac{1}{4}$ inches x 9 gage. Extension, 5 inches. Mounting holes size, $1\frac{1}{16}$ inch.

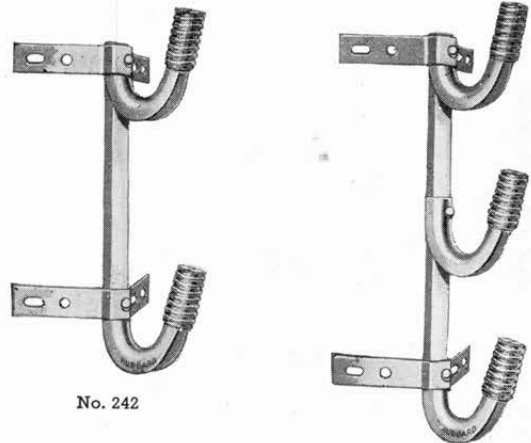
Approximate shipping weight per 100, 112 pounds.

Stock No. (891541)



No. 152

PEIRCE PRESSED STEEL CORNER BRACKETS



No. 242

No. 342



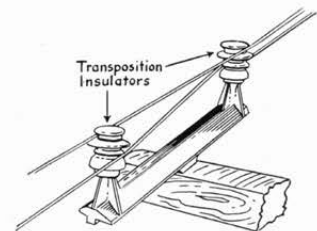
No. 150

For stringing wires around corners of buildings. May be used for telephone or electric light work. Made of pressed steel, hot galvanized. Lead threads on bracket points.

Cat. No.	Stock No.	Extension Inches	Holes Inches	Spacing Inches	Wt. Lb. per 100
150	(891542)	$3\frac{1}{2}$	$1\frac{1}{32}$	—	88
242	(891543)	$3\frac{3}{4}$	$1\frac{1}{32}$	9	165
342	(891544)	$3\frac{3}{4}$	$1\frac{1}{32}$	$6\frac{1}{2}$	297

PM-101 ALL ALUMINUM TRANSPOSITION BRACKETS

These all-aluminum brackets are cast in permanent molds. Non-corrosive and light in weight. Shipped completely assembled with Hot Dip galvanized bolt and washer, and rubber cobs ready to install on crossarm.



Cat. No.	Stock No.	Carton	Weight, Each
PM-101	(895178)	20	$2\frac{1}{2}$ Lb.

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.

WESTERN UNION OR SIGNAL PINS

Hot Galvanized

For use with standard insulators having 1-inch pin holes.

Furnished with best grade, air dried oak cobs, boiled in paraffine, accurately gaged to a uniform size. Pins are made of high carbon steel, with clean threads and square nuts.



No. 8000



No. 8010

Long Shank Pins

For Wood Cross Arms

Cat. No.	Stock No.	Diam. In.	Length, In. Above Shoulder	Approx. Ship. Wt. Lb.
+8000	(891298)	1/2	4 1/4	5
*+8005	(891299)	5/8	4 1/4	5

Lag Screw Pins

For Wood Arms and Poles

Cat. No.	Stock No.	Diam. In.	Length, In. Above Shoulder	Approx. Ship. Wt. Lb.
8006	(891300)	1/2	4 1/4	3
8007	(891301)	5/8	4 1/4	3

Short Shank Pins

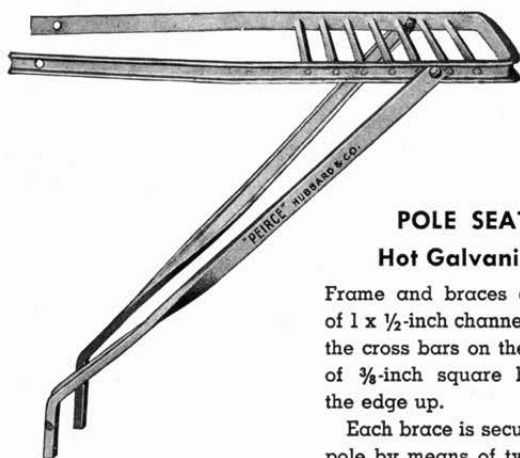
For Steel Cross Arms, Transposition Brackets and Break Irons

Cat. No.	Stock No.	Diam. In.	Length, In. Above Shoulder	Approx. Ship. Wt. Lb.
*+8010	(891302)	1/2	4 1/4	1
*+8015	(891303)	5/8	4 1/4	1
+8015-A	(891304)	5/8	4 1/4	1 3/8

With Long Cob for Transposition Insulators

Cat. No.	Stock No.	Diam. In.	Length, In. Above Shoulder	Approx. Ship. Wt. Lb.
*8011	(891305)	1/2	5	1
8016	(891306)	5/8	5	1

*A.T.&T. Co. Std. +Western Union Std. +A.R.A. Std.



POLE SEATS

Hot Galvanized

Frame and braces are made of 1 x 1/2-inch channel iron and the cross bars on the seat are of 3/8-inch square bars with the edge up.

Each brace is secured to the pole by means of two 1/2 x 1-inch lag screws and the frame by means of 7/16 or 1/2-inch lag screws. Designed to fit a 10-

inch diameter pole, but may be fitted to 8 to 12-inch diameter poles.

Catalog No.	755	757
Stock No.	(891851)	(891852)
Size Platform	inches 13 7/8 x 12	12 x 11
Extension from Center of Pole	inches 2 1/2	2 1/4
Weight, Each	pounds 14	12.6

WOOD TOP PINS WITH STEEL BOLTS

Bolts Hot Galvanized

Made of properly seasoned wood tops, thoroughly impregnated with paraffine. Head of solid steel bolt is sunk in pin top to eliminate pressure against insulator.

For 1-Inch Insulator Pin Hole

Diameter of top of Wood Top, 1 inch; Diameter of steel bolt, 1/2 inch.

Cat. No.	Stock No.	Wood Top, In. Diam. Bottom	In. Lgth.	Bolt, In. Lgth.	Ap. Lgth. prox. Below Ship. Wood Top 100 Pcs.
8064	(891307)	1 13/16	4	9	5
8070	(891308)	1 7/8	4 1/2	5 1/2	1
8071	(891309)	2 1/4	5 1/4	6 1/2	1 1/4
8074	(891310)	1 7/8	4 1/2	9 1/2	5
8075	(891311)	2 1/4	5 1/4	10 1/2	5 1/4
8076	(891312)	2 1/4	5 1/4	11 1/2	6 1/4



No. 8078

For 1 3/8-Inch Insulator Pin Hole

Diameter of top of Wood Top, 1 3/8 inches; Diameter of steel bolt, 5/8 inch.

Cat. No.	Stock No.	Wood Top, In. Diam. Bottom	In. Lgth.	Bolt, In. Lgth.	Ap. Lgth. prox. Below Ship. Wood Top 100 Pcs.
8072	(891313)	2 1/4	4 1/2	5 1/2	1
8073	(891314)	2 1/4	5 1/4	6 1/2	1 1/4
8077	(891315)	2 1/4	4 1/2	9 1/2	5
8078	(891316)	2 1/4	4 1/2	10 1/2	6
8079	(891317)	2 1/4	5 1/4	10 1/2	5 1/4
8080	(891318)	2 1/4	6 1/2	12 1/2	6
8081	(891319)	2 1/2	8	14	6
8082	(891320)	2 3/4	9	16	7

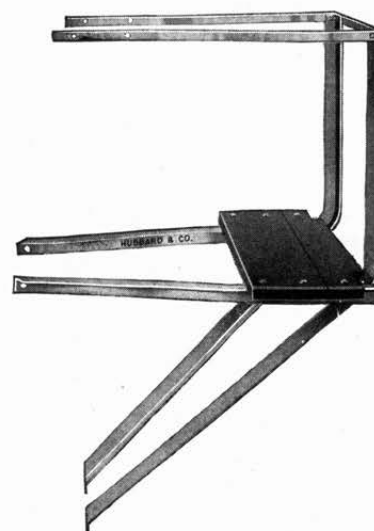
NO. 9035 POLE BALCONIES

Hot Galvanized

The frame, braces and guard rails of this balcony are made of open hearth steel, galvanized by the hot-dip process.

The wooden platform is made of thoroughly seasoned oak, painted with two coats of standard green pole paint.

The railing fastens to a telephone terminal box. Used for convenience and comfort in telephone terminal box work and serve as switching platforms with the power companies.



Upright braces are 1 1/2 x 1 1/2 x 3/16-inch steel, the platform supports 1 3/4 x 1 3/4 x 3/16-inch angle steel, and the guard rail of 1/4 x 1 1/4-inch flat steel.

Includes all bolts for fastening parts together, but not bolts for attaching to pole.

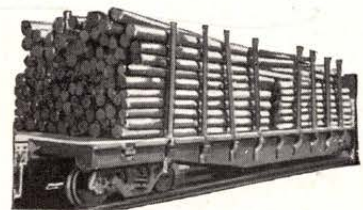
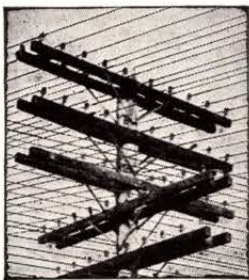
Size of seat, 14 1/4 x 29 3/4 inches.

Shipping weight per 100, 6300 pounds.

Stock No. (891850)

STROMBERG-CARLSON

Poles, Cross Arms, Brackets



Poles of creosoted yellow pine, and of red or white cedar with various preservative treatments; cross arms of Douglas fir; locust wood pins and brackets of thoroughly seasoned oak.

CONTENTS

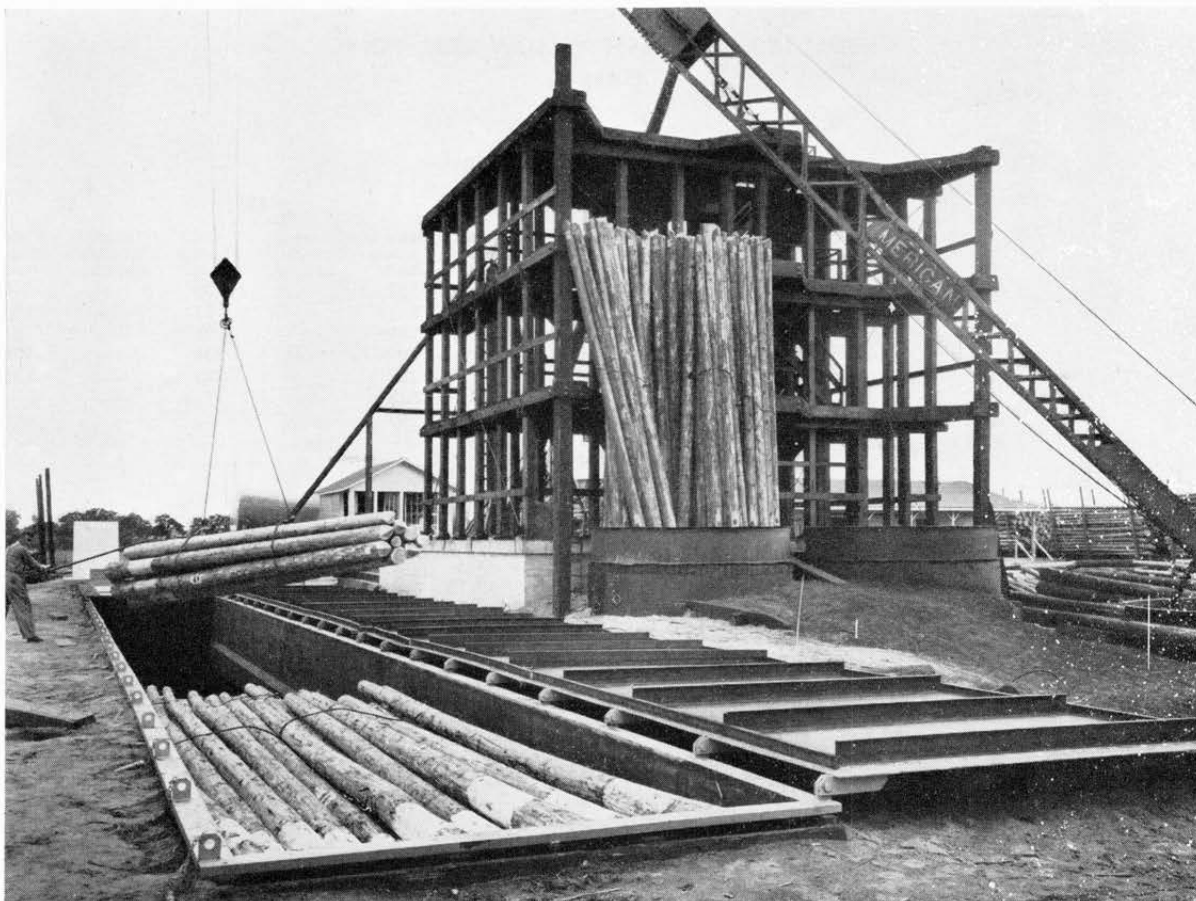
SECTION N

POLES, CROSS ARMS, BRACKETS

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TELEPHONE POLES

Creosoted Southern Yellow Pine—Western Red Cedar—Northern White Cedar



Creosoted Southern Yellow Pine Poles have within recent years become as popular in the telephone field as the cedars. This timber is stronger than the cedars and consequently the poles need not be so large to give a required strength.

Inasmuch as yellow pine is perishable without preservative treatment it is furnished only after treatment full length under pressure with the finest and cleanest obtainable Creosote Oil, a pure distillate of coal tar. This treatment, it is generally believed, when applied properly to a pine pole that is in perfect condition, will protect the timber for a life in the line upward of thirty years.

In most sections of the country the Creosoted Yellow Pine Pole will figure out being the lowest cost pole obtainable, on an annual cost basis if not actually in first cost.

Northern White and Western Red Cedar Poles are probably in more general use in the independent telephone field today than any other timber. The natural durability of these timbers makes for long life even untreated and by adding open tank butt treatment at very little first cost that natural life in the line can be materially extended. The weight of the cedars is less than yellow pine, which to some users is an advantage in handling, transporting and construction. Other differences between the cedars and yellow pine considered by some users as advantages: Greater taper resulting in larger ground line circumference and consequent greater ground friction when set,

softer texture of the wood to facilitate climbing, lack of creosote treatment in the section above ground to insure against complaints in regard to leaching and to permit painting.

Northern White Cedar Poles can be "Penta" treated to insure maximum protection against decay and termites. A toxic organic chemical compound, many times more powerful and lasting than other preservatives in common use is carried into the wood structure itself. This preservative is non-corrosive, does not affect hardware, or insulation qualities of the pole. Treated poles may be readily handled without any unusual care, as washing with soap and water will remove every trace from the hands.

The Stromberg-Carlson organization feels that both the Pine and Cedar Timbers and in some cases other timbers will provide entirely satisfactory poles. Each kind of timber has its particular qualifications and for some users one may be better suited, while for others the opposite may be true. We have arrangements with the leading producers and treaters of all species, insuring an adequate supply available.

In ordering poles please be as specific as possible in regard to the specifications concerning both grade and size as well as treatment. Creosoted Pine Pole prices always include framing (roofing, gabling and boring for through bolts) in accord with customers' instructions so orders should be accompanied with a sketch or other complete description.

STROMBERG-CARLSON

TABLES OF POLE DIMENSIONS AND WEIGHTS

American Standards Association
(A.S.A.) Specifications

CREOSOTED SOUTHERN YELLOW PINE POLES

Class

5 6 7 8 9 10

Minimum Top Circumference, Inches

19 17 15 18 15 12

Length Feet	Minimum Circumfer- ence In.	Weight Pounds Each	Minimum Circumfer- ence In.	Weight Pounds Each	Minimum Circumfer- ence In.	Weight Pounds Each	*Minimum Circumfer- ence In.	Weight Pounds Each	*Minimum Circumfer- ence In.	Weight Pounds Each	*Minimum Circumfer- ence In.	Weight Pounds Each
16	21.5	234	19.5	202	18.0	165	---	188	---	138	---	110
18	22.5	275	21.0	234	19.0	188	---	211	---	151	---	133
20	23.5	330	22.0	284	20.0	234	---	261	---	202	---	161
22	24.5	398	23.0	339	21.0	284	---	307	---	234	---	188
25	26.0	491	24.0	422	22.0	334	---	389	---	289	---	234
30	28.0	660	26.0	550	24.0	454	---	513	---	371	---	---
35	30.0	862	27.5	743	25.5	646	---	697	---	---	---	---
40	31.5	1059	29.0	921	27.0	807	---	---	---	---	---	---
45	33.0	1274	30.5	1114	28.5	976	---	---	---	---	---	---

*No butt requirements

WESTERN RED CEDAR POLES

Class

5 6 7 8 9 10

Minimum Top Circumference, Inches

19 17 15 18 15 12

Length Feet	Minimum Circumfer- ence In.	Weight Pounds Each	Minimum Circumfer- ence In.	Weight Pounds Each	Minimum Circumfer- ence In.	Weight Pounds Each	*Minimum Circumfer- ence In.	Weight Pounds Each	*Minimum Circumfer- ence In.	Weight Pounds Each	*Minimum Circumfer- ence In.	Weight Pounds Each
20	25.5	240	23.5	180	22.0	160	---	160	---	120	---	90
25	28.5	320	26.0	255	24.5	200	---	205	---	180	---	120
30	30.5	400	28.5	335	26.5	280	---	295	---	225	---	---
35	32.5	520	30.5	450	28.0	375	---	405	---	---	---	---
40	34.5	640	32.0	560	---	---	---	---	---	---	---	---
45	36.5	800	---	---	---	---	---	---	---	---	---	---

*No butt requirements

NORTHERN WHITE CEDAR POLES

Class

5 6 7 8 9 10

Minimum Top Circumference, Inches

19 17 15 18 15 12

Length Feet	Minimum Circumfer- ence In.	Weight Pounds Each	Minimum Circumfer- ence In.	Weight Pounds Each	Minimum Circumfer- ence In.	Weight Pounds Each	*Minimum Circumfer- ence In.	Weight Pounds Each	*Minimum Circumfer- ence In.	Weight Pounds Each	*Minimum Circumfer- ence In.	Weight Pounds Each
16	26.0	230	24.0	190	22.0	135	---	135	---	105	---	85
18	28.0	300	25.5	230	23.5	190	---	190	---	130	---	100
20	29.0	300	27.0	230	25.0	190	---	190	---	130	---	100
22	30.5	420	28.0	300	26.0	225	---	225	---	200	---	150
25	32.5	420	30.0	300	28.0	250	---	250	---	200	---	150
30	35.5	520	33.0	420	30.5	350	---	350	---	275	---	---
35	38.0	720	35.0	510	32.5	450	---	---	---	---	---	---
40	40.0	790	37.0	740	---	---	---	---	---	---	---	---
45	42.0	1080	---	---	---	---	---	---	---	---	---	---

*No butt requirements

Minimum circumferences listed are measured at 6 feet from butt.

STOCK NUMBERS

For all Yellow Pine Poles (894844)

For all Red Cedar Poles (894845)

For all White Cedar Poles (894846)

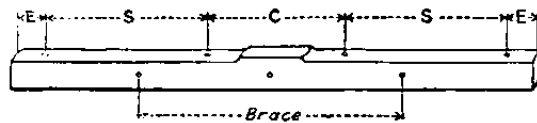
Give complete specifications as to Class, Circumference and Length; also instructions for preservative treatment.

The purchasing of poles on other than A.S.A. specifications is rapidly becoming an obsolete practice. As long as the other specifications are in use, however, we will be in position to intelligently handle inquiries and orders relating to them.

The figures in the tables are given only with reference to the more typical telephone pole sizes.

For other sizes please make special inquiry.

STANDARD TELEPHONE CROSSARMS



DOUGLAS FIR CROSSARMS

Manufactured from old growth Douglas yellow fir obtained from virgin forest in the northwest. Fir, because of its durability and light weight, compared with its strength, has been almost universally adopted for crossarm purposes by the telephone companies.

All arms are Kiln or air dried so as to insure the uniformity of the seasoning. Modern machine equipment is employed in the surfacing of the arms and in the boring of the pin holes.

Electric Light Arms

Size arm, $3\frac{1}{4} \times 4\frac{1}{4}$ inches. Size pin holes, $1\frac{17}{32}$ inches. Size center bolt hole, $\frac{5}{8}$ inches.

Lgth. Feet	No. Pin Holes	Stock No.	Pin Hole Spacing Center Sides Ends	*Brace Bolt per 100 Spacing	Wt. Lb. per 100
3	2	(891140)	28	—	4 25 1062
4	4	(891141)	16 12	4	28 1416
5	4	(891142)	18 17	4	28 1770
6	4	(891143)	22 21	4	32 2124
6	6	(891144)	16 12	4	32 2124
8	6	(891145)	18 17½	4	32 2832
8	8	(891146)	16 12	4	32 2832
8½	10	(891147)	16 9¾	4	32 3009
10	8	(891148)	17½ 15¾	4	42 3540
10	10	(891149)	16 12	4	42 3540

Pony Telephone Arms

Size arm, $2\frac{3}{4} \times 3\frac{3}{4}$ inches. Size pin holes, $1\frac{17}{32}$ inches. Size center bolt hole, $\frac{5}{8}$ inch.

Lgth.	No. Pin Holes	Stock No.	Pin Hole Spacing Center Sides Ends	*Brace Bolt per 100 Spacing	Wt. Lb. per 100
24	2	(891150)	17	—	3½ — 540
30	2	(891151)	23	—	3½ — 675
36	2	(891152)	29	—	3½ 25 810
42	4	(891153)	16 9½	3½	28 945
62	6	(891154)	16 9¾	3½	28 1395
82	8	(891155)	16 9¾	3¾	28 1845
102	10	(891156)	16 9¾	4	28 2295
120	12	(891157)	16 9¾	3¾	28 2700

*All arms are bored with $\frac{3}{8}$ -inch brace bolt holes unless otherwise specified.

CREOSOTED YELLOW PINE CROSSARMS

These arms have become increasing popular in recent years and are being used extensively in some localities. Sound southern yellow pine is close and straight grained. Defects impairing strength are strictly prohibited.

Arms are thoroughly seasoned and are pressure treated by the Rueping Empty Cell Process to final retention of eight pounds per cubic foot of wood with No. 1 grade pure coal tar creosote oil.

Electric Light Arms

Size arm, $3\frac{1}{4} \times 4\frac{1}{4}$ inches. Size pin holes $1\frac{17}{32}$ inches. Size center bolt hole, $\frac{5}{8}$ inches.

Lgth. Feet	No. Pin Holes	Stock No.	Pin Hole Spacing Center Sides Ends	*Brace Bolt per Arm Spacing	Wt. Lb. per 100
3	2	(891158)	28	—	4 25 15
4	4	(891159)	16 12	4	28 20
5	4	(891160)	18 17	4	28 26
6	4	(891161)	22 21	4	32 31
6	6	(891162)	16 12	4	32 31
8	6	(891163)	18 17½	4	32 41
8	8	(891164)	16 12	4	32 41
8½	10	(891165)	16 9¾	4	32 43
10	8	(891166)	17½ 15¾	4	42 51
10	10	(891166)	16 12	4	42 51
10	12	(891168)	16 9¾	3¾	42 51

Pony Telephone Arms

Size arm, $2\frac{3}{4} \times 3\frac{3}{4}$ inches. Size pin holes, $1\frac{17}{32}$ inches. Size center bolt hole, $\frac{5}{8}$ inch.

Lgth. In.	No. Pin Holes	Stock No.	Pin Hole Spacing Center Sides Ends	*Brace Bolt per Arm Spacing	Wt. Lb. per 100
24	2	(891169)	17	—	3½ — 8
30	2	(891170)	23	—	3½ — 10
36	2	(891171)	29	—	3½ 25 12
42	4	(891172)	16 9½	3½	28 13
62	6	(891173)	16 9¾	3½	28 20
82	8	(891174)	16 9¾	3¾	28 26
102	10	(891175)	16 9¾	4	28 32
120	12	(891176)	16 9¾	3¾	28 38

*All arms are bored with $\frac{3}{8}$ -inch brace bolt holes unless otherwise specified.

NOTE: Length of Brace corresponding to different lengths of crossarms:

Electric Light Arms

3 foot arm	20 inch brace
4, 5 foot arm	22 inch brace
6, 8, 8½ foot arm	24 inch brace
10 foot arm	30 inch brace

Pony Telephone Arms

36 inch arm	20 inch brace
All Larger Sizes	22 inch brace

STANDARD WOOD PINS

Made of locust wood. Is hard, close-grained wood, impenetrable to moisture and practically impervious to decay. Especially well suited for making wood insulator pins where accurate turning and freedom from shrinking or warping are primary considerations.

All pins are shipped in heavy burlap bags.

Size Pin Inches	Stock No.	Size Top Inches	No. in Std. Pkg	Wt. Lb. per 1000
1 ¼ x 8	(891293)	1	250	325
1 ½ x 9	(891294)	1	250	480



WOOD BRACKETS

These brackets made of oak are fastened to pole or wall by spikes.

Holes in brackets are $\frac{5}{16}$ -inch diameter.

Brackets are securely wired in bundles of 20 or 25 each.

Furnished plain or creosote-dipped.

Type	Stock No.	Size Inches	Std. Pkg.	Wt. Lb. per 1000
4	(891281)	1½x2x10	250	600
L.D.	(891282)	1¾x2x12	250	800
W.U.	(891283)	2x2¾x12	250	1000
New W.U.	(891284)	2x2¾x12	250	1150



6n • POLES, CROSS ARMS, BRACKETS

Revised 6-1-53



WOOD POLE STEPS

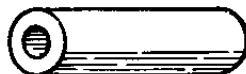
Made from oak, seasoned and dried.

5/16 holes for spikes are drilled.

Wired in bundles of 20 or 25 for shipment.

Catalog No. J-2662
Stock No. (891269)
Size Inches 1 1/4 x 2 5/8 x 7
Weight Pounds per 1000 700

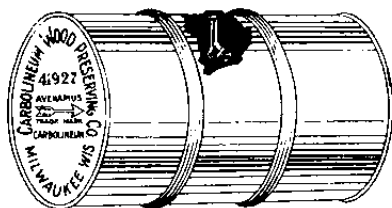
LOCUST PIN BUSHINGS



This bushing is used for adapting a crossarm which has a pin hole for a standard wood pin so that it will take the smaller shank of a steel pin. Locust wood is hard, close-grained, and practically impervious to moisture, so that bushings may be driven home and left without further treatment. Bushing is 1 1/4" x 3 7/8".

Stock No.	Bore	Steel Pin Size	Ship. Wt. Lbs./M
(895184)	1 1/8"	5/8"	150
(895159)	1 1/4"	1/2"	150

CARBOLINEUM



"Avenarius Carbolineum", wood preservative, is four times richer in wood preserving elements than average creosote oils. Will prevent premature rot and decay and will from double to triple the life of poles, posts, braces, cross arms, etc. Termites will not attack "Carbolineum" treated wood.

Liquid and usable at all times. No bleeding or oozing in hot weather; no heating, pressure, special equipment or skilled labor is necessary. Apply at site simply by brush, spray or quick dip. One gallon treats 3 to 6 butts depending on size of poles or 100 to 200 square feet of surface. Stock No. (891279)

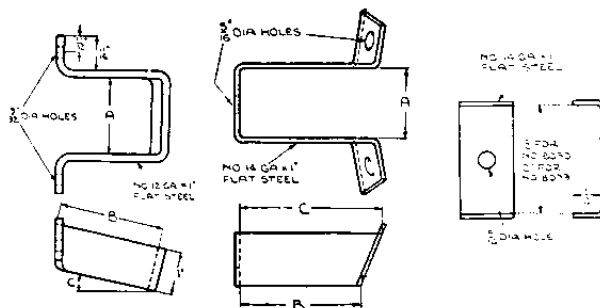
C-A WOOD PRESERVER (Carbolineum America)

Pole butts treated with this product have lasted 25 years.

To retard rot on erected poles, dirt is dug away from the ground line and C-A wood preserver (CARBOLINEUM AMERICA) is sprayed on the poles. Dirt is replaced about 24 hours later.

The product is so efficient that if 1/3 of it is mixed with 2/3's fuel oil or used crank case oil, the mixture is fully equal to the highest grade of creosote oil. Stock No. (891280)

HUBBARD BRACKET STRAPS AND CLIP WASHERS Hot Galvanized



No. 8065

No. 8089

No. 8099

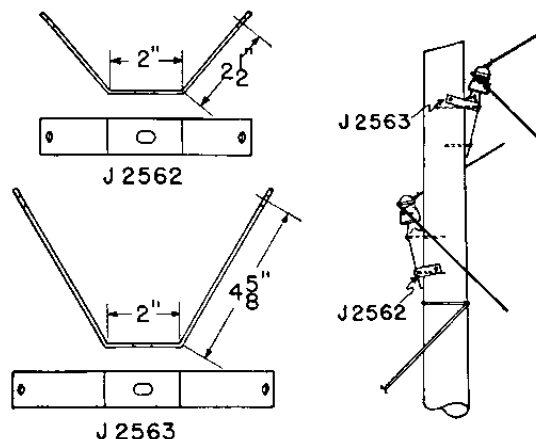
Two bracket straps, top and bottom, are used on each wood bracket. A. T. & T. Standard.

No. 8089 top clip washer and No. 8090 bottom clip washer are to be used with Graybar Standard No. 1 Wood Bracket.

No. 8098 top clip washer and No. 8099 bottom clip washer are to be used with Graybar Standard No. 2 Wood Bracket.

Cat. No.	Stock No.	Description	Dimensions			Ship. Wt. per C
			A In.	B In.	C	
8065	(891285)	Low. Brkt. W. U.	1 15/16	15/16	19°	16
8066	(891286)	Top Brkt. W. U.	1 15/16	27/16	19°	25
8067	(891287)	Top Brkt. L. D.	1 3/4	2	15°	22
8068	(891288)	Low. Brkt. L. D.	1 3/4	7/8	15°	16
8089	(891289)	Top Washer	1 1/2	1 11/16	1 15/16	17
8090	(891290)	Low. Washer	1 1/2	---	---	6
8098	(891291)	Top Washer	2	2	2 1/4	20
8099	(891292)	Low. Washer	2	---	---	8

JOSLYN BRACKET STRAPS



Joslyn bracket straps are used to reinforce the wood bracket when new types of high strength wire are used. Longer spans are used and therefore the strain on the fastenings is greatly increased, especially on angles. The bottom strap is used on an outside bracket and the top strap on an inside bracket, as illustrated.

Mounting holes are 5/16 inch. The straps are made of 1-inch x No. 14 gage steel, to fit brackets 2 inches wide.

Cat. No.	Stock No.	Description	Wt. Lb. per 100
J2562	(894663)	Bottom	18
J2563	(894664)	Top	28

STROMBERG-CARLSON