

Stromberg-Carlson

1925

Switchboards
Telephones
Radio Apparatus
Miscellaneous Parts
Construction Material
and
Supplies

Stromberg - Carlson Telephone Mfg. Co.

FACTORY and GENERAL OFFICES—ROCHESTER, N. Y., U. S. A.

BRANCH OFFICES:

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West Virginia

INTRODUCTORY

THIS catalogue has been written with the idea of presenting to our customers complete lines of high grade Switchboard, Telephone and Radio Equipment, together with Piece Parts, Accessories, Construction Material and Specialties. The equipment listed includes only material of our own manufacture and such items as are considered standard by the majority of telephone companies and radio dealers.

The large assortment of these supplies carried in our stocks at Rochester, Chicago and Kansas City insure prompt shipments.

STROMBERG-CARLSON TELEPHONE MFG. CO.

Notice to Purchasers

When Ordering Goods—Give address in full, and shipping point, taking care to specify our Code Number as well as the name of each article ordered. Unless you specify what is wanted by Code Number, your order may be subject to delay. All requests for information should be made on separate sheets from the order blanks.

Shipments—Always specify whether you desire goods shipped by freight or by express. When shipment is desired by freight, specify the routing. In the absence of specific instructions, we shall use our best judgment in selecting the route, but, we are not responsible for extra drayage expense at destination.

Transportation Charges—Unless otherwise specified by us, all goods are sold f. o. b. Rochester, N. Y., or f. o. b. Branch Offices. The transportation charges will therefore be collected from the purchaser by the carriers.

Prices—The prices quoted in the following pages are net and are subject to change without notice.

Unpriced orders will be filled at our lowest market prices prevailing at the date of shipment.

Priced orders for considerable quantities of materials which do not conform in pricing with our latest prevailing market quotations will be requested before we make shipment.

On the other hand, priced orders for small quantities of materials will be shipped without renegotiations, unless request is made for revised quotations before shipment.

We shall endeavor to fill all orders at the prices herein quoted, except where it is possible to give the benefit of a lower market.

All Agreements—Are made contingent upon strikes, fires, accidents or causes beyond our control.

Terms—Net cash thirty days from date of invoice.

New Accounts—New accounts are solicited on a credit basis. In order to facilitate prompt service, we request that where you are not rated by commercial agencies, references or other information of a credit character should be forwarded with the order. Special references or information will be immediately acted upon, and the result held in strict confidence for our sole use. When reasonably satisfactory credit standing is established, shipment will follow with all possible dispatch.

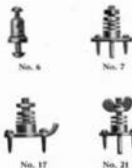
To avoid the delay incidental to communicating with regard to references, etc., it would be mutually convenient when immediate shipment is desired to instruct us to ship C. O. D., by express, or parcel post (insured if so instructed) or by freight subject to sight draft through a local bank against bill of lading.

Remittances—May be made by bank draft, postoffice or express money-orders or in currency. Cash should only be sent by registered mail. Unless accompanied by orders, all remittances should be addressed to our General Offices at Rochester, New York, where all accounts are kept.

Liability—We cannot be responsible for breakage after having obtained an "In Good Order" receipt from the transportation company.

All claims for breakage and damage should be made without delay to the transportation companies handling the freight. We will gladly assist you present these claims.

Binding Posts



Code No.	Description	Finish	Price Each
6	The No. 6 Binding Post is provided with a screw connection for making contact with either cord tips or wire. It is mounted with a $\frac{1}{2}$ in. screw and is used on the No. 962 Extension Bell.	Polished Nickel	\$.15
7	This Binding Post has a lock nut connection with a terminal designed to extend through a wooden terminal board, for a soldered connection. Two $\frac{1}{2}$ in. screws are used in mounting.	Black	.15
17	No. 17 Binding Post has two connections: one is a lock nut, the other a soldered connection. Two $\frac{1}{2}$ in. screws are used in mounting.	Polished Nickel	.15
21	A Binding Post with a lock nut which has wing shaped projections to facilitate turning by hand. The rear connection is for soldering. Two $\frac{1}{2}$ in. screws are used in mounting. It is designed for Test Sets.	Black	.20



Drop Blanks

Drop Blanks for use in place of drop mountings when a switchboard is not fully equipped.



Code No.	Material	Mounts	Use	Price Each
33	Steel, Dull black finish	On Drop Mtg. Strip or Panel covering drilling for one drop.	Blank for one No. 11-12-13-14-15-16 or 17 Drop.	\$.10
34	Steel, Dull black finish	As Blank for one No. 140 Drop Mtg. on Jack Stiles. Used on No. 105 Magneto Switchboard.	Blank for five No. 11 Drops.	.50
40	Wood, Golden Oak finish	As Blank for three No. 140 Drop Mtgs. on Jack Stiles, used on No. 105 Magneto Switchboard.	Blank for fifteen No. 11 Drops.	.75



Jack Blanks

All Jack Blanks are secured to the switchboard's framework by jack fasteners. If jack fasteners are required, they should be ordered as a separate item.

The mounting centers of any jack blank is determined by measuring the horizontal distance between centers of jack fastener drillings in the jack stiles.



Code No.	Type of Jack Blank	Description	Jack Fastener Code No.	Price Each
13	67	Ebonized maple, width $\frac{1}{4}$ in., mounting centers $7\frac{1}{4}$ in.	12	\$.45
23	67	Similar to No. 25, mahogany with bolly, width $1\frac{1}{4}$ in., mounting centers $7\frac{1}{4}$ in.	12	.75
25	67	Ebonized maple, width $1\frac{1}{4}$ in., mounting centers $7\frac{1}{4}$ in.	12	.55
31	67	Ebonized maple, width $\frac{1}{4}$ in., mounting centers $7\frac{1}{4}$ in. Used as blank for No. 67 Jack with No. 120 Lamp Socket.	12	\$.45

Jack Blanks (Cont.)

	Type of Jack Blanked	Description	Jack Fastener Code No.	Price Each
 No. 35	35	Black enameled steel, width $\frac{3}{8}$ in., mounting centers 2 ins. Used as blank for operator's cut-in Jack.	—	\$.40
 No. 36	36	Oak with holly, width $1\frac{1}{8}$ ins., mounting centers $8\frac{3}{4}$ ins.	18-19	.55
 No. 37	37	Similar to No. 36. Mahogany with holly, width $1\frac{1}{8}$ ins., mounting centers $8\frac{3}{4}$ ins.	18-19	.70
 No. 38	38	Black Formica, width $1\frac{1}{4}$ ins., mounting centers $8\frac{3}{4}$ ins. Used for mounting Pilot Lamps, Test Jacks, etc.	17	.60
 No. 39	39	Similar to No. 43. Black Formica, width $\frac{3}{4}$ in., mounting centers $8\frac{3}{4}$ ins. Used as blank for No. 127 Jack with No. 121 Lamp Socket.	17	.60
 No. 40	40	Black Formica with holly, width $\frac{5}{8}$ in., mounting centers $8\frac{3}{4}$ ins. Used as blank for No. 127 Jack with No. 121 Lamp Socket.	17	.65
 No. 41	41	Similar to No. 43. Black Formica, width $\frac{5}{8}$ in., mounting centers $8\frac{3}{4}$ ins.	17	.60
 No. 42	42	Similar to No. 40. Black Formica with holly, width $\frac{5}{8}$ in., mounting centers $8\frac{3}{4}$ ins.	17	.65
 No. 43	43	Black Formica, width $\frac{1}{2}$ in., mounting centers $8\frac{3}{4}$ ins. Used as blank for No. 121 Lamp Socket.	17	.55
 No. 44	44	Similar to No. 40. Black Formica with holly, width $\frac{1}{4}$ in., mounting centers $8\frac{3}{4}$ ins.	17	.60
 No. 45	45	Similar to No. 43. Black Formica, width $\frac{3}{4}$ in., mounting centers $8\frac{3}{4}$ ins.	17	.55
 No. 46	46	Oak with holly, width $2\frac{1}{2}$ ins., mounting centers $11\frac{1}{8}$ ins.	18-19	.65
 No. 47	47	Similar to No. 46. Mahogany with holly, width $2\frac{1}{2}$ ins., mounting centers $11\frac{1}{8}$ ins.	18-19	.80
 No. 48	48	Black Formica, width $1\frac{1}{2}$ ins., mounting centers $11\frac{1}{8}$ ins. Used for mounting Pilot Lamps, Test Jacks, etc.	17	.70
 No. 49	49	Black Formica, width 1 in., mounting centers $11\frac{1}{8}$ ins.	17	.70
 No. 50	50	Black Formica with holly, width $1\frac{1}{8}$ ins., mounting centers $11\frac{1}{8}$ ins.	17	.75
 No. 51	51	Similar to No. 50. Black Formica with holly, width 1 in., mounting centers $11\frac{1}{8}$ ins.	17	.75
 No. 52	52	Black Formica, width $\frac{1}{2}$ in., mounting centers $11\frac{1}{8}$ ins.	17	.60
 No. 53	53	Similar to No. 54. Black Formica with holly, width $\frac{1}{8}$ in., mounting centers $11\frac{1}{8}$ ins.	17	.60

Jack Blanks (Cont.)

Code No.	Type of Jack Blank	Description	Jack Fastener Code No.	Price Each
54	130	Black Formica with holly, width $\frac{1}{2}$ in., mounting centers $11\frac{1}{4}$ ins.	17	\$.65
 No. 54		55	—	17 1.25
 No. 55		56	—	17 1.25
 No. 56		57	127	17 .60
 No. 57		58	127	17 .75
 No. 58		59	130	17 .65
 No. 59		60	130	17 .80
 No. 60		62	130	18-19 .60
 No. 62		63	127	18-19 J .80

Key Blanks

Key Blanks are used in place of keys where the full equipment of keys is not installed or to fill in space between two keys.

They are held in place by key clamps and screws, which are furnished with the order.



No. 3



No. 7

Code No.	Blank for Keys, No.	Description	Mounting Centers	Price Each
3	170	Steel, black enamel finish; $2\frac{1}{4}$ ins. x $\frac{1}{2}$ in. Mounts on surface of keyboard with 2-P-6714 machine screws or 2-P-5992 wood screws.	$1\frac{1}{4}$ ins.	\$.20
7	170	Steel, black enamel finish; $1\frac{1}{4}$ ins. x $\frac{1}{2}$ in. Mounts in the face of switchboard, on key mounting, with 2-P-4639 machine screws and 2-P-946 nuts.	1 in.	.15

Key Blanks (Cont.)

Code No.	Blanks for Keys, No.	Description	Mounting Centers	Price Each
68	170	Formica on steel top, black finish; 6½ ins. x 1 in. Mounts flush on keyboard with 2-P-12908 machine screws and 2-P-12672 clamps.	6½ ins.	\$.65
69	191	Formica on steel top, black finish; 6½ ins. x 1½ in. Mounts flush on keyboard with 2-P-12908 machine screws and 2-P-12672 clamps.	6½ ins.	.25
71	190	Similar to No. 69, formica on steel top, black finish; 5½ ins. x 1½ in. Mounts flush on keyboard with 2-P-12908 machine screws and 2-P-12672 clamps.	5½ ins.	.75
72	170	Similar to No. 77, formica on steel top, black finish; 5½ ins. x 1 in. Mounts flush on keyboard with 2-P-12908 machine screws and 2-P-12672 clamps.	5½ ins.	.75
77	170	Formica on steel top, black finish; 6½ ins. x 1½ ins. Mounts flush on keyboard with 2-P-12908 machine screws and 2-P-12672 clamps.	6½ ins.	.75
79	170	Similar to No. 77, formica on steel top, black finish; 5½ ins. x 1½ ins. Mounts flush on keyboard with 2-P-12908 machine screws and 2-P-12672 clamps.	5½ ins.	.85
83	169	Steel, black enamel finish; 7¼ ins. x 1½ ins. Mounts flush on keyboard with 2-P-12908 machine screws and 2-P-12672 clamps.	6½ ins.	1.25



No. 68-Key Blank assembled



No. 69-Key Blank assembled



No. 69



No. 77



No. 83

Cables—Inter-Comm-Phone

All wires in standard intercommunicating cables are tinned copper, with single silk and single cotton insulation, and are color coded:—blue, orange, green, brown, slate, etc. (standard code). The cores are saturated with beeswax compound to facilitate installation work, and to protect the cable from moisture.

The covering of the cable may be either a painted cotton braid, indicated by the letter "B" or a pure lead sheath indicated by the letter "L"—affixed to the code number of the cable.

Cables for System No. 1

Selective Talking—Selective Ringing

The cables used with System No. 1 are made up entirely of wires in pairs. All wires in each cable are No. 22 B. & S. Gauge, except the two pairs used for talking and signalling battery which are No. 18 B. & S. Gauge.

Code No.	No. of Pairs	No. of Stations	Approx. Diameter Braided	Lead Loaded	Thickness Lead Sheath	Net Weight Per 1000 Ft.	List Price per 100 Ft.
60-B	14	12	¼ in.	..	..	130 lbs.	\$ 51.00
60-L	14	12	..	¾ *	¼ *	535 "	75.00
61-B	24	22	¼ in.	..	..	195 "	78.00
61-L	24	22	..	¾ *	¼ *	685 "	112.44

Note: Quantity discounts on Cable will be quoted upon request.



No. 60-B, Braid Covered Cable; Showing one silk and one cotton insulation

No. 61-L, Lead Covered Cable; Showing one silk and one cotton insulation

Cables—Inter-Comm-Phone (Cont.)

Cables for System No. 2

Common Talking—Selective Ringing

Cables used with System No. 2 are made up of both single conductors and pairs. In each cable all single conductors are No. 22 B. & S. Gauge and the two pairs used for common talking and common return ringing circuits are No. 18 B. & S. Gauge.



No. 87-B, Braid Covered
Generator Cable

Code No.	No. of Conductors	No. of Pairs	Approx. Diameter Braided	Lead Sheath	Thickness	Net Weight per 1000 ft.	List Price per 100 ft.
77-B	10	6	1 1/2 in.	1/4 in.	1/4 in.	65 lbs.	\$ 27.00
77-L	10	6	1 1/2 in.	1/4 in.	1/4 in.	270 "	39.60
78-B	15	11	1 1/2 in.	1/4 in.	1/4 in.	85 "	30.00
78-L	15	11	1 1/2 in.	1/4 in.	1/4 in.	320 "	49.80

Cables—Generator

Four Party Harmonic Ringing

Code No. 87-B is designed especially for carrying ringing current through the switchboard positions. The cable is made up of six single conductors, No. 22 B. & S. Gauge, with double silk and single cotton insulation, and has a moisture-proof brown cotton braid over all.



No. 88—Rubber Insulated
Generator Cable

Code No.	No. of Conductors	Approximate Diameter	Net Weight Per 1000 ft.	List Price per 100 ft.
87-B	6	1/2 in.	35 lbs.	\$14.00

Code No. 88 Cable is used to carry generator current through partitions or other places where a thoroughly moisture-proof cable is desired without the expense of lead sheathing. Consists of six single conductors No. 18 B. & S. Gauge rubber covered and braided (no outside overall covering).

Code No.	No. of Conductors	Approx. Diameter Braided	Net Weight Per 1000 ft.	List Price per 100 ft.
88	6	1/2 in.	73 lbs.	\$28.00

Cables—Switchboard

These cables are used for connecting apparatus within a telephone exchange building. The wires in these cables are tinned copper with double silk and single cotton insulation, color coded. The cores are saturated with beeswax compound to facilitate installation work and to protect the cable from moisture.

The overall covering of the cable may be either a painted cotton braid indicated by the letter "B" or a pure lead sheath indicated by the letter "L"—affixed to the code number of the cable.



No. 90-B, Braid Covered
Switchboard Cable;
Showing two silk and
one cotton insulation

No. 22 B. & S. Gauge Cables-Pairs

Code No.	No. of Pairs	Shape	Approx. Diameter	Thickness Lead Sheath	Net Weight Per 1000 ft.	List Price per 100 ft.
71-B	10	Round	1/2 in.	1/4 in.	70 lbs.	\$ 38.92
71-L	10	"	"	1/4 in.	353 "	52.74
86-B	20	"	"	1/4 in.	139 "	61.16
86-L	20	"	"	1/4 in.	603 "	91.70
84-B	25	"	"	1/4 in.	182 "	77.84
84-L	25	"	"	1/4 in.	733 "	111.00
90-B	50	"	"	1/4 in.	328 "	144.56
90-L	50	"	"	1/4 in.	1112 "	180.74
91-B	100	"	1 in.	1/4 in.	558 "	305.80
91-L	100	"	1 1/4 in.	1/4 in.	1798 "	380.00

Above cables from 10 to 50 pairs inclusive have one spare pair. The 100 pair cable has two spare pairs.

Note: Quantity discounts on Cable will be quoted upon request.

Cables—Switchboard (Cont.)

No. 22 B. & S. Gauge Cables-Triples

Code No.	No. of Triples	Shape	Approximate Diameter	Net Weight Per 1000 ft.	List Price per 100 ft.
65-B	20	Round	$\frac{5}{16}$ in.	206 lbs.	\$ 89.00
67-B	100	Oval	$1\frac{1}{8} \times \frac{1}{2}$ in.	936 "	500.40
72-B	10	Round	$\frac{11}{16}$ in.	105 "	50.00
76-B	20	Oval	$1\frac{1}{2} \times \frac{1}{2}$ in.	324 "	88.90

Above 10 and 20 triples cables have one spare triplet. The 100 triplet cable has two spare triplets.

No. 22 B. & S. Gauge Cables

Singles and Triples

Code No.	No. of Singles	No. of Triples	Shape	Approximate Diameter	Net Weight Per 1000 ft.	List Price per 100 ft.
68-B	20	20	Round	$\frac{11}{16}$ in.	270 lbs.	\$116.76
69-B	20	20	Oval	$\frac{7}{8} \times \frac{1}{2}$ in.	297 "	116.76

Above cables have one spare triplet and one spare single conductor.

No. 19 B. & S. Gauge Cables-Pairs

Code No.	No. of Pairs	Shape	Approximate Diameter	Net Weight Per 1000 ft.	List Price per 100 ft.
86-B	10	Round	$\frac{1}{2}$ in.	130 lbs.	\$ 66.64
85-B	20	"	$\frac{11}{16}$ in.	212 "	100.00

Above cables have one spare pair.

No. 16 B. & S. Gauge Cables-Pairs

Code No.	No. of Pairs	Shape	Approximate Diameter	Net Weight Per 1000 ft.	List Price per 100 ft.
75-B	10	Round	$\frac{11}{16}$ in.	90 lbs.	\$106.56

Note: Quantity discount on Cable will be quoted upon request.



No. 1 Type



No. 10 Type



No. 13 Type

Impedance Coils

No. 1 Type

A single wound impedance coil with a closed magnetic circuit, encased within a Cross-Talk-Proof iron shell. Used in switchboards and miscellaneous circuits. Mounts on No. P-740 Angle Bracket with No. S-32 x $\frac{1}{2}$ in. F. H. I. M. screw, and No. S- $\frac{1}{2}$ in. F. H. I. M. screw. Bracket and screws must be ordered separately. When mounted without bracket No. S-32 x $\frac{1}{2}$ in. F. H. I. M. screw is used, which is furnished.

Code No.	Approximate Resistance	Price Each
1-A	200 Ohms	\$1.25
1-B	70 "	1.25
1-C	100 "	1.25
1-G	500 "	1.35
1-J	1000 "	1.60
1-L	35 "	1.25

No. 10 Type

This type impedance coil has open magnetic circuit with two windings, tandem wound. Used in key boxes of telephones for Inter-Communicating Systems No. 1. May be mounted on No. P-740 Angle Bracket similar to No. 1 Type or with No. S-32- $\frac{1}{2}$ in. F. H. I. M. screw.

Code No.	Approximate Resistance	Price Each
10-A	35 x 35 Ohms	\$1.35
10-B	100 x 100 "	1.35

No. 13 Type

Consists of No. 1 Impedance Coil mounted on oak base, equipped with three Fahnestock Terminal Clips. Overall dimensions $3\frac{1}{2} \times 6\frac{1}{2} \times 1\frac{1}{2}$ ins. Has closed magnetic circuit and is Cross-Talk-Proof. Used with Inter-Communicating Systems, Nos. 2 and 3.

Code No.	Approximate Resistance	Price Each
13-A	35 Ohms	\$1.80

Impedance Coils (Cont.)

No. 17 Type

Iron clad impedance coil with closed magnetic circuit and Cross-Talk-Proof shell similar to No. 19 Relay Casing. Equipped with two parallel windings. Mounts on steel plate uniformly with a pair of No. 200 Type Relays. Used in Central Energy Switchboards.

Code No.	Approximate Resistance	Price Each
17-A	44 x 44 Ohms	\$3.00
17-C	200 x 200 "	3.25
17-D	85 x 85 "	3.10



No. 17 Type

No. 18 Type

This coil has a closed magnetic circuit, and is designed especially for use as a "Noise Killer" in connection with Harmonic Converters. Consists of a single winding of very low resistance and high impedance over a core made up of transformer iron laminations, mounted with an iron frame. Arranged to mount on either Power Boards or Converter Control Panels. Space occupied—4 3/4 x 7 x 7 ins.

Code No.	Approximate Resistance	Mounting Centers	Price Each
18	1 Ohm	4 3/4 x 3 3/4 ins.	\$17.00



No. 18 Type

No. 200 Type

Consists of our standard No. 200 Type Single Wound Relay Coil with iron frame. Has closed magnetic circuit but requires the No. 19 Relay Casing to become Cross-Talk-Proof. Mounts on steel plate uniformly with No. 200 Type Relays.

Code No.	Approximate Resistance	Price Each
201	5 Ohms	\$2.00
202	15 "	2.00
203	60 "	2.00
204	100 "	2.00
205	200 "	2.10
206	500 "	2.25
207	1000 "	2.50



No. 200 Type

No. 220 Type

The No. 220 Type Impedance Coil is similar to No. 200 Type but equipped with two windings arranged in tandem.

Code No.	Approximate Resistance	Price Each
221	60 x 60 Ohms	\$2.25
222	100 x 100 "	2.25
223	200 x 200 "	2.50
224	500 x 500 "	2.75
225	1000 x 1000 "	3.00



No. 220 Type

Induction Coils

No. 4 Type

The No. 4-C Induction Coil—a former standard coil for Common Battery Multiple Switchboards. It has four windings brought out to eight terminals. Mounts on a maple base, overall dimensions 7 1/8 x 2 3/8 x 1 3/4 ins.

Code No.	Primary	Approximate Resistance	Monitor	Test	Price Each
4-C	12 Ohms	25 Ohms	42 Ohms	3000 Ohms	\$3.50



No. 4 Type

No. 20 Type

The No. 20 Type Coil is a standard coil for use in both No. 896 Magneto Telephone and the No. 105 Switchboard. Equipped with two windings brought out to four terminals and arranged for either screw or soldered connections. Mounting space 3 3/8 x 1 3/8 x 1 3/8 ins.

Code No.	Primary	Approximate Resistance	Secondary	Price Each
20-A	1.7 Ohms		19.5 Ohms	\$.85



No. 20 Type

Induction Coils (Cont.)

No. 38 Type

These induction coils are of small size for mounting in desk stands and hookswitch boxes—dimensions $3\frac{1}{4} \times \frac{1}{4} \times \frac{1}{4}$ ins. The No. 38-A Induction Coil is designed for Central Energy Systems; used in the Nos. 989 and 990 Desk Stands, and the Nos. 19, 28 and 29 Hookswitch Boxes. The No. 39-A is designed for Magneto Systems; used in No. 992 Desk Stand, and No. 36 Hookswitch Box. Both of these Induction Coils have two windings.



No. 38 Type

Code No.	Approximate Resistance		Price Each
	Primary	Secondary	
38-A	30. Ohms	48. Ohms	\$.92
39-A	1.7 "	19.5 "	.85

No. 42 Type

Standard induction coil for use in Central Energy Switchboard operator's circuits of the improved anti-side tone type. Consists of two coils mounted together on an oak base. Overall dimensions $6\frac{1}{2} \times 3\frac{3}{4} \times 1\frac{1}{4}$ ins.



No. 42 Type

Code No.	Used on	Description	Appro. Resls.	Price Each
42-A	P. B. X. Swbds.	Has three windings Terminals P to P — 7.5 Ohms " L to T — 91. " " T to L.T. — 464. "		\$5.00
42-B	C. E. Mult. Swbds.	Has five windings Terminals P to P — 7.5 Ohms " L to T — 91. " " T to L.T. — 464. " " Monitor — 72. " " Test — 86. "		\$6.00

No. 43 Type

This type of induction coil is furnished in two codes—the No. 43-A and the No. 43-B, which are similar in appearance. Mounting space $4\frac{1}{2} \times 1\frac{1}{4} \times 1\frac{1}{2}$ ins.



No. 43 Type

The No. 43-A Induction Coil has two windings, and is used in the booster talking circuits of the No. 11E2 Desk Set Box and the No. 1130 Wall Telephone. The No. 43-B has three windings and is used in the operator's circuits of magneto multiple switchboards.

Code No.	Approximate Resistance			Price Each
	Primary	Secondary	Tertiary	
43-A	27 Ohms	11 Ohms	None	\$1.00
43-B	8 "	11 "	9 "	2.50

Repeating Coils

No. 11-A Talk-Through Type

A highly efficient "Talk-Through-Type" Repeating Coil for toll service, also for cord, trunk, and other circuits, where it is necessary to establish connection between dissimilar lines, such as—central energy to magneto, grounded to metallic, and unbalanced to balanced. The high frequency bridged lam, when used for the above mentioned purposes, is remarkably low—approximately 0.4 miles of standard cable.

These Repeating Coils have four concentric windings, brought out to eight terminals, and mount on steel plates uniformly with the No. 200 Type Relays.



No. 11-A

Code No.	Use	Approximate Resistance Between Terminals		Dimensions of case over Terminals	Price Each
		Ter. 1 and 2	Ter. 3 and 4		
11-A	Central Energy Exchange	Ter. 1 and 2—15.6 ohms	Ter. 3 and 4—16.5 "	Length $4\frac{1}{2}$ ins.	\$5.00
		Ter. 5 and 6—19.4 "	Ter. 7 and 8—20.2 "	Width $2\frac{1}{2}$ "	
				Height $1\frac{1}{2}$ "	

Repeating Coils (Cont.)

No. 12-A Ring-Through, Talk-Through Type

The No. 12-A Repeating Coil is unexcelled for Ring-Through and Talk-Through service in Phantom, Simplex, and Composite circuits. It is perfectly balanced electrically as to resistance, capacity, and impedance. Remarkably efficient in both talking and ringing transmission—high frequency losses less than 0.35 miles of standard cable. Equipped with two parallel primary and two parallel secondary windings, brought out to eight terminals. The two primary windings are balanced with respect to each other, and also the two secondary windings are balanced with respect to each other; a feature which permits this coil to be used in the center as well as the terminating ends of a circuit. Encased within a cross-talk-proof steel shell so that it can be mounted either in the terminal room on relay rack or in the rear of switchboard on relay gates. Also drilled and tapped to receive machine screws for securing to shelf or wooden base.



No. 12-A



No. 12-A X



No. 12-A Y



No. 12-A

Code No.	Use	Approximate Resistance Between Terminals	Dimensions of case over Terminals	Price Each
12-A	To Form Phantom Simplex, and Composite Circuits.	Ter. 1 and 2—16 ohms Ter. 3 and 4—16. " Ter. 5 and 6—20. " Ter. 7 and 8—20. "	Length 6½ ins. Width 2½ ins. Height 3¼ ins.	\$8.00
12-AX	For use at Telephone Exchanges in Simplex, Composite, & Phantom Circuits.	Consists of two No. 12-A Repeating Coils mounted on a common wooden base, equipped with 16 terminals.	Space occupied: Length 10½ ins. Width 4½ ins. Height 4¼ ins.	17.50
12-AY	Phantom Coil at Substation	Consists of one No. 12-A Repeating Coil mounted on a common wooden base, equipped with eight terminals.	Space occupied: Length 8½ ins. Width 2½ ins. Height 4¼ ins.	10.00

No. 13-A Non-Ring-Through,
Talk-Through Type

A Non-Ring-Through, Talk-Through Repeating Coil, manufactured especially for use in Stromberg-Carlson Magneto and Universal Cord Circuits; unexcelled when used in these circuits 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 a double relay casing, and mounts on steel plates with the same mounting centers employed for the No. 200 Type Relays.

The above mentioned remarkable combination of properties possessed by this repeating coil is due not only to unique design but also to the employment of high-grade materials, and skilled workmanship.

Code No.	Use	Approximate Resistance Between Terminals	Dimensions of Case over Terminals	Price Each
13-A	On Universal Cord Circuits and the No. 105 Magneto Switchboard	Ter. 1 and 2—15.6 ohms Ter. 3 and 4—16.5 " Ter. 5 and 6—19. " Ter. 7 and 8—20.2 "	Length 4½ ins. Width 2½ " Height 1½ "	\$4.50

Resistance Coils

No. 10 and 11 Types

Stromberg-Carlson Resistance Coils have a sufficiently large carrying capacity and radiating surface to prevent them from over heating when used in the circuits for which they are designed. These resistance coils are wound upon rigid and heat conducting cores, with special electrical alloy resistance wire;—single wound coils are brought out to two terminals; double wound coils are brought out to four terminals. No. 10 is single wound and No. 11 is double concentric wound. Approximate dimensions are $3\frac{3}{4} \times 1$ inches. These coils mount on steel plates uniformly with the No. 200 Type Relays, furnished with mounting nut, bushing, and washers.



No. 10 Type



No. 11 Type

Impedance & Resistance
Coil Mounting No. 175

Code No.	Use	Winding Data			Price Each
	Tele. & Swbds.	Non-Inductive	1,000 Ohms Resistance		
10-A	"	"	3,000	"	\$1.00
10-B	"	"	100	"	1.25
10-C	"	"	200	"	.80
10-D	"	"	50	"	.90
10-E	"	"	2,000	"	.75
10-F	"	"	375	"	1.10
10-G	"	"		"	.90
11-A		Inductive Inner Winding	1,100 Ohms	Res.	\$2.50
11-B	"	Outer	15,000	"	
11-C	"	Inner	500	"	1.25
11-D	"	Outer	1,000	"	
11-E	"	Inner	50	"	1.00
11-F	"	Outer	250	"	
11-G	"	Inner	100	"	1.25
11-H	"	Outer	500	"	
11-I	"	Inner	1,000	"	2.00
11-J	"	Outer	10,000	"	
11-K	"	Inner	200	"	1.50
11-L	"	Outer	600	"	
11-M	"	Inner	600	"	1.50
11-N	"	Outer	600	"	
11-O	"	Inner	50	"	1.00
11-P	"	Outer	50	"	
11-Q	"	Inner	1,500	"	2.00
11-R	"	Outer	1,500	"	
11-S	"	Inner	1,000	"	1.75
11-T	"	Outer	1,500	"	
11-U	"	Inner	200	"	1.50
11-V	"	Outer	400	"	
11-W	"	Inner	25	"	1.50
11-X	"	Outer	1,500	"	
11-Y	"	Inner	50	"	1.50
11-Z	"	Outer	1,500	"	
11-AA	"	Inner	350	"	1.50
11-AB	"	Outer		"	

Impedance and Resistance
Coil Mounting

The No. 175 Impedance and Resistance Coil Mounting is a right angle bracket; used to mount impedance or resistance coils individually—but it can also be used for other purposes where this design of mounting is needed. Made of steel with Parker Finish. Furnished with one No. 8 x $\frac{1}{2}$ in. F. H. I. Wd. screw and one No. 8-32 x $\frac{1}{4}$ in. F. H. I. M. screw.

Code No.	Mounts	Dimensions	Price Each
175	Impedance Coils Nos. 1 or 10 type, also Resistance Coils Nos. 10 or 11 Type in switchboards.	Length of either elbow $1\frac{1}{8}$ ins. $2\frac{1}{2}$ ins. Width $\frac{1}{2}$ in. Thickness $\frac{3}{8}$ in.	\$2.25

Condensers

Stromberg-Carlson Condensers are made from the best grade tinfoil and paraffined paper—carefully rolled to the correct capacity; impregnated with pure paraffin; cooled in iron shaping molds; placed in tinned sheet metal cases, and sealed with a compound which will not become brittle at a temperature as low as 0° F. nor flow at a temperature as high as 150° F. The completed condensers are then subjected to severe capacity and breakdown tests.

The following five styles of Standard Telephone Condensers are carried in stock. Other condensers required for ignition systems, radio-telegraph instruments, high frequency violet ray machines, etc., are manufactured on quantity orders.



Style A
Condenser



Style B
Condenser



Style C
Condenser



Style D
Condenser

Style A

Code No.	Use	Capacity	Case	Price Each
18	Central Office Equipment.	1 M.F.	Black japanned sheet metal, $4\frac{1}{4} \times 1\frac{1}{4} \times \frac{1}{4}$ inches. Mounts on metal strips like relays.	\$.85
19	Central Office Equipment.	2 M.F.	Same as No. 18.	\$1.15
28	Central Office Equipment.	$3\frac{1}{2}$ M.F.	Same as No. 18.	2.00

Style B

Code No.	Use	Capacity	Case	Price Each
21	300 Har. Bell.	1 M.F.	Black japanned sheet metal, $4\frac{1}{4} \times 2\frac{1}{4} \times \frac{1}{4}$ inches. Mounts with metal condenser clips.	\$.85
	950 Iron Clad Mine Telephone.			
	1130 Wall Telephone			
	1131 Extension Bell (Desk Set Box)			
	1132 Extension Bell (Desk Set Box)			
22	Used in same instruments as No. 21.	2 M.F.	Same as No. 21.	1.15
24	948 Extension Bell.	1 M.F.	Same as No. 21. $4\frac{1}{4} \times 2\frac{1}{4} \times \frac{1}{4}$ inches.	.85
25	Radio (See Radio Apparatus)	1 M.F.	Same as No. 21. $3\frac{1}{2} \times 2\frac{1}{4} \times \frac{1}{4}$ inches.	Consumer's Price 1.10

Style C

Code No.	Use	Capacity	Not in Case	Price Each
20	Mounted within the handle of Nos. 11-D and 11-E Type Combination Telephone.	$\frac{4}{10}$ M.F.	Condenser is provided with Bookbinders cloth cover for protection. Size $3\frac{1}{2} \times 1 \times \frac{1}{4}$ inches. Equipped with nine inch terminal wires.	\$.60

Style D

Code No.	Use	Capacity	Case	Price Each
26-T	Used principally as a "Sum Ring Condenser" in the Receiver Circuits of Magneto Telephones. Mounts in either No. 806 Wall Telephone or No. 1000 Desk Telephone, with 3 Pz. 2494 Clips and 3 Pz. 5202 Screws.	$\frac{1}{2}$ M.F.	Black japanned sheet metal, $4\frac{1}{4} \times 2\frac{1}{4} \times \frac{1}{4}$ inches. Equipped with Fahnestock Terminal Clips.	\$.90
26-R	Radio (See Radio Apparatus)	$\frac{1}{2}$ M.F.	Same as No. 26-T	Consumer's Price .95

Condensers (Cont.)

Style E

Code No.	Use	Capacity	Price Each
27	Ringings Covers, Mounts with metal Condenser Clips.	5 M.F. Black japanned sheet metal, $4\frac{1}{2} \times 4\frac{1}{2} \times \frac{1}{2}$ inches. Equipped with sheet metal cover and terminal bushings.	\$2.50



Style E
Condenser

Condenser Mounting Strips

Stromberg-Carlson Condenser Mounting Strips are Rust-Proof, made of cold drawn steel, and finished with the Parker Process. Furnished in three styles A, B, and C, which differ only in design. Style A, is an oblong plate; B, is similar to A, but twice the width and mounts two rows of condensers; C, is a right angled bracket. All styles mount the No. 18, 19 or 28 Type Condensers with the exception of style C, which mounts only the No. 18 and 19 Type Condensers. Mounting Screws furnished with all orders.

Style A

Code No.	Used on	Number of Condensers Mounted	Dimensions	Price Each
1	Former Multiple Swbds.	16	Mounting Centers $18\frac{1}{4}$ in. Length $18\frac{1}{4}$ " Width $1\frac{1}{4}$ " Thickness $\frac{1}{8}$ "	\$1.50
6	Standard Relay Rack	24	Mounting Centers $25\frac{1}{2}$ " Length 26 " Width $1\frac{1}{4}$ " Thickness $\frac{1}{8}$ "	2.00
7	Standard Type Swbd.	20	Mounting Centers $20\frac{1}{4}$ " Length $21\frac{1}{4}$ " Width $1\frac{1}{4}$ " Thickness $\frac{1}{8}$ "	1.75
8	101-102 Standard P.B.X. Swbd.	16	Mounting Centers 17 " Length $17\frac{1}{4}$ " Width $1\frac{1}{4}$ " Thickness $\frac{1}{8}$ "	1.50

Style A, mounts with 2 No. 12-24 x $\frac{1}{2}$ in. R. H. I. M. screws.



Style A
Condenser Mounting



Style B
Condenser Mounting

Style B

Code No.	Used on	Number of Condensers Mounted	Dimensions	Price Each
4	Former S-C Relay Bay	40	Mounting Centers 26 in. Length $26\frac{1}{2}$ " Width 4 " Thickness $\frac{1}{8}$ "	\$3.00

Style B, mounts with 4 No. 10-32 x 1 in. R. H. I. M. screws, 4 Pe. No. 5900 nuts, and 4 Pe. No. 1101 washers.



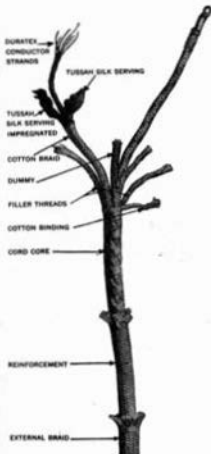
Style C
Condenser Mounting

Style C

Code No.	Used on	Number of Condensers Mounted	Dimensions	Price Each
9	P. B. X. Swbds.	4	Mounting Centers $27\frac{1}{4}$ in. Length $37\frac{1}{4}$ " Width 2 " Thickness $\frac{1}{4}$ "	\$1.00

Style C, mounts with 5 No. 8 x $\frac{1}{4}$ in. R. H. I. W. screws.

Duratex Cords



Construction of Stromberg-Carlson
Carlson-Duratex Cord



Enlarged View of Conductor
Strands and Silk Serving

Duratex Combination Telephone Cords, Duratex Desk Stand cords, Duratex Operator's Transmitter and Receiver cords and Duratex Telephone Receiver cords are all protected with an outside braiding of dark brown silk. Duratex Switchboard cords are protected with a tight, closely woven outside braiding of glazed cotton and reinforced for a length of eighteen inches at the plug end.

Duratex Cords are furnished with all telephones and switchboards shipped from the Stromberg-Carlson factory.

These cords are of rope construction made from the best materials obtainable and built, not only for remarkable durability, but for efficient voice transmission. Every process in the manufacture of Duratex Cords is completed in the Stromberg-Carlson plant.

Stromberg-Carlson bronze alloy wire is rolled by special machinery into ribbons .001 of an inch thick. Two of these ribbons are spiralled over a cotton thread to form a conductor strand in such a way that all tension is taken up by the thread. Six of these conductor strands are twisted about another cotton thread, which takes the strain of the whole conductor. This group of strands is served with two wrappings of high grade Tusseh silk, moisture proofed and covered with a cotton braid. The resultant product is one Duratex Conductor.

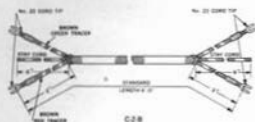
The various Stromberg-Carlson Duratex Cords are made by twisting together these "Duratex Conductors" rope fashion into cylindrical forms. Over each cord form is spiralled a tight wrapping of cotton. There is then applied an outside covering of tightly woven braid.

Duratex Cords are so constructed that they possess the following characteristics:

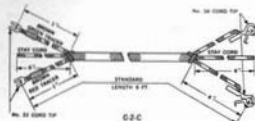
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|-------------------------------|--|
| Long Life | Duratex Cords have 300% longer life than copper tinsel cords. |
| Moisture Proofed | Duratex Cords are moisture proofed so as to render them impervious to either climatic conditions or moisture from the operator's hands. |
| Easily Rebutted | Duratex Cords are easier to rebut than either steel or tinsel cords. |
| Low Resistance | Duratex Cords have a resistance of only 0.90 ohms per six foot length of single conductor. Compare this with 9 to 11 ohms,—the resistance of a six foot, steel cord conductor. |
| Heavy Current Capacity | Duratex Cords on account of the low resistance of their rolled ribbon conductors, have ample carrying capacity much greater than is necessary for the heaviest telephone currents. |
| Flexibility | Duratex Cords because of their rope construction, are more flexible than most tinsel cords and are far more flexible than any steel cords. |
| Inter-changeability | Duratex Cords, of the types designed for switchboard service, by virtue of their low resistance characteristics, are adapted to toll service as well as local service, thus eliminating the necessity for stocking two kinds of cords. |

Duratex Cords with two or more conductors are furnished with colored tracers, so that each conductor may be readily identified.

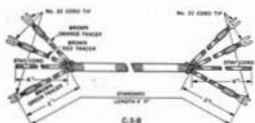
The following pages illustrate and describe a few standard Stromberg-Carlson Duratex Cords. Provided that you do not find the cord you want, just send in a cord which fits, then you will be promptly supplied with a quotation on a Stromberg-Carlson Duratex Cord.



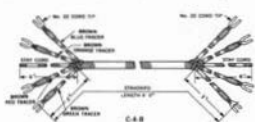
C-2-B



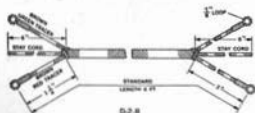
C-2-C



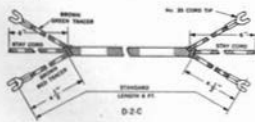
C-3-B



C-4-B



D-2-B



D-2-C

Duratex Cords (Cont.)

Cords—Combination Telephone

Code No.	Description	Price Each
C-2-B	Number of Conductors, 2 Standard Length, 4 ft. Used with telephones, Nos. 10-P, 10-PC, 10-S, 10-D.	\$.60

C-2-C	Number of Conductors, 2. Standard Length, 6 ft. Used with telephones, Nos. 11-C, 11-D, 11-E.	.75
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C-3-B	Number of Conductors, 3. Standard Length, 6 ft. Used with telephone, No. 11-L.	.85
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C-4-B	Number of Conductors, 4. Standard Length, 4 ft. Used with telephones, Nos. 10-C, 10-I, 10-IC, 10-L.	.90
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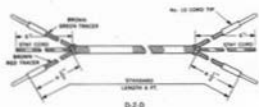
Cords—Desk Stand

Code No.	Description	Price Each
D-2-B	Number of Conductors, 2. Standard Length, 4 ft. Used with No. 20-A Receiver and No. 23 Plug.	\$.65

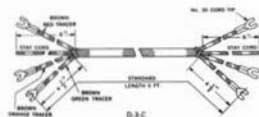
D-2-C	Number of Conductors, 2. Standard Length, 6 ft. Used with telephones, Nos. 988, and 993.	.65
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Duratex Cords (Cont.)

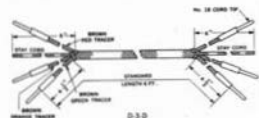
Cords—Desk Stand (Cont.)



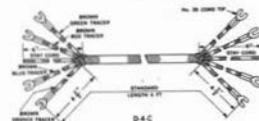
Code No.	Description	Price Each
D-2-D	Number of Conductors, 2 Standard Length, 6 ft. Used with Garford Type Desk Telephone.	\$.65



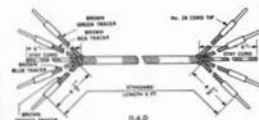
D-3-C	Number of Conductors, 3. Standard Length, 6 ft. Used with telephones, Nos. 986, 992, 1109, 1141, 1150-A, 1150-M.	.85
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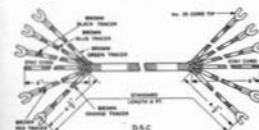
D-3-D	Number of Conductors, 3. Standard Length, 6 ft. Used with Garford Type Desk Telephone.	.85
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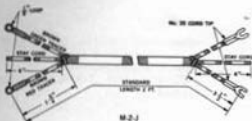
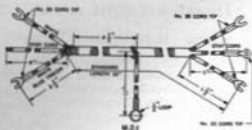
D-4-C	Number of Conductors, 4. Standard Length, 6 ft. Used with telephones, Nos. 1110 and 1146.	1.05
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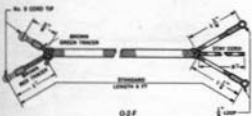
D-4-D	Number of Conductors, 4. Standard Length, 6 ft. Used with Garford Type Desk Telephone.	1.05
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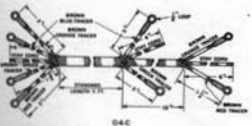
D-5-C	Number of Conductors, 5. Standard Length, 6 ft. Used with telephones, Nos. 989, 990, 1128-B, 1128-C, 1150-L.	1.30
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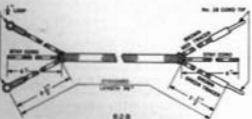
O-1-A



O-2-F



O-4-C



R-2-B

Duratex Cords (Cont.)

Cords—Desk Stand (Cont.)

Code No.	Description	Price Each
M-2-I	Number of Conductors, 2. Standard Length, 16 in. Used with No. 800 Mine-A-Phone, No. 950 Iron Clad Telephone, No. 27-B Receiver. Outside braid, white glazed cotton.	\$.45
M-2-J	Number of Conductors, 2. Standard Length, 2 ft. Used with No. 844 Test Set. Outside braid, dark brown silk.	.45

Cords—Operators' Transmitters and Receivers

Code No.	Description	Price Each
O-1-A	Number of Conductors, 1. Standard Length, 5 ft. Used with suspended Transmitters.	\$.30
O-2-F	Number of Conductors, 2. Standard Length, 6 ft. Used with No. 20 Receiver and No. 40 Plug.	.70
O-4-C	Number of Conductors, 4. Standard Length, 5 ft. Used with Operator's Breast Plate Telephone Set with No. 20 Receiver and No. 14 Transmitter using No. 23 Plug; also Garford Type Operator's Telephone Plug.	1.30
R-2-B	Number of Conductors, 2. Standard Length, 36 in. Used with telephones with other than Stromberg-Carlson Receivers.	.35

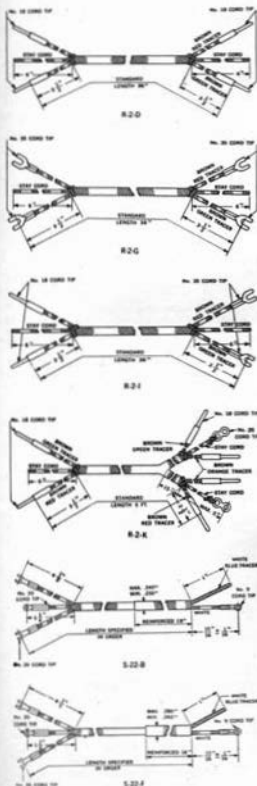
Duratex Cords (Cont.)

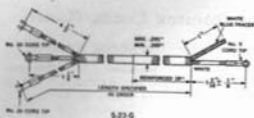
Cords—Telephone Receiver

Code No.	Description	Price Each
R-2-D	Number of Conductors, 2. Standard Length, 36 in. Used with telephones with other than Stromberg-Carlson Receivers.	\$.35
R-2-G	Number of Conductors, 2. Standard Length, 36 in. Used with standard Strom- berg Carlson Telephones which are equipped with Nos. 27 and 28 Receivers.	.35
R-2-I	Number of Conductors, 2. Standard Length, 36 in. Used with Telephones with other than Stromberg-Carl- son Receivers.	.35
R-2-K	Number of Conductors, 2. Standard Length, 5 ft. Used with No. 2-A Radio Head Set.	.70

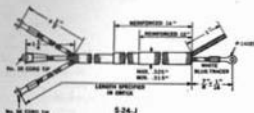
Cords—Switchboard

S-22-B	Number of Conductors, 2. Standard Length, 3, 6 and 7 feet as specified. Used with plugs Nos. 11, 20, 36 and 57.	3 ft. \$.55 6 ft. .75 7 ft. .85
S-22-F	Number of Conductors, 2. Standard Length, 3, 5 and 6 feet as specified. Used with plugs Nos. 56 and 56-X; also Garford 2 Conductor Plugs.	3 ft. .55 5 ft. .65 6 ft. .75

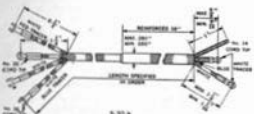




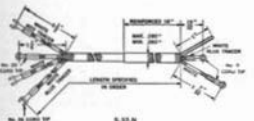
S-23-G



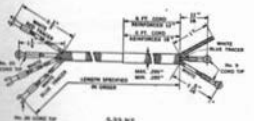
S-24-J



S-32-K



S-32-N



S-33-NS



T-1-B

Duratex Cords (Cont.)

Cords—Switchboard (Cont.)

Code No.	Description	Price Each
S-23-G	Number of Conductors, 2. Standard Length, 2, 3, 5 and 6 feet as specified. Used with plugs Nos. 10, 15, 24, 32, 42 and 43.	2 ft. \$.45 3 ft. .55 5 ft. .65 6 ft. .75

S-24-J	Number of Conductors, 2. Standard Length, 5, 6 and 7 feet as specified. Used with Western Electric plugs No. 47.	5 ft. .65 6 ft. .75 7 ft. .85
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S-32-K	Number of Conductors, 3. Standard Length, 3, 5, 6 and 7 feet as specified. Used with plugs Nos. 22, 37, 49, 53, 53-X, 54, 54-G, 54-N, 55 and 55-N.	3 ft. .70 5 ft. .90 6 ft. 1.00 7 ft. 1.10
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S-32-N	Number of Conductors, 3. Standard Length, 5, 6 and 7 feet as specified. Used with Western Electric No. 109 Plug.	5 ft. .90 6 ft. 1.00 7 ft. 1.10
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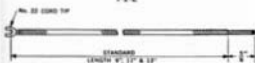
S-33-NS	Number of Conductors, 3. Standard Length 5, 6 and 7 feet as specified. Used with No. 59 Plug and Western Electric No. 110 Plug.	5 ft. .90 6 ft. 1.00 7 ft. 1.10
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Cords—Terminal

Code No.	Description	Price Each
T-1-B	Number of Conductors, 1. Standard Length, 4 in. Used with No. 10 Trans- mitter. Outside Braid, Brown Cotton.	\$.08



T-1-E



T-1-G

Duratex Cords (Cont.)

Cords—Terminal (Cont.)

Code No.	Description	Price Each
T-1-E	Number of Conductors, 1. Standard Length, 9, 11 and 15 inches. Used with Transmitter Cord, Desk Telephone, Outside Braid, Brown Cotton.	.08
T-1-G	Number of Conductors, 1. Standard Length, 11 in. Used with Combination Telephone Nos. 10-C and 10-L, Outside Braid, Brown Cotton.	.08

Cordage-Telephone

A moisture proofed, Brown Silk covered, 12 end "Duratex Conductor" cordage, used for extra long extensions with Desk Stands, Combination Telephones, and for repair work. Cuts in lengths as specified on order. Shipped up to 20 ft. in coils, and over 20 ft. on spools.

Spool Showing How
Both Cordage and
Sleeving are Shipped

Price No.	No. of Conductors	Approximate Feet per Pound	Price per 100 ft.
20021	1	223	\$ 4.00
20022	2	90	7.00
20023	3	87	9.00
20024	4	59	11.00
20025	5	53	13.00

Cotton Sleeving

A tubular cotton fabric used to insulate bare wire for ties or relays, keys, and jacks. Furnished in any color which must be specified when ordering.—Brown carried in stock. Wound—under 400 feet in coils, over 400 ft. on spools.

Price No.	Inside Diameter	Approximate Feet per Pound	Price Per 100 ft.
20031	$\frac{1}{8}$ in.	1250 ft.	\$1.00
20032	$\frac{1}{4}$ in.	380 ft.	1.25
20033	$\frac{3}{8}$ in.	300 ft.	1.50

Note—If waxed add \$.25 per c.ft. to the above prices.



No. 6 Cord Adjuster

Cord Adjusters

Used to conveniently regulate cord lengths. These cord adjusters take up the slack, and prevent coiling or knotting of the cords. Made of red sheet fibre $4\frac{1}{4}$ inches long by 1 inch wide.

Code No.	Used With	Price Each
6	All standard two or three conductor, switchboard cords.	\$.05



No. 4 Cord Fastener

Cord Fasteners

A nickel plated brass punching—designed for drive-fit, through cord terminal rack, equipped with tinned eyelet for soldering to switchboard cable, and provided with screw terminal for connecting to switchboard cords.

Code No.	For Use On	Length	Price Each
4	Terminal Racks	$1\frac{1}{8}$ in.	\$.05
5	Switchboards	$1\frac{1}{4}$ in.	.05



No. 5 Cord Fastener

Cord Hooks

Cord Hooks—used to suspend the terminal end of a switchboard cord from the cord rack, thus removing all stress from the conductors. Made of iron with Parker Finish,—have open screw eye arranged so that cord will not work loose in service, but may be easily detached by hand when changing cords. Length $1\frac{1}{4}$ inches.

Code No.	Used With	Price Each
2	All standard switchboard cords.	\$.015



No. 2 Cord Hook

Cord Pulleys



No. 1 Cord Pulley



No. 2 Cord Pulley

Code
No. 1

1

2

Description

$\frac{5}{8}$ in. Brass Screw Pulley—width of pulley wheel $\frac{3}{4}$ in. Used to suspend operator's transmitter cord in connection with cord weight. Mounts beneath roof of switchboard.
Brass frame with boxwood pulley wheel—Width of wheel $\frac{3}{8}$ in. Used with double length switchboard cords. Mounts beneath cord connecting rack.

Price
Each
\$.15

.15

Cord Tips



No. 4



No. 9



No. 14



No. 17



No. 18



No. 20



No. 22



No. 24



No. 26



No. 28



No. 30



No. 32



No. 34



No. 36



No. 38



No. 40



No. 42



No. 44



No. 46



No. 48



No. 50



No. 52



No. 54



No. 56



No. 58



No. 60



No. 62



No. 64



No. 66



No. 68



No. 70



No. 72



No. 74



No. 76



No. 78



No. 80



No. 82



No. 84



No. 86



No. 88



No. 90



No. 92

Cord Tips

Description

Used on transmitter cords of various makes other than Stromberg-Carlson. Fits any terminal which is the same size as a No. 6 Screw.
Used on switchboard cords to engage terminals of the Nos. 10, 42, 56 and 57 Plugs. Fits any terminal which is the same size as a No. 2 Screw.
Used on switchboard cords to engage terminals of the Nos. 33, 34, 54 and 55 Plugs. Fits any terminal which is the same size as a No. 1 Screw.
Used on desk stand cords for connecting to magnetic desk set boxes, using lock-nut type binding posts. Fits any terminal which is not smaller than a No. 8 Screw and which is not larger than a No. 10 Screw.
Used on radio cords to engage terminals of Stromberg-Carlson Head Sets and Loud Speakers. Also used on telephones other than Stromberg-Carlson.
Used on switchboard cords (stay cord end) to engage cord hooks in switchboards.
Used on transmitter cords for connecting transmitters to telephone instruments. Fits any terminal which is the same size as a No. 4 Screw.
Used on various cords to engage any terminal which is the same size as a No. 4 Screw.
Used on radio cords for connecting stay cord to receiver cord tip.
Used on combination telephone cords in line-men's test sets for making connection to line wires.
1-13, \$.20 each; 12-99, \$.12 each.
Used on various desk stands and receiver cords. Fits any terminal which is the same size as a No. 4 Screw.
Used on switchboard cords to engage cord hooks on cord rack in switchboard.

Net Weight
Per 100
Price
per 100

1 1/2 oz. \$.75

1/2 " .50

1/4 " .50

2 1/2 " .75

3 1/4 " 1.00

2 3/5 " .75

1/2 " .50

1/4 " .50

1 " .75

2 lbs. 11.00

1 1/4 oz. .50

8 " 1.50

Cord Weights

Description

Consists of No. 1 Cord Pulley attached to a 6 oz. cylindrical lead weight. Used for operators transmitter cords. Approximate Dimensions— $4\frac{1}{4} \times \frac{3}{4}$ ins.
A double pulley for extra cord lengths on switchboards. Consists of two steel frames, with boxwood pulley wheels, secured to a 45 oz. rectangular lead weight. Width of wheel— $\frac{3}{8}$ in. Overall dimensions are $5\frac{1}{2} \times 3\frac{3}{4} \times \frac{1}{2}$ ins.
A Standard Cord weight for all types of regular switchboard Cords—Sufficiently weighted to satisfactorily restore cords properly 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.
Overall dimensions— $4 \times 1\frac{1}{2} \times \frac{3}{8}$ ins.
Size of wheel— $\frac{3}{8}$ in. $\times \frac{1}{4}$ in.

Price
Each
\$.35

1.25

.35

Cord Weights



No. 1



No. 4



No. 6

Designation Strips

No. 2 Type



No. 2 Type Designation Strip

These Designation Strips are used principally in multiple switchboards in connection with trunk jacks. They consist of a maple mounting block, and a nickel plated brass card holder with celluloid protector.

Code No.	Used With	Dimensions	Price Each
2	No. 109 Jack	Length—10 $\frac{1}{4}$ ins. Width— $\frac{1}{2}$ in. Mounting centers—10 $\frac{1}{4}$ ins.	\$.75
6	No. 67 Jack	Length—6 $\frac{1}{4}$ ins. Width— $\frac{1}{2}$ in. Mounting centers—7 $\frac{1}{4}$ ins.	.75



No. 5 Type Designation Strip

No. 5 Type

Designation Strips of this type have nickel plated card holders, and celluloid protectors. Furnished in any length. Specify length when ordering—20 in. and 21 in. lengths carried in stock. The No. 5 and No. 5-D designation strips differ in only one respect—the No. 5 has a polished nickel finish, the No. 5-D has a dull nickel finish.

Code No.	Used On	Dimensions	Price Each
5	Plug Shelf	Specify length, Width— $\frac{1}{2}$ in.	Less than 12 ins. \$1.25
5-D	Plug Shelf	Specify length, Width— $\frac{1}{2}$ in.	12 ins. and over per in., .10



No. 14 Type Designation Strip

No. 14 Type

A type of Designation Strip consisting of a maple mounting block with a designation card, and celluloid 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.

Code No.	Used With	Dimensions	Price Each
14	No. 127 Jack	Length—7 $\frac{1}{4}$ ins. Width— $\frac{3}{4}$ in. Mounting centers—8 $\frac{3}{4}$ ins.	\$.75
16	No. 130 Jack	Length—10 $\frac{1}{4}$ ins. Width— $\frac{1}{2}$ in. Mounting centers—11 $\frac{1}{4}$ ins.	.75



No. 15 Type 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 multiple switchboards, and the No. 17 Designation Strip is used in P. B. X. Switchboards.

Code No.	Used With	Dimensions	Price Each
15	No. 127 Jack	Length—7 $\frac{1}{4}$ ins. Width— $\frac{3}{4}$ in. Mounting centers—8 $\frac{3}{4}$ ins.	\$.75
17	No. 130 Jack	Length—10 $\frac{1}{4}$ ins. Width— $\frac{1}{2}$ in. Mounting centers—11 $\frac{1}{4}$ ins.	.75



No. 19

No. 19-A

No. 19-B

No. 19-C

No. 19-D

No. 19 Type

This type consists of a metal mounting block with a card designation strip, and celluloid protector strip, held in place by four nickel plated screws. Used on magneto Non-Multiple switchboards.

Code No.	Used On	Dimensions	Price Each
19	Keyboard of No. 105 Switchboard designating cord circuit operation.	Length—7 $\frac{1}{4}$ ins. Width—1 in. Mounting centers—6 $\frac{1}{4}$ ins.	\$.75
19-A	Keyboard of No. 105 Switchboard with Harmony Master Key.	Same as No. 19.	.75

No. 19 Type Designation Strip

Designation Strips (Cont.)

No. 19 Type (Cont.)

Code No.	Used on	Dimensions	Price Each
19-B	Keyboard of No. 105 Switchboard with Harmonic Master Key.	Length—7 $\frac{1}{4}$ ins. Width—1 in. Mounting Centers 6 $\frac{1}{2}$ ins.	\$.75
19-C	Keyboard of No. 105 Switchboard with Pulsating Master Key.	Same as No. 19-B.	.75
19-D	Keyboard of No. 105 Switchboard with divided circuit Master Key.	Same as No. 19-B.	.75

No. 20 Type

The No. 20 Type is 1 $\frac{1}{4}$ ins. shorter than the No. 19, but is of similar design. Used on P. B. X. Switchboards to indicate the operation of the key cams.

Code No.	Used As	Dimensions	Price Each
20	Trunk designation on keyboard of Nos. 101 and 102 P. B. X. Switchboards connecting with Manual Main Exchange.	Length 5 $\frac{1}{4}$ ins., Width 1 in. Mounting centers 5 $\frac{1}{8}$ ins.	\$.75
20-A	Trunk designation on keyboard of Nos. 101 and 102 P. B. X. Switchboards connecting with Automatic Main Exchange.	Same as No. 20.	.75
20-B	Trunk designation on keyboard of Nos. 101 and 102 P. B. X. Switchboards connecting with Magneto Main Exchange.	Same as No. 20.	.75



No. 20 Type Designation Strip



No. 1-A Type Distributing Bar

Distributing Bars

No. 1-A Type

A single point distributing bar with terminal lugs for front and back connections.

Code No.	Points	Used on	Price Each
1-A	1	Terminal boards of P. B. X. Switchboard to connect with battery supply.	\$.25



No. 3 Type Distributing Bar

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 up circuits for testing purposes. Consists of a drawn brass bar, screws, and tinned terminal lug.

Code No.	Points	Used on	Length	Price Each
3	4	Switchboard Term. Boards	2 $\frac{1}{4}$ ins.	\$.30
5	6	" " "	3 $\frac{1}{8}$ "	.40
7	8	" " "	4 $\frac{1}{8}$ "	.50
8	10	" " "	5 $\frac{1}{8}$ "	.60
11	16	" " "	8 $\frac{1}{8}$ "	.90
12	20	" " "	10 $\frac{1}{8}$ "	1.00

Distributing Bars (Cont.)

No. 67 Type

A distributing bar of extra heavy construction for multiple central office installations.

Consists of brass lugs, drawn brass bar, steel washers and nuts. All parts have copper finish, face of bar is polished.



No. 67 Type Distributing Bar

Code No.	Poles	Used on	Length	Price Each
67	4	Slate Fuse Panels	4½ in.	\$ 2.50
68	8	" " "	8½ " "	3.00
69	10	" " "	9½ " "	3.50
70	14	" " "	13½ " "	4.00
71	20	" " "	17½ " "	4.50
72	24	" " "	21½ " "	5.00
73	30	" " "	26½ " "	5.50
74	40	" " "	34½ " "	6.50
75	60	" " "	50½ " "	8.50
76	80	" " "	66½ " "	10.50



Showing No. 11 Bracket, and Pe-No. 13566 Cap



Showing No. 11 Bracket, Pe-No. 13566 Cap, and 2 in. iron pipe foot rail assembled



Code No. 12 Bracket



A comfortable foot rest consisting of 2 Code No. 12 Brackets and Pe-No. 13700 Foot Rail mounted on unit type multiple switchboard

Foot Rails and Foot Brackets

The following foot rails and foot rail brackets form neat and rigid supports as required to meet the demands of telephone exchanges equipped with a switchboard having a keyboard height of over 31 inches.

These foot rails and foot rail brackets are made primarily to be used with Stromberg-Carlson Switchboard Sections, however they are readily mounted on practically any modern switchboard section without change. The foot rails are made of steel tubing and the brackets cast iron, both furnished with a durable black enamel.

Code No.	Use	Description	Price Each
11 Bracket.	No. 11 foot rail brackets are used in connection with 3 position multiple switchboard. Mounts on floor in front of Nos. 1, 2, 9, and 10 sections with four No. 12 x 2 in. F. H. I. W. screws.	Dimensions of Base Length—6½ in. Width—2½ in. Thickness—¾ in. Height from floor to center of rail 6 in. Made to fit any—2½ in. foot rail.	\$4.00

Note: Foot rails for the above brackets must be ordered as a separate item. A two inch iron pipe, or a foot rail—2½ in. actual diameter, and—8 feet 6½ inches in length is used for the 3—position multiple section.

These foot rails are sold in other lengths which must be specified when ordering. If ornamental cap for the end section of rail is desired, order piece No. 13566 cap.

			5.00
			.75
			4.00
12 Bracket.	Mounts on No. 3 unit type multiple switchboard section at any convenient height from the floor, with—4—No. 8 x ¾ in. R. H. I. W. screws. Two brackets are required for each section.	Bracket secured to the switchboard's end panels by means of screws from the side as well as the front. Dimensions of base. Length—6 in. Width—1½ in. Thickness—¾ in. Taken, Pe-13700—2½ in. iron foot rail.	
Pe-13700 Foot Rail	Mounts on No. 3 unit type multiple switchboard section. Requires two Code No. 12 Brackets for each section. Note: Order bracket mounting screws as a separate item.	A 2½ in. black enameled iron foot-rail.	3.00
			.01

Hand Generators

Pict. Parts shown on pages 227-228

The dominant features of Stromberg-Carlson generators are:—

Ring Efficiency—Stromberg-Carlson generators furnish a surplus ringing current with ample voltage at all loads.

Ease of Operation—Stromberg-Carlson generators are free from jerky motion and grinding; will ring the longest lines without forcing.

Durability—Stromberg-Carlson generators are built for long life and hard service.

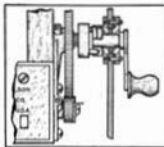
These features are obtained by employing: powerful magnets of special magnet steel, liberal winding space, laminated armature, large bearing surfaces, plenty of oil ducts, rust proofed parts, accurately cut gears, and high grade insulation. All magnetic joints are closely machined. Rotating parts are carefully balanced.



No. 38 Generator



No. 53 Generator



Clutch and Crank Packing
No. 62-A Generator



No. 963 Generator

Standard Hand Generators and Their Uses

Code No.	No. of Bars	Type	Use	Price Each
38	5	Bridging	No. 896 Telephone No. 1000 Telephone No. 105 Switchboard No. 843 Test Set	\$6.00
53	3	Bridging	No. 896 Telephone No. 1000 Telephone No. 844-E Test Set Nos. 101, 102 and 104 Switchboard	5.50
55	3	Pulsating (Harmonic)	No. 896 Telephone	5.75
62-A	5	Bridging	No. 890 Mine-A-Phone. Same as No. 38 generator, but with a specially designed clutch and water proof and gas-proof crank packing, as shown at the left.	6.25

For extra length shafts required on generators used in Nos. 101, 102 and 105 Switchboards, see page No. 25. Add 60 cents to the price of the generator when furnished with 16 or 18½ inch shafts

Ironclad Hand Generator

The No. 963 ironclad, five-bar hand generator is damp-proof, gas-proof, fire-proof, and especially built for use with the No. 962 Loud Ringing Bell—either underground or on the surface.

It is the ideal generator for operating bells on signalling systems in mines—no commutator to spark, no batteries to become exhausted—always reliable at the critical moment. Output of generator ample to ring simultaneously ten to fifteen bells on one circuit.

The housing is made of two iron castings protected with corrosion-proof black enamel.

Detachable mounting bars are provided for fastening the generator to any surface. The generator is secured to an iron bracket, which is part of the door casting—this insures permanent alignment of crank shaft. For details of generator clutch and generator shaft packing, see No. 62-A Generator.

Mounting space 10 x 8 x 10½ inches; net weight 30 pounds. Packed one in a box 12 x 10 x 12 inches. Gross weight, 42 pounds.

Code No.	Description	Price Each
963	Ironclad Hand Generator	\$15.00

Hand Generators (Cont.)

Generator Parts

Code No.	Part	Description	Gen.	Price Each
2	Crank	For No. 102 Swld., length 18½ in.	53	\$.85
3	Crank	For Nos. 101 & 105 Swld., length 16 in.	38-53	.85
P-11576	Crank	For No. 890 Mine-A-Phone	62-A	.75
P-11730	Crank	For Nos. 38, 53, & 55 Generators		.25
P-8058	Armature	3 Bar	53	3.00
P-11039	Armature	5 Bar	38-62-A	3.50
P-11395	Armature	3 Bar	55	3.00
P-3556	Magnet		38-53-55-62-A	.35
P-8193	End Plate	Gear End	38-53-62-A	.60
P-8194	End Plate	Shunt End	38-53-55-62-A	.60
P-11396	End Plate		55	.75
P-2545	Screw	End Plate	All types	.01
P-6013	Shunt Springs	Bridging	38-53-62-A	.35
P-13502	Shunt Springs		55	.50
P-2798	Bushing	Shunt	38-53-62-A	.01
P-5837	Bushing	Shunt	55	.01
P-3493	Insulation	Shunt	38-53-62-A	.01
P-4157	Insulation	Shunt	55	.01
P-3577	Shaft	(Gear) 5 Bar	38	.10
		Bridging		
P-3575	Shaft	(Gear) 3 Bar	53-55	.10
		Bridging		
P-11578	Shaft	(Gear) 5 Bar	62-A	.10
		Bridging		
P-247	Tip	Shaft	38-53-55-62-A	.01
P-246	Clutch	Shaft	38-53-55-62-A	.06
P-245	Cotter Pin	Clutch	38-53-55-62-A	.02
P-278	Collar (Lock)	Shaft	38-53-55-62-A	.05
P-266	Collar	Spring	38-53-55	.03
P-3737	Screw	Collar	38-53-55-62-A	.005
P-4444	Gear	Large	38-53-55-62-A	.60
P-265	Spring	Shaft	38-53-55-62-A	.02
P-3498	Pinion	Small	38-53-55-62-A	.15
P-4133	Spring	Pinion	38-53-55-62-A	.02
P-3497	Stop	Pinion	38-53-55-62-A	.02
P-11674	Screw	Pinion	38-53-55-62-A	.02
P-11673	Washer	Pinion	38-53-62-A	.02
P-4786	Washer		38-53-55-62-A	.005
P-4785	Washer	Shim	38-53-55-62-A	.005
P-11730	Crank		38-53-55-62-A	.25



No. 963 Generator Case

Door and Mounting Shelf
No. 963 Generator

No. 33



No. 41 Type



No. 41-B



No. 41-G

Hookswitches

Piece Parts shown on page 239

Code No.	Description	Price Each
32	Dummy hook for use on any vertical surface to hold any Stromberg-Carlson Combination Telephone. Consists of a round plate with a projecting hook and screw. Hook has extra heavy nickel-dipped finish.	\$.50
41-B	Standard hookswitch for central energy and magneto type wall telephones. Hook and frame are made of stamped steel and springs, of nickel-silver. The hook is finished black.	.75



No. 42 Type



No. 42-B



No. 42-G



No. 28 Hookswitch Box



No. 30-A Hookswitch Box



No. 31-A Hookswitch Box

Hookswitches (Cont.)

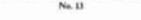
Code No.	Description	Price Each
41-G	Standard hookswitch for inter-communicating telephones. Construction is the same as No. 41-B excepting the spring combination.	\$.75
42-B	For use on No. 19 and No. 36 Hookswitch Boxes which are parts of No. 10-C and No. 10-L Combination Telephones. Hook is made of nickel-plated brass, frame, of stamped steel, and springs, of nickel-silver.	1.00
42-G	For use on No. 30, No. 31, and No. 32 Hookswitch Boxes which are parts of No. 1135-A and B and No. 10-S and DJ Combination Telephones. Construction is the same as No. 42-B.	1.00

Hookswitch Boxes

Code No.	Description	Price Each
19	Central energy type hookswitch box, used as a part of the No. 10-C Combination Telephone. It is equipped with a No. 38-A Induction Coil and a No. 42-B Hookswitch. The cover is made of stamped steel, japanned. There are two terminals at the top of the box. Mounting space $4\frac{3}{4} \times 3\frac{3}{4}$ ins.	\$2.50
28	Used as a part of the No. 10-I Combination Telephone. It is equipped with a No. 38-A Induction Coil and a No. 42-G Hookswitch. The cover is made of stamped steel, japanned. There are five terminals at the top of the box. Mounting space $4\frac{3}{4} \times 3\frac{3}{4}$ ins.	3.55
30-A	Private line hookswitch box, used as a part of the No. 10-P Combination Telephone. Its construction is the same as a No. 31-A with the addition of a push button. Mounting space $4\frac{3}{4} \times 3\frac{3}{4}$ ins.	4.00
30-B	Center phone, substation hookswitch box, used as a part of the No. 10-PC Combination Telephone. Identical with No. 30-A except in wiring. Mounting space $4\frac{3}{4} \times 3\frac{3}{4}$ ins.	4.00
30-D	Apartment house one button type hookswitch box. Identical with No. 30-A & B except in wiring. Mounting space $4\frac{3}{4} \times 3\frac{3}{4}$ ins.	4.00
31-A	Used for selective ringing as a part of the No. 10-S Combination Telephone. It is equipped with a 42-G Hookswitch and has a 20 ohm buzzer concealed under the cover. The cover is made of stamped steel, japanned. There are four terminals at the top of the box. Mounting space $4\frac{3}{4} \times 3\frac{3}{4}$ ins.	3.55
32-DJ	This hookswitch box is very similar to No. 30-D with the addition of one push button and one terminal. Mounting space $4\frac{3}{4} \times 3\frac{3}{4}$ ins.	4.50
36	Magneto type hookswitch box, used as a part of the No. 10-L Combination Telephone. It is equipped with a No. 38-A Induction Coil and a No. 42-B Hookswitch. The cover is made of stamped steel, japanned. There are three terminals at the top of the box. Mounting space $4\frac{3}{4} \times 3\frac{3}{4}$ ins.	2.50

Holly Strips

White Holly Strips—mount between jack strips. Used for segregating each bank of 100 multiple Jacks to the operator's eye.

Holly Strips	Code No.	Used With	Dimensions	Material	Price Each
	3	Nos. 3, 5, 7, 9, 40, 90 and 109 Type Jacks	Length—10 $\frac{1}{4}$ ins. Width— $\frac{1}{2}$ in. Thickness— $\frac{1}{8}$ in. Jack Mounting Centers—10 $\frac{1}{4}$ ins.	White Holly with Lacquered Edges.	\$.015
	13	No. 67 Jack	Length—6 $\frac{1}{4}$ ins. Width— $\frac{1}{2}$ in. Thickness— $\frac{1}{8}$ in. Jack Mounting Centers—7 $\frac{1}{4}$ ins.	White Opaque Celluloid	.07
	15	No. 127 Jack	Length—7 $\frac{1}{4}$ ins. Width— $\frac{1}{2}$ in. Thickness— $\frac{1}{8}$ in. Jack Mounting Centers—8 $\frac{1}{4}$ ins.	White Opaque Celluloid	.10
	16	No. 130 Jack	Length—10 $\frac{1}{4}$ ins. Width— $\frac{1}{2}$ in. Thickness— $\frac{1}{8}$ in. Jack Mounting Centers—11 $\frac{1}{4}$ ins.	White Holly with Lacquered Edges	.015

Note: Nos. 13 and 15 mount with 3 No. 21 x $\frac{1}{4}$ in. R.H. Brass Enc. Pins.

Switchboard Jacks

One of the vital parts of a switchboard is the jack. Good jacks are essential to ensure reliable talking connections between subscribers. These jacks must stand up against years of hard service regardless of climatic conditions.

Stromberg-Carlson jacks are built not only to last, but to render reliable service. And whether furnished individually or mounted in strips these jacks are equipped with the best nickel-silver springs, insulated with best quality of Bakelite, Micarta, Formica or Hard Rubber, and to further insure lastingness, these jacks are constructed upon either drawn steel or cast brass frames.

When jacks are mounted on strips they are assembled in groups of five, ten or twenty jacks, equipped with dull finished hard rubber face strips, finished with a plain face, white line divisions or drilled for party line indicators. The latter must be specified (if required). Always state the Type and Code Number of mountings when ordering jacks in strips. Jack fasteners are not included with the jacks, but must be ordered as a separate item.



No. 58 Jack Assembly



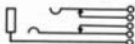
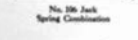
No. 55 Jack Spring Combination

Individual Jacks

Code No.	Description	Price Per Jack
55	Used on Power Switchboards for Cell Test and in Plug Boxes for Inter-Communicating Telephones. Mounts on wood or slate panels $\frac{3}{4}$ to $\frac{1}{2}$ in. thick and is held in place with a locking ring from behind the panel. Shape—Round Face. Finish—Nickel Polished. Length—2 $\frac{1}{2}$ ins. Diameter of Face— $\frac{1}{2}$ in. Mounting Centers— $\frac{3}{4}$ in. Diameter of Mounting Hole— $\frac{3}{4}$ in. Plug required—No. 57 two conductor Plug. Jack Blank required—No. 2 or 3 Plug Hole Blank.	\$.75

Switchboard Jacks (Cont.)

Individual Jacks (Cont.)

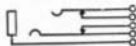
	Code No.	Description	Price Per Jack
	93	Standard operator's cut-in Jack for all multiple and non-multiple switchboards whether equipped with suspended transmitter or with a breast plate type set. Mounts below key shelf on lock rail. Shape—Oblong Face. Finish—Black Enamel. Length of Face—2 $\frac{1}{4}$ in. Width of face— $\frac{1}{2}$ in. Depth of Jack from face to tip of springs—1 $\frac{1}{4}$ in. Horizontal Mounting Centers—2 in. Plug required—No. 23 four conductor Plug. Jack Blank required—No. 33 Jack Blank.	\$1.00
			
	101	Used principally on toll test panels and on wire chief's test boxes at main distributing frame. Mounts on either wood or rubber panels of $\frac{1}{2}$ in. thickness and is held in place from the rear of the panel by a $\frac{1}{2}$ in. Flat Head Iron Wood or Machine screw. Shape—Round Face, Flush mounting. Finish—Dull Nickel. Length—3 $\frac{1}{4}$ in. Diameter of face— $\frac{3}{8}$ in. Minimum mounting centers—Horizontal— $\frac{1}{4}$ in. Vertical— $\frac{3}{8}$ in. Diameter of Mounting Hole— $\frac{3}{8}$ in. Plug required—No. 10 two conductor single plug, No. 35-A three conductor single plug, No. 31 two conductor twin plug or No. 33 three conductor twin plug. Jack Blank required—No. 2 or the No. 3 Plug Hole Blank.	1.00
			
	102	Used on toll test panels. Mounts the same as the No. 101 Jack and has the same general description with the exception of the spring combinations. Plug required—No. 10 two conductor single plug, No. 35-A three conductor single plug or No. 31 two conductor twin plug. Jack Blank required—No. 2 or the No. 3 Plug Hole Blank.	1.10
			
	106	Used as a Cord Test Jack and is mounted in the Pilot rail. Countersinking is necessary from rear if rail is larger than $\frac{1}{4}$ in. in thickness. It is held in place with a lock ring on the front of panel. Shape—Round Face. Finish—Dull Black. Length overall—2 $\frac{1}{4}$ in. Diameter of Face— $\frac{3}{8}$ in. Diameter of Mounting Hole— $\frac{3}{8}$ in. Plug required—No. 33 two conductor plug, or a No. 34 three conductor plug. Jack Blank required—No. 2 or the No. 3 Plug Hole Blank.	.90
			
	129	Used on 2, 4, 6 or 8 panel Central Energy Multiple Switchboards. Mounts on either wood or rubber panels $\frac{1}{2}$ in. or less in thickness, without take-up washers. A sleeve is screwed into the front of the jack through the panel and makes the mounting rigid. An extra brass bushing mounts over the sleeve to properly space the sleeve length. Shape—Round Face. Finish—Nickel Polished. Length—3 $\frac{1}{4}$ in.	1.25

Switchboard Jacks (Cont.)

Individual Jacks (Cont.)



No. 129 Jack Assembly

No. 129 Jack
Spring Combination

Code No.

Description

Price
Per Jack

139

Diameter of face over bushing— $\frac{1}{4}$ in.

Minimum Mounting Centers:

Horizontal— $\frac{1}{4}$ in.Vertical— $\frac{3}{4}$ in.Diameter of Mounting Hole— $\frac{1}{16}$ in.

Plug required—No. 54 three conductor Plug.

Used as a test jack on Multiple Switchboards and is generally mounted in the cord test circuit in each operator's position. It is the same as the No. 129 Jack excepting that it takes a different plug.

Plug required—No. 53 and 53-X three conductor Plug or No. 56 and 56-X two conductor Plug.

\$1.25



No. 140 Jack Assembly

No. 140 Jack
Spring Combination

140

Used as a transfer jack in the No. 105 Magneto Switchboard to transfer calls from one position to another position when three or more positions are required to reach the line capacity. Mounts on a $\frac{1}{8}$ in. metal strip and is held in place by a sleeve screwed into the frame of the jack from the front of the panel. The sleeve is insulated with a hard rubber bushing which also properly spaces the sleeve length. This Jack is also mounted with 5 on a strip.

Shape—Hexagonal Face.

Finish—Nickel Polished.

Length— $3\frac{1}{4}$ ins.Face dimensions— $\frac{1}{2}$ in.

Mounting Centers—

Horizontal— $\frac{1}{4}$ in.Vertical— $\frac{3}{4}$ in.Diameter of Mounting Hole— $\frac{1}{16}$ in.

Plug required—No. 42 two conductor Plug, No. 57 two conductor Plug or a No. 55 three conductor Plug.

1.35



No. 147 Jack

Code No.

Description

Consumer's
Price Each

147

Mounts neatly and securely on Formica, Bakelite and Hard Rubber panels between $\frac{3}{8}$ and $\frac{1}{4}$ in. thick.

Is readily assembled to the panel with a nickel-polished hexagonal nut.

Contacts are equipped with low resistance, electrical contact metal, nickel-silver springs and extra-thick phenol fibre insulations.

Positive electrical connections between the plug and the jack are assured, as plug-conductor contacts are made through jack springs.

The necessity for use of the unreliable jack sleeve contact is thus eliminated.

This Jack permits the instantaneous connection of the Head Set directly to either the detector or to any succeeding amplifier stage of the cascade, cutting off unused stages. Takes No. 60 Plug.

\$.75



No. 151 Jack

151

Construction same as No. 147.

This Jack permits connections of phones in detector sets or in any circuit where no local contacts are to be opened or closed.

Takes No. 60 Plug.

.50



No. 152 Jack

152

Construction same as No. 147.

This Jack permits the instantaneous connection of either a Head Set or a Loud Speaker to the detector or to any amplifier stage of the cascade, cutting off unused stages on both sides; also gives the advantage of automatic filament control.

Takes No. 69 Plug.

1.00

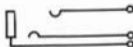
Radio Jacks

Jacks Mounted in Strips

No. 67 Type

No. 67 Jack
on 27 MountingCode No.
67 on 27
Mounting

Description
Used as a standard multiple jack for 9 panel switchboards.
Mounts—20 per strip.
Group Division—White Dots.
Length of face—6 $\frac{1}{4}$ ins.
Width of face— $\frac{3}{4}$ in.
Depth of jack from face to tip of springs—2 $\frac{1}{4}$ ins.
Mounting Centers—7 $\frac{1}{4}$ ins.
Jack Fasteners—No. 12.
Jack Blank required—No. 13 or 15.
Takes No. 33 two conductor plug and No. 34 three conductor plug.
Same as No. 67 on No. 27 Mounting, except with white line divisions. .35
Mounts 20 per strip.
Same as No. 67 on No. 27 Mounting, except with plain face. .45
Mounts 10 per strip. Spaced symmetrically.

Price
Per Jack
\$.35No. 67 Jack
Spring Combination67 on 58
Mounting67 on 72
Mounting

No. 109 Type

No. 109 Jack
on 61 MountingCode No.
109 on 59
Mounting

Description
Formerly used as a standard three point jack for two, three, four, and six panel multiple sections. Used only on additions to old S-C installations.
Mounts—5 per strip.
Plain Face.
Length of face—10 $\frac{1}{4}$ ins.
Width of face— $\frac{1}{2}$ in.
Depth of jack from face to tip of springs—2 $\frac{1}{4}$ ins.
Mounting Centers—10 $\frac{1}{4}$ ins.
Jack Fastener—No. 15.
Jack Blank required—No. 6.
Takes No. 42 two conductor plug, No. 57 two conductor plug and No. 55 three conductor plug.
Same as No. 109 on No. 59 Mounting, only mounts 10 per strip. .50
Same as No. 109 on No. 59 Mounting, only mounts 20 per strip. .40
Same as No. 109 on No. 59 Mounting, only mounts 20 per strip and spaced with white line divisions. .45
Same as No. 109 on No. 59 Mounting, only mounts 20 per strip, spaced with white line divisions, and drilled for party line indicators. .50
Formerly used as a standard three point jack for two, three, four and six panel multiple sections. Used only on additions to old S-C installations. .60
Same as No. 109 on No. 59 Mounting, only mounts 10 per strip and takes No. 16 Number Plates. Jack Blank required—No. 6.

Price
Per Jack
\$.65

End View No. 109 Jack

109 on 60
Mounting
109 on 61
Mounting
109 on 62
Mounting
109 on 63
Mounting
109 on 78
MountingNo. 109 Jack
Spring CombinationCode No.
111 on 61
Mounting

No. 111 Type

No. 111 Jack
Spring Combination111 on 62
Mounting
111 on 63
Mounting

Description
Used for trunk service on multiple switchboards.
Similar to No. 109 Jack but with spring combination as shown.
Mounts—20 per strip.
Plain Face.
Jack Blank required—No. 6.
Same as No. 111 on No. 61 Mounting, only face has white line divisions. .45
Same as No. 111 on No. 61 Mounting, only face has white line divisions, and drilled for party line indicators. .50

Price
Per Jack
\$.40

Jacks Mounted in Strips (Cont.)

No. 112 Jack
Spring CombinationCode No.
112 on 61
Mounting

No. 112 Type

Description
Used for trunk service on multiple switchboards. Similar to No. 109 Jack but with spring combination as shown.
Mounts—20 per strip.
Plain Face.
Jack Blank required—No. 6.

Price
Per Jack
\$.40

112 on 62
Mounting Same as No. 112 on No. 61 Mounting, only face has white line divisions. .45

112 on 63
Mounting Same as No. 112 on No. 61 Mounting, only face has white line divisions and drilled for party line indicators. .50

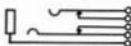
No. 113 Jack
Spring CombinationCode No.
113 on 59
Mounting

No. 113 Type

Description
Used for trunk service on multiple switchboards. Similar to No. 109 Jack, but with spring combination as shown.
Mounts—5 per strip. Plain Face.
Jack Blank required—No. 6.

Price
Per Jack
\$1.05

113 on 60
Mounting Same as No. 113 on No. 59 Mounting, only mounts 10 per strip. .90

No. 114 Jack
Spring CombinationCode No.
114 on 59
Mounting

No. 114 Type

Description
Used for service on P. B. X. and Magneto Switchboards. Similar to No. 109 Jack, but with spring combination as shown.
Mounts—5 per strip. Plain Face.
Jack Blank required—No. 6.

Price
Per Jack
\$.85

114 on 60
Mounting Same as No. 114 on No. 59 Mounting, only mounts 10 per strip. .70

114 on 61
Mounting Same as No. 114 on No. 59 Mounting, only mounts 20 per strip. .60

114 on 62
Mounting Same as No. 114 on No. 59 Mounting, only mounts 20 per strip and has white line divisions. .65

114 on 63
Mounting Same as No. 114 on No. 59 Mounting, only mounts 20 per strip, has white line divisions and is drilled for party line indicators. .70

No. 121 Jack
Spring CombinationCode No.
121 on 60
Mounting

No. 121 Type

Description
Used with generator call, visual signal on multiple switchboards.
Mounts—10 per strip.
Length of face—10 1/4 in.
Width of face—1/4 in.
Depth of Jack from face to tip of springs 2 1/4 in.
Mounting centers—10 1/4 in.
Plug required—No. 42 two conductor Plug.
—No. 57 two conductor Plug.
—or No. 55 three conductor Plug.
Jack Fastener required—No. 15.
Jack Blank required—No. 6.

Price
Per Jack
\$.95

121 on 61
Mounting Same as the No. 121 Jack on No. 60 Mounting with the exception that the No. 61 Mounting accommodates 20 Jacks to a strip. .85

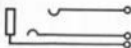
121 on 62
Mounting Same as the No. 121 Jack on No. 60 Mounting with the exception that the No. 62 Mounting accommodates 20 Jacks to a strip and has white line divisions. .90

121 on 63
Mounting Same as the No. 121 Jack on No. 60 Mounting with the exception that the No. 63 Mounting accommodates 20 Jacks to a strip, has white line divisions on its face and is drilled for party line indicators. .95

Jacks Mounted in Strips (Cont.)

No. 127 Type

Piece Parts shown on page 240

No. 127 Jack
on S1 mountingNo. 127 Jack
Spring Combination

End View No. 127 Jack

No. 127 Jack
on S3-B mounting

End View No. 130 Jack

No. 130 Jack on S1-B
mounting with party
line indicators.
(No. 7 Type Service Plug)No. 130 Jack
Spring CombinationCode No.
127, on S2
Mounting

Description
Standard for eight panel multiple switchboards.
Mounts—10 per strip.
Plain face.
Length of face—7 $\frac{1}{2}$ ins.
Width of face— $\frac{3}{4}$ in.
Depth of Jack from face to tip of sp'gs—2 $\frac{1}{2}$ ins.
Mounting Centers—8 $\frac{3}{4}$ ins.
Plug required—No. 54 or No. 54-N three Conductor Plug.
Jack Fastener required—No. 17.
Jack Blank required—No. 45.

127 on S3
Mounting

Standard for eight panel multiple switchboards.
Same as the No. 127 Jack on No. S2 Mounting
with the exception that the No. S3 Mounting
accommodates 20 Jacks to a strip.
The Jack Blank required—either the No. 45,
the No. 36 or the No. 37.

127 on S3-A
Mounting

Same as the No. 127 Jack on No. S2 Mounting
with the exception that the No. S3-A Mounting
accommodates 20 Jacks to a strip
and also has white line divisions.

127 on S3-B
Mounting

Same as the No. 127 Jack on No. S2 Mounting
with the exception that the No. S3-B Mounting
accommodates 20 Jacks to a strip.
The face has white line divisions and is spotted for
party line indicators.

Price
Per Jack
\$.45

.35

.35

.35

No. 130 Type

Piece Parts shown on page 241

Code No.
130 on 79
Mounting

Description
Used for two and six panel multiple switchboards.
Mounts—5 per strip.
Plain Face.
Length of Face—10 $\frac{3}{4}$ ins.
Width of Face— $\frac{1}{2}$ in.
Depth of Jack from face to tip of springs—3 ins.
Mounting Centers—11 $\frac{1}{4}$ ins.
Plug required—No. 56, No. 56-X three conductor Plug or No. 53-X two conductor Plug.
Jack Fastener required—No. 17.
Jack Blank required—No. 52.

130 on 80
Mounting

Same as the No. 130 on No. 79 Mounting with
the exception that the No. 80 Mounting
accommodates 10 Jacks to a strip.

130 on 81
Mounting

Same as the No. 130 on No. 79 Mounting with
the exception that the No. 81 Mounting
accommodates 20 Jacks to a strip.

130 on 81-A
Mounting

Same as the No. 130 on No. 79 Mounting with
the exception that the No. 81-A Mounting
accommodates 20 Jacks to a strip and has
white line divisions.

130 on 81-B
Mounting

Same as the No. 130 on No. 79 Mounting
with the exception that the No. 81-B Mounting
accommodates 20 Jacks to a strip and
besides having white line divisions is also
drilled for party line indicators.

Price
Per Jack
\$.65

.50

.40

.45

.50

Jacks Mounted in Strips (Cont.)

No. 132 Type

No. 132 Jack
Spring Combination

Code No.	Description	Price Per Jack
132 on 81 Mounting	Standard for two and six panel multiple switchboards. It is similar to the No. 130 Jack with the exception of the spring combinations as shown. It accommodates 20 Jacks to a strip and has a plain face. Jack Blank required—No. 52.	\$.60
132 on 81-A Mounting	Same as the No. 132 Jack on No. 81 Mounting with the exception that this Jack has white line divisions.	.65
132 on 81-B Mounting	Same as the No. 132 Jack on No. 81 Mounting with the exception that the No. 81-B Mounting has white line divisions and is drilled for party line indicators.	.70

No. 133 Type

No. 133 Jack
Spring Combination

Code No.	Description	Price Per Jack
133 on 81 Mounting	Standard for two and six multiple switchboards. It is similar to the No. 130 Jack with the exception of the spring combination as shown. It accommodates 20 Jacks to a strip and has a plain face. Jack Blank required—No. 52.	\$.40
133 on 81-A Mounting	Same as the No. 133 Jack on No. 81 Mounting with the exception that the No. 81-A Mounting has white line divisions.	.45
133 on 81-B Mounting	Same as the No. 133 Jack on No. 81 Mounting with the exception that the No. 81-B Mounting has white line divisions and is also drilled for party line indicators.	.50

No. 134 Type

No. 134 Jack
Spring Combination

Code No.	Description	Price Per Jack
134 on 79 Mounting	Designed for two and six panel multiple switchboards. It is similar to the No. 130 Jack with the exception of the spring combination as shown. Mounts 5 Jacks to a strip and has a plain face.	\$.85
134 on 80 Mounting	Same as the No. 134 on No. 79 Mounting with the exception that the No. 80 Mounting accommodates 10 Jacks to a strip.	.70

No. 135 Type

No. 135 Jack
Spring Combination

Code No.	Description	Price Per Jack
135 on 79 Mounting	Standard for private branch switchboards and six panel multiple switchboards. It is similar to the No. 130 Jack with the exception of the spring combination as shown. Mounts 5 Jacks to a strip and has a plain face. Jack Blank required—No. 52.	\$.85
135 on 80 Mounting	Same as the No. 135 on No. 79 Mounting with the exception that the No. 80 Mounting accommodates 10 Jacks to a strip.	.70
135 on 81 Mounting	Same as the No. 135 on No. 79 Mounting with the exception that the No. 81 Mounting accommodates 20 Jacks to a strip.	.60
135 on 81-A Mounting	Same as the No. 135 on No. 79 Mounting with the exception that the No. 81-A Mounting accommodates 20 Jacks to a strip and has white line divisions.	.65
135 on 81-B Mounting	Same as the No. 135 on No. 79 Mounting with the exception that the No. 81-B Mounting accommodates 20 Jacks to a strip, has white line divisions and is also drilled for party line indicators.	.70

Jacks Mounted in Strips (Cont.)

No. 140 Type



Nos. 140 Jack, and 121
Lamp Socket on 84 mounting



No. 140 Jack
Spring Combination

Code No.
140 on 84
Mounting

Description

A combination strip of transfer jacks and lamp sockets. Used principally on the No. 105 Magneto Switchboard where 3 or more sections are mounted together, to transfer line calls from the first section to the third, etc. Mounts on the jack stiles at the bottom of the drop and jack panels and occupies the same space as the No. 140 Drop Mounting.
Mts. 5 No. 140 Jacks and 5 No. 121 Lamp Sockets.
Shape—Oblong Face.
Finish—Japan Semi-Gloss.
Length of Face— $7\frac{1}{4}$ ins. Width of Face— $1\frac{1}{4}$ ins.
Mounting Centers— $6\frac{1}{2}$ ins.
Depth of Jack and Lamp Socket from face to tip of springs— $3\frac{1}{4}$ ins.
Plug required—No. 42 two conductor Plug
—No. 57 two conductor Plug
—No. 55 three conductor Plug
Drop Blank required—No. 34.

Price
Per Jack
\$1.75

140 on 85
Mounting

A Mounting strip with transfer jacks. Used principally on the No. 105 Magneto Switchboard, where 3 or more sections are mounted together, to transfer line calls across the board from the first section to the third, etc. Mounts the same as the No. 84 Mounting. The design is similar to the No. 84 Mounting only without the lamp sockets.
Plug required—No. 55 three conductor Plug.
Drop Blank required—No. 34.

1.50

Jack Fasteners

Jack Fasteners are used for holding the jack and lamp socket mountings in place on the switchboard stile strip.



No. 15



No. 17



No. 18



No. 19



No. 20

Code No.

Description

Price Each

- | | | |
|----|---|--------|
| 15 | Standard fastener for the Nos. 109 and 120 Type Jacks. It is a special shaped steel screw, $2\frac{1}{4}$ ins. long. The tool required is a No. 28 Screw Driver. | \$.10 |
| 17 | Standard Butterfly type Jack Fastener which is used with the No. 130 Type Jacks on Nos. 79, 80 and 81 Mountings. Also used with the No. 127 Jack and the No. 121 Lamp Sockets on Nos. 79, 80, 81, 82 and 83 Mountings. Consists of a brass screw with a steel washer. Length— $1\frac{1}{4}$ ins. Diameter of Washer— $\frac{1}{2}$ in. The tool required is a No. 44 Wrench. | .10 |
| 18 | Standard fastener for holding Nos. 36, 37, 46, 47, 62 and 63 Face Blanks in Jack Panels and the No. 127 Jack Strip. Consists of a "U" shaped steel clip with one No. 8-32 x $\frac{3}{4}$ in. Screw. Length— $\frac{1}{2}$ in. The tool required is an ordinary screw driver or an S-C No. 363 Screw Driver. | .10 |
| 19 | Same as the No. 18 and is standard for holding Jack Blanks and End Panels of switchboards. This Jack Fastener is similar to the No. 18 but is designed in half a U with one No. 8-32 x $\frac{5}{8}$ in. Screw. Length— $\frac{1}{2}$ in. The tool required is an ordinary screw driver or an S-C No. 363 Screw Driver. | .10 |
| 20 | Standard Fastener used with the No. 109 and No. 120 Lamp Socket Mountings when stile is drilled for 1 inch centers. Consists of a steel screw with a lag. Length— $2\frac{1}{2}$ ins. The tool required is a No. 28 Screw Driver. | .20 |

Keys

Stromberg-Carlson Keys are furnished in many designs. Each design is required to satisfy the needs of a particular service. There are the Individually Mounted Keys, the Strip Mounted Keys, the Ring-off Signal Type Keys, the Cam Type Keys and the Party Line Indicating Type Keys.

All Stromberg-Carlson Keys are made with high grade nickel-silver springs of sufficient length to be flexible. These springs are insulated with best quality phenol fiber, equipped with commercially pure silver contacts, and securely mounted in rigid steel frames.



No. 34 Key Assembly

Spring Combinations



No. 34 Key
Non-Locking
No. 119 Key
Locking



No. 300 Key
Non-Locking
No. 301 Key
Locking



No. 303 Key Assembly

Spring Combinations



No. 303 Key
Non-Locking



No. 304 Key
Non-Locking



No. 305 Key
Non-Locking

Individual Plunger Type

Code No.	Description	Price Each
34	A unit type non-locking key. Mounting centers —1 in. Diameter of shell— $\frac{1}{4}$ in. Designed for mounting in $\frac{3}{4}$ in. key shelf or panel through a $\frac{1}{2}$ in. drill hole. Held in place by two Pe. No. 3939 R. H. I. W. Screws. Used on Central Energy Multiple Switchboards for cord test key and on Magneto Switchboards for order wire key.	\$1.00
119	Similar in design to the No. 34 Key, same spring combinations, but with locking plunger. Used on P. B. X. and Magneto Switchboards for night alarm, code alarm, generator, and battery cut-off key.	1.00
300	Similar in design to the No. 34 Key—non-locking, but with spring combinations as shown. An order wire key used on the No. 105 Magneto Switchboard and also miscellaneous.	1.20
301	Similar in design to the No. 34 Key, but with locking plunger and spring combinations as shown. A position switching key for the No. 105 Switchboard.	1.20

Individual Push Button Type

Code No.	Description	Price Each
303	Used on the No. 806 Magneto Wall Telephone and other subscriber's sets as a "Non-Interfering" Push Button Ringing Key which permits a rural subscriber to ring central without ringing the other phones on his line. Mounts below the hookswitch from the inside of the cabinet with the push button protruding through the woodwork, and is secured by three Pe. No. 11098 Wood Screws. Designed to mount on any $\frac{1}{2}$ in. woodwork. The plunger bushing fits a $\frac{1}{4}$ in. hole. Push-Button—Non-Locking. Length over springs—2 $\frac{1}{4}$ ins. Width— $\frac{3}{4}$ in.	\$.50
304	Similar in design to the No. 303 Key, but with different spring combinations. Used on Magneto Telephones for short circuiting Magneto lines in connection with "Non-Interfering" Ringing.	.75
305	Similar in design to the No. 303 Key, but with different spring combinations. Functions as a hookswitch in the No. 884 Test Set Box. Mounts on upper woodwork inside the telephone box.	.75

Keys (Cont.)

Individual Push Button Type (Cont.)

Code No.	Description	Price Each
310-A	An Individual Non-Locking Push Button Key for four party harmonic machine ringing. Used in Super-Service Cord Circuits to select the frequency on Central Energy Super-Service Multiple Switchboards. Mounts from under side of key shelf,—flushing protrudes through woodwork and flush with top of key shelf. Diameter of hole must be— $\frac{11}{16}$ in. for clearance of push button. Mounts with 2 Pz. No. 11998 R. H. I. W. Screws. Specify these screws on order. Length of key over springs—2 $\frac{11}{16}$ ins. Width— $\frac{3}{4}$ in. Total height—1 $\frac{11}{16}$ ins. Designation—White Button with black center. Diameter of button— $\frac{3}{4}$ in. Diameter of colored center— $\frac{3}{4}$ in. Designed for— $\frac{3}{4}$ in. key shelf.	\$1.00
310-B	Same as No. 310-A Key, except designated by White Button with red center.	1.00
310-C	Same as No. 310-A Key, except designated by White Button with blue center.	1.00
310-D	Same as No. 310-A Key, except designated by White Button with green center.	1.00
310-E	Same as No. 310-A Key, except has plain White Button, without colored center. Used on Super-Service Switchboards with a separately mounted designation,—See Labels—Number Plates Code No. 17.	1.00
312	An Individual Non-Locking Push Button Order Wire Key, for Super-Service Switchboards. Designed for mounting from under side of a— $\frac{3}{4}$ in. key shelf through a— $\frac{3}{4}$ in. drill hole flush with key shelf's surface. Mounts with 2 Pz. No. 11998 R. H. I. W. Screws. Specify these screws on order. Length of key over springs—2 $\frac{11}{16}$ ins. Width— $\frac{3}{4}$ in. Total height—3 $\frac{3}{4}$ ins. Finish of button—Black. Diameter of button— $\frac{11}{16}$ in.	1.25



No. 312 Key Assembly



No. 312 Key Spring Combination Non-Locking



No. 310-A Key Assembly

Combined Key and Drop Type

Piece Parts Shown on Page 242

Code No.	Description	Price Each
109-A	The only key on the market which combines in one compact unit, listening key, ringing keys, and ring-off signals. Furthermore, it is the only key on the market which has automatically restored ring-off signals. Used principally on Stromberg-Carlson Magneto Switchboards but is also readily installed on other standard switchboards. Mounts on keyboard. Consists of a steel frame, shutter hoods, regular ringing key, listening key, ring back key, and two coils for actuating ring-off shutter signals. The listening cam is mechanically linked with the shutters of these ring-off signals, so that the latter are automatically restored when the listening key's lever is operated. Ring-off signals are equipped with night alarm contacts and removable coils. Signal shutters are protected by steel hoods, which are equipped with celluloid windows. All exposed metal parts are given a durable black enamel finish so as to match the remaining parts of the keyboard. Size of escutcheon—7 $\frac{1}{4}$ x 1 $\frac{1}{4}$ inches. Mounts flush with the keyboard's surface on 6 $\frac{1}{4}$ inch mounting centers. Resistance of ring-off signals—500 ohms. For replacing single ring-off coil order Pz. No. 12258—Price \$1.35.	\$10.50



No. 109-A Key Spring Combination

Keys (Cont.)

Combined Key and Drop Type (Cont.)

No. 62 Key
on 3 MountingCode No.
169-F

Description

Same as 169-A but with higher wound ring-off coils. Resistance of each coil—1000 ohms.
For replacing single ring-off coil order Pt. No. 12259—Price \$1.45.

Price Each
\$10.60

Plunger Jack Type

End View No. 62 Key
on 3 MountingCode No.
62 on 3
Mounting

Description

A former standard strip of Non-Locking Push Button Keys assembled on hard rubber strips and metal frames like jacks. Used for restoring rural line circuits, for testing lines, and for miscellaneous purposes.

Mounts in the face of two and six panel multiple switchboard sections, Chief Operator's and Wire Chief's Desks, on the same centers as the No. 109 Type Jack.

Mounts 5 keys per strip.

Length of key strip overall—11½ ins.

Length of face strip overall—10½ ins.

Width of face strip overall—½ in.

Depth of key from face to tip of springs—2½ ins.

Mounting Centers—10½ ins.

Requires two No. 12 Jack Fasteners.

Key Blank required—No. 6 Jack Blank.

Price per single key \$1.50.

Price
Per Strip
\$7.50No. 62 Key
on 122 Mounting62 on 1
Mounting

Same as the No. 62 Key on No. 3 Mounting only mounts 10 keys per strip. Price per single key \$1.20.

12.00

62 on 122
Mounting

A new standard strip of Non-Locking push button keys assembled on hard rubber strips and metal frames like jacks. Used the same as the No. 62 Key on No. 3 Mounting only mounts on the same centers as the No. 130 Type Jack.

Mounts 10 keys per strip.

Length of key strip overall—11¼ ins.

Length of face strip overall—10¾ ins.

Width of face strip overall—½ in.

Depth of key from face to tip of springs—3¼ ins.

Mounting centers—11¼ ins.

Requires two No. 17 Jack Fasteners.

Key Blank required—No. 52 Jack Blank.

Price per single key \$1.20.

12.00

End View No. 62 Key
on 123 Mounting62 on 123
Mounting

Same as the No. 62 Key on No. 122 Mounting only smaller. Used in three and eight panel multiple switchboard sections and mounts on the same centers as the No. 127 Jack.

12.00

Mounts 10 keys per strip.

Length of key strip overall—8½ ins.

Length of face strip overall—7½ ins.

Width of face strip overall—½ in.

Depth of key from face to tip of springs—3¼ ins.

Mounting Centers—8¾ ins.

Requires two No. 17 Jack Fasteners.

Key blank required—No. 43 Jack Blank.

Price per single key \$1.20.

No. 62 Key
Spring Combination
Non-Locking69 on 3
Mounting

A strip of former standard locking push button keys assembled on hard rubber strips and metal frames like jacks. Used for switching circuits on Local and Toll Boards, and miscellaneous purposes.

7.50

Mounts in the face of two and six panel multiple switchboard sections, Chief Operator's, and Wire Chief's Desks on the same centers as the No. 109 Type Jack.

Mounts 5 keys per strip.

Same dimensions and requirements as the No. 62 Key on No. 3 Mounting.

Price per single key \$1.50.

No. 69 Key
on 3 Mounting

Keys (Cont.)

Plunger-Jack Type (Cont.)

No. 69 Key
on 122 MountingCode No.
69 on 1
Mounting

Description
Same as the No. 69 key on No. 3 Mounting only
mounts 10 keys per strip.
Price per single key \$1.20.

Price
Per Strip
\$12.00No. 69 Key
on 123 Mounting69 on 122
Mounting

A new standard strip of locking push button
keys assembled on hard rubber strips and metal
frames like jacks. Used for switching circuits on
Local and Toll Boards, and miscellaneous pur-
poses.

12.00

Mounts in the face of two and six panel multiple
switchboard sections, Chief Operator's and Wire
Chief's Desks on the same centers as the No. 130
Type Jacks.

Mounts 10 keys per strip.
Same dimensions and requirements as the No. 62
Key on No. 122 Mounting.
Price per single key \$1.20.

End View No. 69 Key
on 123 Mounting69 on 123
Mounting

Same as the No. 69 Key on No. 122 Mounting
only smaller. Used in three and eight panel
multiple switchboard sections and mounts on the
same centers as the No. 127 Jack.

12.00

Mounts 10 keys per strip.
Same dimensions and requirements as the No. 62
Key on No. 123 Mounting.
Price per single key \$1.20.

Plunger—Strip Keyboard Type

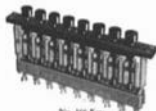
No. 69 Key
Spring Combination
LockingCode No.
166 on 14
Mounting

Description
Order Wire Key for Switchboards.
Mounts on keyboard.
Requires two No. 6—32 x 1/2 in. R. H. I. M. Screws.
Grouping—Eight keys per strip.
Push Buttons—Non-Locking.
Finish of buttons—Black.
Size of escutcheon—5 1/4 x 3/4 in.
Mounting Centers—5 1/4 in.
Depth of key from face to tip of springs—2 3/4 in.
Price per single key—\$1.00.

Price
Per Strip
\$5.00166 on 15
Mounting

Order Wire Key for Switchboards.
Mounts on keyboard.
Requires two No. 6—32 x 1/2 in. R. H. I. M.
Screws.
Grouping—Eight keys per strip.
Push Buttons—Non-Locking.
Similar to No. 166 Key on No. 14 Mounting, but
with a different size of escutcheon.
Size of escutcheon—7 1/4 x 3/4 in.
Mounting Centers—6 1/4 in.
Depth of key from face to tip of springs—2 3/4 in.
Price per single key—\$1.00.

8.00

No. 166 Key
on 14 Mounting166 on 16
Mounting

Order Wire Key for Switchboards.
Mounts on keyboard.
Requires two No. 6—32 x 1/2 in. R. H. I. M.
Screws.
Grouping—Eight keys per strip.
Push Button—Non-Locking.
Similar to No. 166 Key on No. 14 Mounting, but
with a different size of escutcheon.
Size of escutcheon—6 x 3/4 in.
Mounting Centers—5 1/4 in.
Depth of key from face to tip of springs—2 3/4 in.
Price per single key—\$1.00.

8.00

No. 166 Key
Spring Combination
Non-Locking

Keys (Cont.)

Plunger—Strip Keyboard Type (Cont.)



No. 190-A Key

No. 190 Key
Spring Combination
Non-Locking

No. 190-D Key

No. 191 Key
Spring Combination
Non-LockingCam Type Key
with Flush Type MountingCode No.
190-A

Description

Price
Per Strip
\$ 3.50

This type is a New Standard Order Wire Key, and is used the same as the No. 100 but with more convenience as the keys are made up in groups of two, mounted upon a steel mounting plate so that additional keys may be installed as required.

Equipped with two keys and six blanks per strip. Mounts on keyboard with 2 Pe. No. 12672 Clamps and 2 Pe. No. 12908 Oval Headed Machine Screws. No. 2 plug hole blank is used when mounting is not fully equipped with keys.

Push Button—Non-Locking.

Finish—Dull Black.

Size of escutcheon—5½ x 1½ ins.

Mounting Centers—¾ ins.

190-B Same as No. 190-A except equipped with four keys and four blanks per strip. 6.00

190-C Same as No. 190-A except equipped with six keys and two blanks per strip. 8.10

190-D Same as No. 190-A except equipped with eight keys per strip, no blanks. 10.00

191-A Same as the No. 190 Key except with longer escutcheon. 3.50

Size—6½ x 1½ ins.

Equipped with two keys and eight blanks.

191-B Same as No. 191-A except equipped with four keys and six blanks. 6.00

191-C Same as No. 191-A except equipped with six keys and four blanks. 8.10

191-D Same as No. 191-A except equipped with eight keys and two blanks. 10.00

191-E Same as 191-A except equipped with ten keys and no blanks. 12.50

Note (1)—If Order Wire Buttons are to be engraved with letter or number designations, add \$0.10 per button.

Note (2)—Standard button for order wire keys is furnished in black—Other colored buttons are special and add \$0.15 per button.

Cam Type

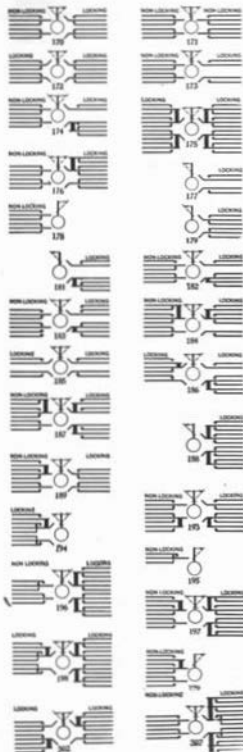
Piece Parts shown on page 248

This key is for standard utility purposes, used in circuits where switching, ringing or listening service is required. It is equipped with either one-way or two-way cam levers in both locking or non-locking types. Provided with spring combinations suitable for practically any circuit, where the use of a cam key is essential.

Both cam and springs are constructed upon a rigid, punched, rust-proofed-steel frame. This frame is equipped with a steel top, vertical spring combinations, and free action roller type cams.

A Key Mounting is required for each key. Order this Key Mounting as a separate item. It is furnished for flush keyboard mounting, for surface keyboard mounting, or for switchboard face mounting. See Key Mountings, page 43.

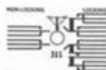
Spring Combination—Cam Type Keys



Keys (Cont.)

Cam Type (Cont.)

Code No.	Description	Price Per Key Less Mounting
170	Cam operates two-ways Locking and Non-Locking	\$1.75
171	Cam operates two-ways Non-Locking and Non-Locking	1.75
172	Cam operates two-ways Locking and Locking	1.75
173	Cam operates two-ways Locking and Non-Locking	1.75
174	Cam operates two ways Locking and Non-Locking	1.85
175	Cam operates two-ways Locking and Locking	2.65
176	Cam operates two-ways Locking and Non-Locking	1.95
177	Cam operates one way Locking	1.15
178	Cam operates one way Non-Locking	1.15
179	Cam operates one way Locking	1.15
181	Cam operates one way Locking	1.15
182	Cam operates two-ways Locking and Non-Locking	1.75
183	Cam operates two-ways Locking and Non-Locking	1.95
184	Cam operates two-ways Locking and Non-Locking	2.05
185	Cam operates two-ways Locking and Locking	1.35
186	Cam operates two-ways Locking and Locking	1.85
187	Cam operates two-ways Locking and Non-Locking	2.15
188	Cam operates one way Locking	1.75
189	Cam operates two-ways Locking and Non-Locking	1.95
193	Cam operates two-ways Locking and Non-Locking	2.15
194	Cam operates one way Locking	1.55
195	Cam operates one way Non-Locking	.95
196	Cam operates two-ways Locking and Non-Locking	2.55
197	Cam operates two-ways Locking and Non-Locking	2.25
198	Cam operates two-ways Locking and Locking	2.45
199	Cam operates one way Non-Locking	1.35
302	Cam operates two-ways Locking and Locking	2.15



Keys (Cont.)

Cam Type (Cont.)

Code No.	Description	Price For Key Less Mounting
307	Cam operates two-ways Locking and Non-Locking	\$2.45
308	Cam operates two-ways Locking and Non-Locking	2.35
309	Cam operates one way Locking	1.75
311	Cam operates two-ways Locking and Non-Locking	2.45

Party Line Indicating Type

Price Parts shown on page 244



No. 201 Key Assembly

No. 201 Key
Spring Combination

No. 211-B Key Assembly

No. 211-B Key
Spring CombinationNo. 221-B Key
Spring Combination

Code No.

201

Description

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— $5\frac{1}{2} \times 1\frac{1}{4}$ ins.

Depth of key from surface of escutcheon to the tips of springs,— $2\frac{3}{4}$ ins. Key top mounts flush with keyboard's surface and is finished in dull black.

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. 201 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— $5\frac{1}{2} \times 1\frac{1}{4}$ ins. Depth of key from the surface of escutcheon to the tips of the springs— $2\frac{3}{4}$ ins.

A four button indicating party line ringing key with a one-way locking cam. Adapted to local "Central Energy" cord circuits which are arranged for "Manual" Four Party Harmonic Ringing and "Manual Listening."

The key plungers have three positions,—ringing, indicating and normal. The spring combinations individual to each button are actuated in the fully depressed position, but not until after the tumbler plate has actuated the common end springs. Both the end springs and the springs associated with a depressed button return to normal, as the button is released to its indicating position. Each button remains in its indicating position until it is fully restored automatically when another button is depressed. The buttons are colored blue, red, green, and black.

Size of key top— $5\frac{1}{2} \times 1\frac{1}{4}$ ins. Depth of key from the surface of escutcheon to the tips of the springs— $2\frac{3}{4}$ ins.

Price Includes
Mtg. Plate

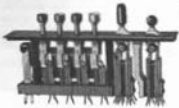
\$5.50

6.30

6.55

Keys (Cont.)

Party Line Indicating Type (Cont.)

	Code No.	Description	Price Includes Mtg. Plate
	231-WH	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. 201 Key. 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.	\$8.20
		Size of key top— $6\frac{1}{2} \times 1\frac{1}{4}$ ins. The buttons are colored blue, red, green, and black. Depth of key from surface of escutcheon to the tips of springs— $2\frac{3}{4}$ ins.	
	231-WT	Identical to No. 231-WH Key but with different arrangement of cam spring contacts. Used in combination cord circuits that are provided for both four party "Machine Ringing" and "Manual Listening."	8.50
	236-BH	An indicating, four button party line key mounted with two cams. Used in toll to local cord circuits that are designed for:—"Manual Party Line Ringing" on the calling cord end; "Manual Single Party Ringing" on the answering cord end; and "Manual Listening" bridged across the cord circuit. The operation of the buttons is similar to that described for the No. 221-B Key.	7.55
		The buttons are colored blue, red, green, and black. Size of key top— $6\frac{1}{2} \times 1\frac{1}{4}$ ins. Depth of key from surface of escutcheon to the tips of springs— $2\frac{3}{4}$ ins.	
	236-WH	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.	8.45
		The operation of the buttons is similar to that described for the No. 221-B Key. The buttons are colored blue, red, green, and black. Size of key top— $6\frac{1}{2} \times 1\frac{1}{4}$ ins. Depth of key from surface of escutcheon to the tips of springs— $2\frac{3}{4}$ ins.	
	236-WT	An indicating, four button, party line key mounted with two cams. Used in combination cord circuits, that are designed for:—"Manual Party Line Ringing" on the calling 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. 221-B Key.	8.75
		The buttons are colored blue, red, green, and black. Size of key top— $6\frac{1}{2} \times 1\frac{1}{4}$ ins. Depth of key from surface of escutcheon to the tips of springs— $2\frac{3}{4}$ ins.	

Keys (Cont.)

Party Line Indicating Type (Cont.)



No. 252-A Key Assembly

Code No.
252-A

Description

Price Includes
Mtg. Plate
\$6.50

Consists of a four button indicating party line ringing key mounted with a one way locking cam key. The action of the buttons and the spring combinations which are controlled by the buttons is identical with that of a No. 201 Key.

This key is generally used as an eight party master key in the following manner:—it is wired in the circuit so as to ring selectively to ground four parties connected on the "ring" side of the line, or to ring selectively, to ground four parties connected on the "tip" side of the line. The position of the cam key handle indicates which side of the line is being rung to ground.

The buttons are colored blue, red, green, and black. Size of key top— $7\frac{1}{4} \times 1$ in.

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

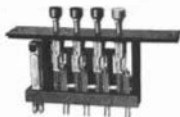
No. 252-A Key
Spring Combination

201

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.

The buttons are colored, blue, red, green, and black. Size of key top— $5\frac{1}{2} \times 1\frac{1}{4}$ in. Depth of key from surface of escutcheon to the tips of springs— $2\frac{3}{4}$ in.

5.75



No. 261 Key Assembly

No. 261 Key
Spring Combination

Key Mountings

The following Key Mountings are designed to be used with Stromberg-Carlson Keys. They are furnished in three designs—for surface key-board mounting, for flush keyboard mounting, and for switchboard face mounting.

Code No.
55

Description

Price Includes
Mtg. Screws
and Clamps
\$.50

For keyboard surface mounting.

Mounts one Cam Type Key.

Steel escutcheon.

Finish—Black enamel.

Length of face— $2\frac{3}{4}$ in.

Width of face— $\frac{1}{4}$ in.

Mounting Centers— $2\frac{3}{4}$ in.

Mounts with 2—No. P-5502 Oval Head Wood Screws.

No. 55
Surface Key Mounting

66

For keyboard surface mounting

Mounts one Cam Type Key

Steel escutcheon similar to No. 55

Finish—Black Enamel

Length of face— $2\frac{3}{4}$ in.

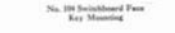
Width of face— $\frac{1}{4}$ in.

Mounting Centers— $\frac{1}{4}$ in.

Mounts with 2 No. P-5502 Oval Head Wood Screws.

\$.50

Key Mountings (Cont.)

	Code No.	Description	Price Includes Mtg. Screws and Clamps
	82	For keyboard flush mounting Similar to No. 88 only with different dimensions Mounts one Cam Type Key Formica over steel top Finish—Dull Black Length of face—6½ in. Width of face—1 in. Mounting Centers—6½ in. Mounts with 2 No. P-12908 Screws and 2 No. P-12672 Clamps.	\$1.25
	86		
	88		
	89		
	90		
	91		
	92		
	93		
	94		
	95		
	96		
	97		
	98		
	99		
	100		

Key Mountings (Cont.)



No. 104 Switchboard Face
Key Mounting,
assembled with three
Cam Type Keys

Code No.

111

Description

Price Includes
Mfg. Screws
and Clamps

\$1.25

For keyboard flush mounting
Same as the No. 114 Mounting except for
dimensions.
Mounts one Cam Type Key
Formica over steel top
Finish—Dull Black
Length of face— $6\frac{1}{2}$ ins.
Width of face— $1\frac{1}{2}$ ins.
Mounting Centers— $6\frac{1}{4}$ ins.
Mounts with 2 No. P-12908 Screws and 2 No.
P-12672 Clamps.



No. 114 Flush Key Mounting,
for one Cam Type Key
—Assembled—

112

Same as the No. 111 Mounting but mounts two
Cam Type Keys.

1.50



No. 113 Flush Key Mounting,
for two Cam Type Keys
—Assembled—

113

Same as the No. 111 Mounting but mounts three
Cam Type Keys.

1.75



No. 115 Flush Key Mounting,
for two Cam Type Keys
—Assembled—

114

For keyboard flush mounting
Mounts one Cam Type Key
Formica over steel top
Finish—Dull Black
Length of face— $7\frac{1}{4}$ ins.
Width of face— $1\frac{1}{4}$ ins.
Mounting Centers— $6\frac{1}{4}$ ins.
Mounts with 2 No. P-12908 Screws and 2 No.
P-12672 Clamps.

1.25

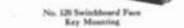


No. 116 Flush Key Mounting,
for three Cam Type Keys
—Assembled—

115

Same as the No. 114 Mounting but mounts two
Cam Type Keys.

1.50

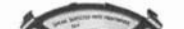


No. 119 Flush Key Mounting,
for three Cam Type Keys
—Assembled—

116

Same as the No. 115 Mounting but mounts three
Cam Type Keys.

1.75



No. 119 Flush Key Mounting,
for three Cam Type Keys
—Assembled—

117

Same as the No. 114 Mounting except for
dimensions.
Mounts three Cam Type Keys
Length of face— $5\frac{1}{2}$ ins.
Width of face— $\frac{3}{4}$ in.
Mounting Centers— $5\frac{1}{4}$ ins.

1.75



No. 120 Switchboard Face
Key Mounting

118

For switchboard face mountings
Mounts ten Cam Type Keys
Same as the No. 91 Mounting except for
dimensions.
Length of face— $10\frac{1}{2}$ ins.
Width of face—2 ins.
Keys spaced—1 in. apart
Mounting Centers— $11\frac{1}{2}$ ins.
Mounts with two No. 17 Jack Fasteners

5.00

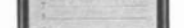


No. 2
Label—Card Frame

120

For switchboard face mountings
Mounts ten Cam Type Keys
Same as the No. 91 Mounting except for
dimensions.
Length of face— $10\frac{1}{2}$ ins.
Width of face—2 ins.
Keys spaced—1 in. apart
Mounting Centers— $11\frac{1}{2}$ ins.
Mounts with two No. 17 Jack Fasteners

5.00



No. 3
Label—Card Frame

119

Same as the No. 114 Mounting except for
dimensions.
Mounts three Cam Type Keys
Length of face— $5\frac{1}{2}$ ins.
Width of face— $\frac{3}{4}$ in.
Mounting Centers— $5\frac{1}{4}$ ins.

1.75



No. 3
Label—Card Frame

120

For switchboard face mountings
Mounts ten Cam Type Keys
Same as the No. 91 Mounting except for
dimensions.
Length of face— $10\frac{1}{2}$ ins.
Width of face—2 ins.
Keys spaced—1 in. apart
Mounting Centers— $11\frac{1}{2}$ ins.
Mounts with two No. 17 Jack Fasteners

5.00

Labels—Card Frames

Code No.

Use

Description

Price Each

2

Mounts Subscriber's
number on face of No.
7 Type Transmitter.

Construction—Steel,
black enameled frame
holding white Bristol-
board with transparent
celluloid protector.

\$.10

Length— $2\frac{1}{2}$ in.Width— $\frac{1}{2}$ in.

3

Mounts operator's in-
struction cards on No.
101 P. B. X. Switch-
boards and on toll
boards.

Construction—Brass
frame, with japanned
semi-gloss black finish,
holding buff colored card
with glass protector.

.25

Length— $3\frac{1}{4}$ ins.Width— $2\frac{1}{4}$ ins.

Labels—Number Plates

Number Plates—used on jack stiles to designate subscriber's multiple; on plug boards to designate cord circuits; on keyboards to designate keys; and on power boards to designate switches.

Labels—Number Plates



No. 13



No. 17



No. 17 A-B-C and D



No. 19-A

Code No.	Description	Price Each
13	A round number plate, used on wood drop mounting panels, keyboards, terminal strips, etc. Consists of white opaque celluloid engraved with black figures— $\frac{3}{4}$ in. high. Mounts flush—drive fit. Diameter— $\frac{1}{4}$ in. Thickness— $\frac{1}{8}$ in.	\$.35
17	Round number plate used on plug boards and keyboards, associated principally with the No. 310-E Key on Super-Service Switchboards. Consists of white opaque celloid or colored Erinoid—plain or engraved with figures or letters— $\frac{3}{4}$ in. high. Mounts flush—drive fit. Diameter— $\frac{1}{4}$ in. Thickness— $\frac{1}{8}$ in.	.35
17-A	Same as No. 17 only Black Erinoid.	.35
17-B	Same as No. 17 only Red Erinoid.	.35
17-C	Same as No. 17 only Blue Erinoid.	.35
17-D	Same as No. 17 only Green Erinoid.	.35
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— $\frac{3}{4}$ in. high, four or more $\frac{1}{2}$ in. Mounts with 2 No. P-12910 O. H. M. Screws or 2 No. P-6782 O. H. W. Screws. Size— $\frac{1}{2}$ in. square. Thickness— $\frac{1}{8}$ in.	.45
19-B	Same as No. 19-A only Red Ivory.	.45

Switchboard Lamps

Stromberg-Carlson Tipless Switchboard Lamps meet the most exacting requirements of telephone service. These lamps are—

Built for long life with uniform brilliancy throughout life.

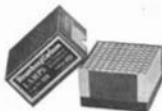
Equipped with rugged filaments, porcelain bases, and highly evacuated bulbs.

Arranged to fit any standard lamp socket that is used in telephone service. Length overall—1 $\frac{1}{2}$ inches. Diameter 0.300 inch.

Operating through a maximum range of voltage varying with a minimum fluctuation of signal value.

Will give an average life of 1000 active hours.

The following types of lamps are carried in stock for immediate shipment—100 lamps in a box. Shipping weight per box—1 $\frac{1}{2}$ lbs.:



No. 32
Switchboard Lamps

Switchboard Lamps (Cont.)



No. 32
Switchboard Lamp,
Enlarged View

Code No.	Voltage	Used In	Current Consumption (Amperes)	
			Minimum	Maximum
16	12	Transfer trunk circuits on Magneto Switchboards.	.090	.110
18	8	Transfer trunk circuits on Magneto Switchboards usually associated with Dry Cells.	.080	.100
28	30	Government Switchboards.	.090	.110
30	6	Transfer trunk circuits on Magneto Switchboards usually associated with Dry Cells.	.120	.160
31	16	Series—Lamp, Line Circuits on P. B. X. Switchboards.	.090	.110
32	18 to 28	Central Energy Multiple and P. B. X. Switchboards—11 Cell Systems. Replaces Nos. 12 and 14 Lamps.	.060	.085
33	36 to 48	Central Energy Multiple and P. B. X. Switchboards—20 Cell Systems. Replaces Nos. 10, 22, and 24 Lamps.	.060	.085
34	14 to 26	Central Energy P. B. X. Switchboards where the Battery Supply voltage at the P. B. X. may drop as low as 14 volts.	.035	.050

Prices

1 to 99	\$.33 each
100 to 499	.31½ "
500 and over	.29 "

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 brass tubing which is later spun over to retain the jewels, —other end of shank is slotted for close fitting in lamp socket.



No. 23 Pilot Type

No. 23 Pilot Type



No. 23 Pilot Type
Mounted

Code No.	Color	Description	Price Each
23-A	White Translucent	A pilot lamp cap used on Central Energy Multiple, Non-Multiple, and P. B. X. Switchboards. Designed for use with the No. 9 Individual Lamp Socket. This lamp cap is equipped with an attractive diamond cut opalescent lens. Maximum diameter of face— $\frac{11}{16}$ in. Diameter of shank is .0811 in. or fits $\frac{11}{16}$ in. hole.	\$.35
23-B	Red Jewel	Same as the No. 23-A Lamp Cap but colored.	.35
23-C	Green Jewel	Same as the No. 23-A Lamp Cap but colored.	.35
23-D	Yellow Jewel	Same as the No. 23-A Lamp Cap but colored.	.35

Lamp Caps (Cont.)

No. 27 Supervisory Type

Code No.	Color	Description	Price Each
27-A	White Translucent	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 in the switchboard's face. This lamp cap is equipped with a glossy milk white non-breakable opal. Maximum diameter of face— $\frac{3}{4}$ in. Diameter of shank is 0.340 in. or fits— $\frac{1}{16}$ in. hole.	\$.12
27-B	Red Translucent	Same as the No. 27-A except colored and sand-blasted to avoid reflection.	.12
27-C	Green Translucent	Same as the No. 27-A except colored and sand-blasted to avoid reflection.	.12
27-D	Colorless Transparent	Same as the No. 27-A except clear.	.12
27-E	Normally White Translucent—Red when illuminated	Same as the No. 27-A except equipped with an invisible colored disc to give red color when illuminated.	.12



No. 27 Supervisory Type

No. 29 Line Type

Code No.	Color	Description	Price Each
29-A	Transparent Opal	Associated with line lamps in 20 per strip mounting on eight Panel Multiple Switchboards. Designed principally for use with the No. 121 Lamp Socket on No. 83 Mounting. Equipped with a glossy, transparent non-breakable lens and removable number disc which is held in place by an invisible ring. Disc numbered as specified. Maximum diameter of face— $\frac{3}{4}$ in. Diameter of shank 0.312 in. or fits a $\frac{1}{16}$ in. hole.	\$.15
29-B	Red Opal	Same as the No. 29-A except colored lens is sand blasted to avoid reflection.	.15
29-C	Green Opal	Same as No. 29-B.	.15
29-D	White Translucent	Same as the No. 29-A except equipped with glossy, milk white lens.	.15

Lamp Caps



No. 29 Line Type



No. 29 Line Type Mounted and associated with line jacks



No. 30-A Line Type

No. 30 Line Type

Code No.	Color	Description	Price Each
30-A	Transparent Opal	A lamp cap used on P. B. X. and Multiple Switchboards over line lamps. Designed for use with the No. 121 Lamp Socket on 79, 80, 81 or 82 Mountings. Equipped with a glossy, transparent non-breakable opal and removable paper	\$.15

Lamp Caps (Cont.)

30 Line Type (Cont.)



No. 30-D



No. 30-J



No. 30-K



No. 31-A Supervisory Type



No. 31-B Supervisory Type

Code No.	Color	Description	Price Each
		number disc which is held in place by an invisible ring. Disc numbered as specified. Diameter of face— $\frac{5}{8}$ in. Diameter of shank 0.340 in. or fits— $\frac{11}{16}$ in. hole.	
30-D	White Dot Designation	Same as the No. 30-A but furnished with special designation as shown.	\$.20
30-J	White Cross Designation	Same as No. 30-D.	.20
30-K	White Line Designation	Same as No. 30-D.	.20

No. 31 Supervisory Type

Code No.	Color	Description	Price Each
31-A	White Translucent	New standard lamp cap used with both trunk and cord circuits on P. B. X. and Multiple switchboards. Designed only for use with the No. 13 Lamp Socket. Equipped with a glossy milk white non-breakable lens. Maximum diameter of face— $\frac{5}{8}$ in. Diameter of shank 0.343 in. or fits $\frac{11}{16}$ in. hole. Shank has chamfered edges.	\$.12
31-B	Red Translucent	Same as the No. 31-A except opal is sand-blased to avoid reflection.	.12

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. 7, 10, and 11, takes a standard switchboard lamp and lamp cap. Code Nos. 7, 10 and 11 Lamp Sockets take Edison base lamps.

Lamp Sockets which are mounted in strips for use in the face of switchboard align with jacks of the same code number of mounting.

Mounting screws, fasteners, and lamp caps are not included with the lamp sockets, but should be ordered separately.

Individual Lamp Sockets



No. 7 Lamp Socket

Code No.	Description	Price Each
7	Designed for use on power switchboards, ringing panels, and lamp charging slate panels. Takes any standard incandescent lamp. Mounts on any $\frac{1}{2}$ to $1\frac{1}{2}$ in. wood or slate panel. Consists of Bryant Keyless Lamp Socket No. 24998 with Edison Base. Equipped with studs and brass terminals for rear connections. Diameter of base— $2\frac{1}{2}$ ins. Length of terminal studs—2 ins. Distance between studs— $\frac{1}{4}$ in. Face finished in either brush brass or black enamel.	\$.75

Lamp Sockets (Cont.)

Individual Lamp Sockets (Cont.)



No. 9 Lamp Socket

Code No.
9

Description

Price Each
\$.25

For pilot lamp service on P. B. X. and Multiple Switchboards. Used with standard switchboard lamp and the No. 23 Lamp Cap. Mounts on the face of the switchboard in any standard panel with two P-4749 Wood Screws. Consists of steel frame with brass head for lamp cap; equipped with insulating fiber tubing and nickel silver springs.

Length overall—2 1/8 ins.
Diameter of head—3/4 in.
Diameter of sleeve—1/4 in.



No. 10 Lamp Socket

10

5.00

Mounted lamp sockets designed to mount four Mazda resistance lamps for generator protection, used in multiple switchboards where four party ringing service is required. Strip fastened to the roof of the switchboard with four No. 10 x 3/4 in. R. H. I. W. Screws (Blued). Consists of a white shellaced maple mounting strip equipped with—four No. 9514 Bryant Porcelain Edison Base Lamp Sockets; six No. 4 Cord Terminals; and two steel supports for mounting.

Length overall—13 ins.
Breadth overall—3 1/2 ins.
Thickness overall—2 3/4 ins.



No. 11 Lamp Socket

11

5.75

Mounted lamp sockets designed to mount five Mazda resistance lamps for generator protection. Used in multiple switchboards where four party ringing and toll service is required.

Same as the No. 10 Strip, except equipped with five lamp sockets and seven terminals.

Length overall—16 ins.
Breadth overall—3 1/2 ins.
Thickness overall—2 3/4 ins.



No. 12 Lamp Socket

12

.25

Used on P. B. X. 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—1/4 in. key shelf with one No. 4 x 1/2 in. R. H. I. W. Screw. Takes standard switchboard lamp and the No. 27 Lamp Cap.

Length over springs—2 1/8 ins.
Diameter of sleeve—1/4 in.
Mounting lug—1/4 in. from face.



No. 13 Lamp Socket

13

.25

A new standard lamp socket for cord circuits and supervisory lamp service. Replaces the No. 12 and used on all new work. Used on P. B. X., 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—1/4 in. panel with one No. 4 x 3/4 in. R. H. I. W. Screw. Takes standard switchboard lamp and the No. 31 Lamp Cap.

Length over springs—2 1/8 ins.
Diameter of sleeve—1/4 in.
Mounting lug—1/4 in. from face.

Lamp Sockets Mounted in Strips

Code No.
121 on 59
Mounting

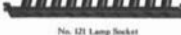
Description

Price Each
Socket
\$.60

Former style lamp sockets used on Stromberg-Carlson Switchboards made previously 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

Lamp Sockets (Cont.)

Lamp Sockets Mounted in Strips (Cont.)

	Code No.	Description	Price Each Socket
 No. 121 Lamp Socket on 59 Mounting		spings. Sleeve socket insulated from springs with black tubular sheet fiber. Mounts 5 sockets per strip on—$2\frac{1}{4}$ in. centers. Length of face—$10\frac{1}{4}$ in. Mounting extensions—$\frac{1}{2}$ in. each. Length overall—$11\frac{1}{4}$ in. Width—$\frac{1}{2}$ in. Mounting centers—$10\frac{1}{4}$ in. Depth of lamp socket from face to tip of springs—$2\frac{1}{4}$ in. Jack Fastener required—No. 15.	
 No. 121 Lamp Socket on 60 Mounting	121 on 60 Mounting	Same as the No. 121 Lamp Socket on No. 59 Mounting, only mounts 10 sockets per strip on $1\frac{1}{4}$ in. mounting centers.	\$.40
 No. 121 Lamp Socket on 61 Mounting	121 on 61 Mounting	Same as the No. 121 Lamp Socket on No. 59 Mounting, except mounts 20 sockets per strip on $\frac{1}{2}$ in. centers.	.35
 No. 121 Lamp Socket on 67 Mounting	121 on 67 Mounting	Used in connection with the No. 122 Type Jack on S-C former standard eight panel multiple switchboards made previously to 1917. Takes standard switchboard lamp and No. 30 Individual Lamp Cap. Same material and construction as the No. 121 on No. 59 Mounting only shorter. Mounts 10 sockets per strip on $\frac{1}{4}$ in. centers. Length of face— $7\frac{1}{4}$ in. Mounting extensions— $\frac{1}{4}$ in. each. Length overall— $8\frac{1}{4}$ in. Width of face— $\frac{1}{2}$ in. Mounting Centers— $8\frac{1}{4}$ in. Depth of lamp socket from face to tip of springs— $2\frac{1}{4}$ in. Jack Fastener required—No. 15.	.40
 No. 121 Lamp Socket on 68 Mounting	121 on 68 Mounting	Same as the No. 121 Lamp Socket on No. 67 mounting, except mounts 5 sockets per strip on $1\frac{1}{4}$ in. centers.	.60
 No. 121 Lamp Socket on 70 Mounting	121 on 70 Mounting	Used in connection with No. 67 Type Jack on standard nine panel multiple switchboards. Takes standard switchboard lamp and No. 30 Individual Lamp Cap. Same material and construction as the No. 121 on No. 59 Mounting, only shorter. Mounts 10 sockets per strip on— $\frac{1}{4}$ in. mounting centers. Length of face— $6\frac{1}{4}$ in. Mounting extensions— $\frac{1}{4}$ in. Length overall— $7\frac{1}{4}$ in. Width of face— $\frac{1}{2}$ in. Mounting Centers— $7\frac{1}{4}$ in. Depth of lamp socket from face strip to tip of springs— $2\frac{1}{4}$ in. Jack Fastener required—No. 15.	.40
 No. 121 Lamp Socket on 71 Mounting	121 on 71 Mounting	Same as the No. 121 Lamp Socket on No. 70 Mounting, except mounts 5 sockets per strip on $1\frac{1}{4}$ in. centers.	.60
 No. 121 Lamp Socket on 79 Mounting	121 on 79 Mounting	A new standard lamp socket for two, three, four and six panel associated multiple and P. B. X. Switchboards. Used in connection with the No. 130 Type Jacks and mounts the same. Replaces Garford Type and used on all new work. Takes standard switchboard lamp and 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. Mounts 5 sockets per strip on 2 in. centers. Length of face— $10\frac{1}{4}$ in. Extension of end Lugs— $\frac{1}{4}$ in. each with additional $\frac{1}{4}$ in. tongue on rear of lug. Length overall— $10\frac{1}{4}$ in.	.60

Lamp Sockets (Cont.)

Lamp Sockets Mounted in Strips (Cont.)

No. 121 Lamp Socket
on 80 MountingNo. 121 Lamp Socket
on 81 MountingNo. 2-C
Operator's Telephone SetNo. 2-C
Operator's Telephone Set
in Service

Code No.	Description	Price Each Socket
	Width of face— $\frac{1}{2}$ in. Mounting Centers— $11\frac{1}{4}$ in. Depth of lamp socket from face strip to tip of springs— $2\frac{1}{4}$ in. Jack Fastener required No. 17	
121 on 80 Mounting	Same as the No. 121 Lamp Socket on No. 79 Mounting, except mounts 10 sockets per strip on 1 in. centers and also drilled, not only for the No. 30 Lamp Cap, but also for the No. 26 Lamp Cap.	\$.40
121 on 81 Mounting	Same as the No. 121 Lamp Socket on No. 79 Mounting, except mounts 20 sockets per strip on $\frac{1}{2}$ in. centers, and also drilled not only for the No. 30 Lamp Cap, but also for the No. 26 Lamp Cap.	.35
121 on 82 Mounting	A standard lamp socket for eight panel multiple switchboards. Used in connection with No. 127 Type Jacks. Replaces Garford Type and used on all new work. Takes standard switchboard lamp, and either the No. 30 Individual or the No. 24 Twin Lamp Cap. Similar to the No. 79 Mounting only shorter and mounts 10 sockets per strip on $\frac{1}{2}$ in. centers. Length of face— $7\frac{1}{4}$ in. Extension of end lugs— $\frac{1}{8}$ in. each with additional $\frac{1}{4}$ in. tongue on rear of lug. Length overall— $7\frac{1}{4}$ in. Width of face— $\frac{1}{2}$ in. Mounting centers— $8\frac{3}{4}$ in. Depth of lamp socket from face strip to tip of springs— $2\frac{1}{4}$ in. Jack Fastener required No. 17	.40
121 on 83 Mounting	A standard lamp socket for eight panel multiple switchboards. 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 a moulded black Bakelite or Formica face strip with satin finish on face, sheet steel frame for mounting the springs, and the two end lugs. Equipped with 20 pair of nickel-silver springs. Face drilled for 20 lamps on $\frac{1}{2}$ in. centers. Length of face— $7\frac{1}{4}$ in. Extension of end lugs— $\frac{1}{8}$ in. each. Length overall— $7\frac{1}{4}$ in. Width of face— $\frac{1}{2}$ in. Mounting Centers— $8\frac{3}{4}$ in. Depth of strip from face to tip of springs— $2\frac{1}{4}$ in. Jack Fastener required No. 17.	.35

Operator's Telephone Set

Operators like Stromberg-Carlson Telephone Sets on account of the sanitary wire head band, and the easily adjusted white enameled breast plate which is quickly regulated by a movable slide on the neck band so as to bring the transmitter's mouthpiece the required distance from the operator's lips.

As a further convenience to the operator a ball and socket joint permits a wide range of adjustment for the semi-vulcanized rubber mouthpiece which is shaped to insure proper concentration of voice waves directly upon the transmitter's diaphragm.

These telephone sets are constructed mostly of aluminum and Bakelite; this combines lightness with strength; and for efficiency they are equipped with sensitive long distance receivers and powerful long distance transmitters.

A five foot four conductor moisture-proofed "Durastex Cord" connects the set to a four point detachable plug. Each Complete Operator's Telephone Set weighs only 16 oz.

Code No.	Description	Price Per Complete Set
2-C	Central Energy Operator's Breast Plate	\$10.50
2-L	Magneto Operator's Breast Plate	10.50

Switchboard 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 numbers 53, 53-X and 54, are equipped with bronze dead rings—to protect

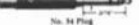
the insulation between the tip and ring conductors.

Plug screws for both, terminals and shells, are drilled for pilot screw driver.

Order plugs by 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.

Two Conductor Plugs

	Code No.	Used With	Class of Service	Cord Used	Price Each
	10	34 Jack	Manual restoring drop magneto swbds.	8-23-G	\$1.25
No. 10 Plug	42	11 Drop	No. 105 Swbd. and other plug restoring drop type magneto swbds.	8-23-G	.80
	56	130 Jack	Garford magneto swbds. (replaces Garford No. 5000)	8-22-F	.80
No. 42 Plug	56-X	130 Jack	C. E., P. B. X. and Multiple Swbds. using 2 conductor cord circuits.	8-22-F	.80
	57	109 Jack	Former standard Central Energy P. B. X. and Multiple Swbds. using 2 conductor cord circuits (replaces former plug No. 36)	8-22-B	.80
No. 56 Plug	60	147, 151, 152 Jacks	Radio (See Radio Apparatus).	Any style	Consumer's Price Each .60
					
No. 57 Plug					
					
No. 53 Plug					
					
No. 53-X Plug					
					
No. 54 Plug					
					
No. 55 Plug					

Three Conductor Plugs

	Code No.	Used With	Class of Service	Cord Used	Price Each
	53	130 Jack	Former standard replaces Garford No. 4815	8-32-K	\$1.10
No. 53 Plug	53-N	Garford 3210-4290 Jacks	Former standard Garford Multiple Swbds. Also replaces Garford No. 2990	8-32-K	1.10
	53-X	130 Jack	No. 101, 102 and 103 C. E., P. B. X. and Multiple Swbds. Also replaces Garford No. 7045	8-32-K	1.10
No. 53-X Plug	54	127 Jack	Central Energy Multiple Former standard Garford Swbds. Also replaces Garford No. 390	8-32-K	1.10
	54-N	Garford 110 Jack	Former standard Multiple Swbds. using 3 conductor cord circuits. Replaces former No. 37	8-32-K	1.10
No. 54 Plug	55	109 Jack	Former standard Multiple Swbds. using 3 conductor cord circuits. Replaces former No. 37	8-32-K	1.10
					
No. 55 Plug					

Note:—"N" indicates non-depressed ring. "X" indicates over-all shell insulating the plug's butt.

Test Plugs

Code No.	No. of Cond'rs	Used With	Class of Service	Cord Used	Price Each
31	2	101 Jack	Test Panel	M-22-C	\$2.50
35	6	101 Jack	Test Panel	M-4-D	3.50
35-A	3	101 Jack	Test Panel	8-32-K	1.50

Operator's Plug

The No. 23 Operator's Plug is furnished with all Stromberg-Carlson switchboards. Adapted for either HEAD BAND receivers or BREAST PLATE type operator's telephone sets.

Code No.	No. of Cond'rs	Used With	Class of Service	Cord Used	Price Each
23	4	93 Jack	Operator's Plug.	O-4-C (B.F. Type)	\$1.25
40	2	58 Jack	Former standard Operator's Plug.	D-2-B (Head Rec. Type)	1.75
				O-2-F	

Switchboard Plugs (Cont.)

Plug Parts



Plug Code No.	Shell Piece No.	Price Each	Shell Screws Piece No.	Price Each	Terminal Screws Piece No.	Price Each
31	P-6401	\$1.00	P-6403	\$.005		
35	P-6911	1.25	P-4836	.005	P-8300	.005
35-A	P-12836	.07	P-4836	.005	P-8300	.005
42	P-8339	.07	P-4836	.005	P-5729	.005
53	P-13010	.07	P-4836	.005	P-8300	.005
53-N	P-13010	.07	P-4836	.005	P-8300	.005
53-X	P-13060	.10	P-13061	.01	P-8300	.005
54	P-13010	.07	P-4836	.005	P-8300	.005
54-N	P-13010	.07	P-4836	.005	P-8300	.005
55	P-13010	.07	P-4836	.005	P-8300	.005
56	P-13010	.07	P-4836	.005	P-5729	.005
56-X	P-13060	.10	P-13061	.01	P-5729	.005
57	P-13010	.07	P-4836	.005	P-5729	.005

Plug and Jack Gauges

These gauges should be in every telephone exchange—they indicate when plugs and jacks are so worn 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. State code number of jack and plug when ordering gauges.



Piece No.	Diameter	Used for Gauging
13070	.246	Plug Nos. 42, 53, 55, 56, and 57.
13071	.255	Jack Nos. 49, 109, 130 or both Stromberg-Carlson and Garford plug restoring drops.

Price:—Per set including one plug gauge and one jack gauge with canvas carrying case, \$4.00.

Plug Seats

Code No.	Used With Plug	Diam. Hole	Description	Price Each
5	42	$\frac{1}{16}$	Black fibre	\$.05
6	53	$\frac{1}{16}$	Black fibre	.05
9	53	$\frac{1}{16}$	Brass and leather with seat detachable from rear of switchboard to facilitate plug and cord replacements.	.15

Service Plugs

Code No.	Diam.	Description	Price Each
7-A to E	.065	Party Line Indicators	
12-A to E	.221	For 109 and 130 Type Jacks	1 to 99 \$.07
		Out of Service, etc.	100 to 499 .05
		For 127 Type Jacks	500 to 999 .04
13-A to E	.249	Out of Service, etc.	1000 and over .03
		For 109 and 130 Type Jacks	

Colors as follows:

A—Green; B—Red; C—Blue; D—White; E—Black.

Note—Quantity prices include assorted colors.



No. 12 Service Plug



No. 13 Service Plug



Plug Hole Blanks

Code No.	Material	Used in Place of	Price Each 1-499	Over 500
1	Comp.	Nos. 42 and 53-X Plugs and Nos. 6 and 8 Lamp Sockets	\$.05	\$.04
3	Comp.	Nos. 33 and 34 Plugs	.05	.02
5	Comp.	Nos. 34, 92, 102 and 119 Plugs	.05	.04
6	Comp.	Nos. 53, 54 and 55 Plugs	.05	.04
9	Comp.	No. 12 Lamp Socket	.10	.09

Receivers

Piece Parts shown on pages 245-246



No. 26-A Receiver with Sanitary Wire Headband

The receivers supplied with Stromberg-Carlson Telephones and Switchboards are unapproached for either talking efficiency or durability.

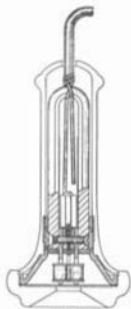
The Coils are of high grade enamelled copper wire.

The Shells of the substation receivers are of the best quality bakelite. The shells of the operator's (watch case) type receivers are of rigid aluminum stampings.

The Magnets in the magnet-equipped receivers are of one-piece "U"-shaped construction free from joints, breaks or welds.

The Ear-Caps on all types of receivers either—substation or operator's—are of bakelite.

The Diaphragms are of the best grade of ferro-type metal, perfectly flat, evenly gauged, rust proofed and accurately tuned to the average frequency of the voice. Great care is taken to remove all clamping strain from these diaphragms so they will be perfectly free to vibrate. One of the most important precautions that have been taken to insure proper clamping is evident in the sub-station hand receivers. In these receivers there is a double threading of the receiver shell. The inner threading



Cross Section View of
No. 27 Receiver



Front Perspective
Nos. 27 and 28 Receivers



Cross Section View of
No. 28 Receiver

These receivers are built to stand hard usage throughout years of service and without impaired efficiency.

The Spool Heads are non-metallic so as to eliminate spool head eddy current losses.

holds the weight of the magnet and the coils in place. This relieves the outer or ear cap threading of all the strain usually incident from holding these heavy parts in place. Obviously the only function of the latter threading is to clamp the diaphragm.

Receivers (Cont.)

Code No.	Description	Price Each	Code No.	Description	Price Each
19-A	A watch case receiver with permanent magnet, used on No. 844 Lineman's Test Set. Provided with two coils, connected in series each wound to 40 ohms, total resistance of receiver 80 ohms. Equipped with No. M-2-J Brown Silk-covered, Duratex Cord, 2 ft. in length. Cord ends finished with No. 35 Cord Tips. Weight of receiver with cord—4½ oz.	\$2.75	27-A	A hand receiver with permanent magnet used on all Stromberg-Carlson Substation instruments except Mine-A-Phones and Inter-Comm-Phones. Provided with two coils, connected in series, each wound to 40 ohms, total resistance of receiver 80 ohms. Equipped with No. R-2-G Brown Silk, Duratex Cord, 3 ft. in length. Weight of receiver with cord—14 oz.	\$2.35
20-A	A watch case operator's receiver, with permanent magnet, furnished with all Stromberg-Carlson Switchboards. Provided with two coils, connected in series, each wound to 40 ohms, total resistance of receiver 80 ohms. Equipped with sanitary wire head band and a 6 ft. two conductor, brown silk, Duratex Cord. Code No. O-2-F Cord for attaching to the No. 40 Plug, Code No. O-2-E Cord for attaching to the No. 13 Plug, Code No. O-4-C Cord for attaching to the Nos. 1-C or 1-L Operator's Telephone Sets, or Code No. D-2-B Cord for attaching to the No. 23 Plug. Weight of receiver with cord—5½ oz.	3.00	25-A	A substation, hand receiver of the direct current type (without permanent magnet). Used on Inter-Comm-Phones where the induction coil is omitted and the transmitter is connected in series with the receiver. Provided with a single coil wound to 41 ohms. Equipped with No. R-2-G Brown Silk, Duratex Cord, 3 ft. in length.	2.45
			27-B	Identical to the No. 27-A Receiver but used in the Nos. 890 and 950 Ironclad Telephones and therefore equipped with specially-designed receiver cord—the No. M-2-L. Length of cord—16 ins. Weight of receiver with cord—14 ozs.	2.40

Relays

Please Refer to pages 247-248



No. 190 Type Relay (Actual Size)

No. 190 Compact Type

The No. 190 Type of Relay is used in the line circuits of all Stromberg-Carlson Central Energy Switchboards—both P. B. X. and Multiple Switchboards. It has proved its superiority over other types of line relays through years of continued use. Following are some of the features of this relay:

High Efficiency—Largely due to having the armature and the traveling contact spring combined in one element. A construction which requires less magnetic effort for operating contacts in telephone circuits. The efficiency of the relay is further increased due to the fact that the armature is rigidly and metalically fastened to one end of the relay's core. This means that the relay operates with but one air gap.

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 more space for adjustment, therefore, closer mounting centers can be employed, which means a marked saving of space either in the switchboard section or on the relay racks in the terminal room.

Light Weight—The lightest in weight of any standard relay. This means easier handling during installation and less danger of the relay's breaking loose from its mounting during shipment.

Strength—Unexcelled by any relay regardless of weight. In fact, the contact-carrying element of this relay is nearly twice as heavy and twice as strong as any contact-carrying element that is found on even the heaviest types of relays.

Accessibility—All contacts are at the extreme front end of the relay, easily inspected, easily adjusted, and easily tested, even when the relays are mounted on the closest possible centers.

Reliability—Owing to its simplicity of construction, its high grade materials, and its careful manufacture this relay is unexcelled for reliable operation. In fact, many instances are on record where the

Relays (Cont.)

No. 190 Compact Type (Cont.)

owners of multiple switchboard installations that are completely equipped with this type of relay, do not consider line relay trouble an item worthy of comment. This reliability is due to the following conditions:

The armature construction does not permit binding or getting out of alignment.

The contact's surfaces have commercially pure platinum faces. The spool heads and the spring insulations are made from "Phenol Fiber," a material which makes the very highest grade of insulating material due to the fact that it not only is free from chemicals which are injurious to relay winding but also is neither hygroscopic nor affected by temperature changes.

The windings are of the best grade of commercially pure, heavily-enamelled copper wire. The following relays of this type are available:

Code No.	Resistance	Spring Arrangement	Price Each
193-C	320 ohms	One make and one break	\$1.70
193-BB	320 ohms	Double make	1.75
194-A	800 ohms	One make	1.65
194-C	800 ohms	One make and one break	1.70

No. 200 Type



Two No. 200 Type Relays Mounted

This relay is standard equipment in all Stromberg-Carlson trunk and cord circuits. It is designed especially to satisfy the requirements of circuits where large winding space is desired, where various spring combinations are necessary, where the timing of a relay's action is an important feature, where high impedance is essential and where more than one winding is required on a relay.

The features of this relay are:

- Large winding space.
- Heavy Magnetic Circuit.
- Pin-pivoted, definitely-located armature of the "L" shaped type.
- Non-magnetic, metallic front spool head which annularly projects beyond the relay's core so as to form an anti-freeze stop for the armature.
- Facilities for the quick removal of the relay's coil.
- Visible contacts located at the front end of the relay.
- Phenol Fiber spring insulation.

How to Order No. 200 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", "copper core", and "copper head." The last digit in each number indicates the resistance, for example: No. 201 indicates a 5 ohm winding; No. 202, a 15 ohm winding, etc. The spring combination is assigned by affixing a letter to the code number or two or three letters, depending on the groups of spring combinations desired, as shown in the accompanying diagrams.

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 relay, excepting for relays with 3 spring combinations having 2 combinations alike, then the odd combination shall be mounted in the middle. When three sets of springs are used, only one set of the E, F, G, H, or L combinations should be used.

Prices of No. 200 Type Relays

Note:—Prices of relays are low relay casings and less mounting strips. These parts, when furnished, are extra, in addition to labor charges, as follows:

- When mounted and assembled with casing add \$.10 per relay.
- When, in addition, mounting strip also is to be "strapped" for the common wiring add \$.15 per relay.
- When used as a restoring relay in combination with No. 200-X type relays, the letter "X" should be affixed to the code number. Regular armature is replaced with special armature (P-2001) and add \$.25 per relay.

Example:

40 No. 204-AC Relays (each No. 204-AC Relay includes—one No. 204 Relay Coil, one "A" Spring Combination and one "C" Spring Combination).....	@ \$2.50	\$100.00	\$100.00
20 No. 19 Casings.....	.75	15.00	15.00
1 No. 85 Mounting Strip.....	.....	3.00	3.00
40 Relays Mounted.....	.10	4.00	4.00
Total \$122.00			
40 Relays "strapped" @	.15		6.00
			\$128.00

Prices of Relay Coils

(Relay Frame and Winding Only)

Note:—To figure price of complete relay be sure to add price for spring combinations as required.

Single Wound Coil

201	5 ohms	\$2.00
202	15 "	2.00
203	60 "	2.00
204	100 "	2.00
205	200 "	2.10
206	500 "	2.25
207	1000 "	2.50
208	800 "	2.50
212	18 " with 50 ohms N.L. shunt.	2.50

Relays (Cont.)

Prices of Relay Coils (Cont.)

Tandem Wound Coil

221	60-60 ohms	\$2.25
222	100-100 "	2.25
223	200-200 "	2.50
224	500-500 "	2.75
225	1000-1000 "	3.00
226	50-50 "	2.25
227	100-250 "	2.50

Concentric Wound Coil

241	500-100 N. I. ohms	\$2.75
242	1000-100 " "	3.00
243	100-350 " "	2.75
244	500-350 " "	2.75
251	500-1000 ohms	2.75
252	500-100 " "	2.75
253	200-500 " "	2.75
254	70-12000 " "	3.50
*255	100-10000 " "	3.50

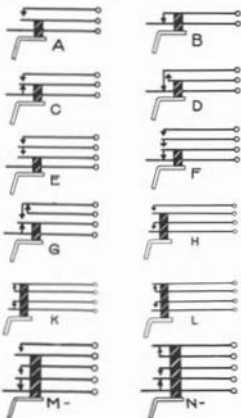
*Used with "AY" springs only.

Single Wound Copper Sleeve on Core Coil

261	100 ohms	\$2.50
262	200 " "	2.50
263	500 " "	2.75
264	1000 " "	3.00
265	50 " "	2.50

Copper Slug on Armature End

281	200-200 N. I. ohms	\$3.00
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The prices specified for all No. 200 Type relay codes cover the frame and winding only and to arrive at the price of a complete relay, add for each spring combination as follows:

Prices of Spring Combinations Only

A	One make	\$.20
B	One break	.20
C	One make and one break	.30
D	One make before break	.35
E	Double make	.30
F	Double make and one break	.40
G	One break and one make before break	.45
H	Two makes	.40
K	Two breaks	.40
L	One make and separate break	.40
M	One make, one make and break	.50
N	One break, one make and break	.50
AY	One make (light gauge spring)	.30
BY	One break (light gauge spring)	.30

Note:—These prices on spring combinations apply only when assembled with complete relays. Prices on spring combination when sold separately, furnished upon request.

No. 300 Type

This type relay is adapted for use with any style of ringing current—alternating, pulsating, or super-imposed.

It is furnished as either a non-locking or a locking relay. Provided a non-locking relay is desired order a spring combination without the suffix letter "X". Provided a locking relay is desired order a spring combination with the suffix letter "X".

Each No. 300 Type Relay will be furnished with any one (not more than one) of the following spring combinations.

A	One make	\$.20
B	One break	.20
C	One make and break	.30
X	One make locking with armature	.30
AA	Two makes	.40
BB	Two breaks	.40
CC	Two makes and two breaks	.60
AX	One make and one make locking with armature	.50
BX	One break and one make locking with armature	.50
CX	One make and break and one make locking armature	.60

The above spring combination prices should be added to the following:

Prices Relay Frame and Winding Only

306	500 ohms	\$2.75
307	1000 "	3.00
313	400-500 ohms	3.25

Important Notice—When used as an "X" relay be sure to add to the above prices for the No. 200 type relay associated with it.

Example:

1	No. 306-AX Relay made up with:	
1	No. 306 Relay frame and wind g	\$2.75
1	AX spring combination	.50
		\$3.25
1	No. 204-BHX Relay made up with:	
1	No. 204 Relay frame and wind g	\$2.00
1	No. X Armature	.25
1	BH Spring Combination	.40
		2.65
	Total	\$5.90

The No. 300 type relay takes same mounting and casing as No. 200 type.

Relay Coils

The following Stromberg-Carlson Relay Coils do not include the relay frames or spring combinations. For those parts refer to "Relays—200 Type."

When ordering Relay Coils state not only the Piece Number of the Relay Coil which is desired but also the Resistance of the Relay Coil.

	Piece No. of Relay Coil	For Relay Code	Type	Resistance	Price Each
	12234	193	Single	320	\$1.00
	12235	194	"	800	1.00
	12430	201	"	5	1.25
	12430	202	"	15	1.25
	12430	203	"	60	1.25
	12430	204	"	100	1.25
	12430	205	"	200	1.35
	12266	206	"	1000	1.50
	12267	207	"	1000	1.75
	12430	208	"	800	1.75
	13595	212	"	18-50 N. L.	1.75
	12432	221	Tandem	60-60	1.50
	12432	222	"	100-100	1.50
	12432	223	"	200-200	1.75
	12432	224	"	500-500	2.00
	12432	225	"	1000-1000	2.25
	12432	226	"	50-50	1.50
	12432	227	"	100-250	1.75
	12431	241	Concentric	500-100 NI	2.00
	12431	242	"	1000-100 NI	2.25
	12431	243	"	100-350 NI	2.00
	12431	244	"	500-350 NI	2.00
	12431	251	"	500-1000	2.00
	12431	252	"	500-100	2.00
	12431	253	"	200-500	2.00
	12431	254	"	70 x 12000	2.75
	12431	255	"	100 x 10000	2.75
	12433	261	Single (Copper Core)	100	1.75
	12433	262	"	200	1.75
	12433	263	"	500	2.00
	12433	264	"	1000	2.25
	12433	265	"	50	1.75
	12434	281	Double (Copper Head)	200-200 NL.	2.25
	12466	306	Single	500	2.00
	12466	307	"	1000	2.00
	12469	313	Concentric	400-500	2.25
	13086	343	"	500	2.25

Relay Casings

There are two distinct types of relay casings—those used to eliminate cross talk as well as to afford protection from dust and those which afford only protection from dust.

Stromberg-Carlson Relay Casings are furnished in both of these types. The cross talk proof type relay casing is of aluminum—the dust proof type is of steel construction.

Code No.	Description	Price Each
6	Protects two Nos. 37, 60, 84 or 150 Type Relays. Used on Nos. 11, 24, 29, 31, 32, 54, 69, 74, 78, 80, 88, 89 Relay Mountings. Dimensions— $3 \times 1 \frac{1}{4} \times 2 \frac{3}{4}$ ins.	\$.60
16	Protects 50 No. 190 Type Relays. Used on Nos. 83 and 91 Relay Mountings. Made of steel. Dimensions— $3 \frac{1}{2} \times 3 \frac{3}{4} \times 9 \frac{1}{8}$ ins.	1.75
17	Protects 40 No. 190 Type Relays. Used on Nos. 84 and 96 Relay Mountings. Made of steel. Dimensions— $3 \frac{1}{2} \times 3 \frac{3}{4} \times 7 \frac{3}{4}$ ins.	1.50
18	Protects 20 No. 190 Type Relays. Used on Nos. 86, 88 and 98 Relay Mountings. Made of steel. Dimensions— $3 \frac{1}{2} \times 3 \frac{3}{4} \times 4 \frac{3}{4}$ ins.	1.25



No. 16 Relay Casing



No. 19 Relay Casing



No. 21 Relay Casing

Relay Casings (Cont.)

Code No.	Description	Price Each
19	Protects 2 No. 200 Type Relays. Used on Nos. 85, 87, 89, 90, 92, 95, 98, 100, 101, 102 and 103 Relay Mountings. Made of aluminum—cross talk proof. Dimensions $4\frac{5}{8} \times 1\frac{3}{4} \times 2\frac{1}{4}$ ins.	\$.75
20	Protects 20 No. 200 Type Relays. Used on No. 85 Relay Mounting. Made of steel. Dimensions $4\frac{1}{2} \times 3\frac{3}{4} \times 12\frac{5}{8}$ ins.	2.50
21	Protects 21 No. 200 Type Relays. Used on No. 85 Relay Mounting. Made of steel. Dimensions $4\frac{1}{2} \times 3\frac{3}{4} \times 12\frac{5}{8}$ ins.	2.00
22	Protects 40 No. 190 Type Relays. Used on No. 97 Relay Mounting. Made of steel. Dimensions $3\frac{3}{4} \times 1\frac{3}{4} \times 23\frac{3}{4}$ ins.	1.50

Relay Mountings

All relay mountings are made of $\frac{3}{16}$ in. strip steel, japanned.



No. 87 Relay Mounting



No. 92 Relay Mounting



No. 94 Relay Mounting

Code No.	Description	Price Each
83	Mounts 100 No. 190 Type Relays in two groups, horizontally. Requires two No. 16 Relay Casings. Mounting centers, $25\frac{1}{2}$ ins. Length, 26 ins. Width, $3\frac{3}{4}$ ins.	\$4.00
84	Mounts 120 No. 190 Type Relays in three groups, horizontally. Requires three No. 17 Relay Casings. Mounting centers, $25\frac{1}{2}$ ins. Length, 26 ins. Width, $3\frac{3}{4}$ ins.	4.00
85	Mounts 40 No. 200 Type Relays, horizontally. Requires either 20 No. 19, 2 No. 20 or 2 No. 21 Relay Casings. Mounting centers, $25\frac{1}{2}$ ins. Length, 26 ins. Width, $3\frac{3}{4}$ ins.	3.00
86	Mounts 60 No. 190 Type Relays in three groups, horizontally. Requires three No. 18 Relay Casings. Mounting centers, $20\frac{5}{8}$ ins. Length, $21\frac{1}{8}$ ins. Width, $3\frac{3}{4}$ ins.	3.00
87	Mounts 16 No. 200 Type Relays, horizontally. Requires 8 No. 19 Relay Casings. Mounting centers, $20\frac{5}{8}$ ins. Length, $21\frac{1}{8}$ ins. Width $1\frac{7}{8}$ ins.	1.75
88	Mounts 60 No. 190 Type Relays in three groups, horizontally. Requires three No. 18 Relay Casings. Mounting centers 17 ins. Length, $17\frac{1}{2}$ ins. Width $3\frac{3}{4}$ ins.	3.00
89	Mounts 12 No. 200 Type Relays, horizontally. Requires 6 No. 19 Relay Casings. Mounting centers, 17 ins. Length, $17\frac{1}{2}$ ins. Width, $1\frac{7}{8}$ ins.	1.75
90	Mounts 10 No. 200 Type Relays horizontally. Requires either 5 No. 19 or 1 No. 21 Relay Casings. Mounting centers, 13 ins. Length, $13\frac{1}{2}$ ins. Width, $1\frac{7}{8}$ ins.	1.75
91	Mounts 100 No. 190 Type Relays in two groups horizontally. Requires two No. 16 Relay Casings. Mounting centers, $20\frac{5}{8}$ ins. Length, $21\frac{1}{8}$ ins. Width, $3\frac{3}{4}$ ins.	4.00
92	Mounts 16 No. 200 or 10 No. 190 Type Relays, horizontally. Requires 8 No. 19 Relay Casings. Mounting centers, 13 ins. Length, $13\frac{1}{2}$ ins. Width, $3\frac{3}{4}$ ins.	2.50
93	Mounts 1 No. 200 Type Relay on floor of cabinet. Length, $1\frac{1}{2}$ ins. Width $1\frac{1}{8}$ ins.	.75
94	Mounts 1 No. 200 Type Relay on side of cabinet. Length, $1\frac{1}{8}$ ins. Width, 1 in.	.75
95	Mounts 2 No. 200 Type Relays on side of cabinet. Requires 1 No. 19 Relay Casing. Length, $2\frac{1}{2}$ ins. Width, 1 in.	.75

Relay Mountings (Cont.)

Code No.	Description	Price Each
96	Mounts 40 No. 190 Type Relays horizontally. Requires 1 No. 17 Relay Casing. Mounting centers, 8 $\frac{3}{4}$ ins. Length, 8 $\frac{3}{4}$ ins. Width, 3 $\frac{1}{4}$ ins.	\$3.00
97	Mounts 40 No. 190 Type Relays horizontally. Requires 1 No. 22 Relay Casing. Mounting centers, 25 $\frac{1}{2}$ ins. Length, 26 ins. Width, 1 $\frac{3}{4}$ ins.	3.00
101	Mounts 12 No. 200 Type Relays and 2 No. 19 Condensers horizontally. Requires 1 No. 19 and either 1 No. 21 or 6 No. 19 Relay Casings. Mounting centers, 18 $\frac{3}{4}$ ins. Length, 18 $\frac{3}{4}$ ins. Width, 1 $\frac{3}{4}$ ins.	2.00
102	Mounts 14 No. 200 Type Relays and 2 No. 19 Condensers horizontally. Requires 2 No. 19 and 1 No. 21 Relay Casings. Mounting centers 25 $\frac{1}{2}$ ins. Length, 26 ins. Width, 1 $\frac{3}{4}$ ins.	4.50



No. 142 Relay Mounting

Radio Receiver

No. 1-A Neutrodyne



Front View No. 1-A Neutrodyne Receiver

Perfection in reception is exemplified by this receiver. It is sensitive, selective, simple, stable, sonorous and economical.

Sensitive

Places a whole continent within its range. Gives good reception on average evenings, within a radius of 2400 miles. Carries two stages of tuned and neutralized radio frequency amplification and two stages of audio frequency amplification. Equally efficient on all broadcast wave lengths between 200 and 600 meters.

Selective

Exhibits the greatest selectivity that is possible without impairing the tonal quality by cutting off the "side bands." Brings in a distant station free of annoying interference from a local broadcasting station. Has an equivalent of three wave traps in series,—the antenna tuner and the two radio frequency units. Each of these tuned units gives not only high ratio voltage amplification but also wave trap selectivity.

Simple

Tunes as positively and as accurately as the combination of a safe is worked. To tune, simply set each of the three dials at predetermined points, read from a log sheet. Any station is heard in this manner without guesswork. Stations always are found at the same dial settings. There is no confusing multiplicity of dial settings possible for any

one station. The dial settings are independent of each other. Furthermore, the dial settings, for any station not logged can be quickly located by means of the hand-calibrated curve which accompanies each receiver.

Stable

Holds a station indefinitely after the dials are once set. Cannot be "knocked off a station" by radiations from neighboring regenerative and heterodyning receivers. Does not generate howls, does not generate squeals and in fact does not radiate in any manner. Perfectly balanced under all operating conditions.

Sonorous

Gives a surplus of the volume necessary for loud speaker reproduction on all but extremely distant stations. Most stations are brought in on the loud speaker without using a head set for tuning. In fact, most stations are brought in with Loud Speaker volume on the first audio stage, using only four tubes—the second audio stage never is required for loud speaker volume on any but extremely distant stations.

Economical

Uses only 50% of the "B" battery current that is required in many five tube types of receivers. Furthermore, as above mentioned the fifth tube is seldom used except for loud speaker volume on very distant stations.

Radio Receiver (Cont.)

Specifications

Cabinet

Mahogany, richly finished in Adam-Brown. Equipped with front control panel, rear control panel and with apparatus panel. Overall dimensions—width, 28½ ins., height, 11½ ins., depth over dials, 9½ ins.

Panels

Front control panel—mounts tuning dials, rheostat for radio frequency amplification tubes, rheostat for detector tube, the detector jack, the first audio jack, and the second audio jack.

of rheostats permits the use of any storage battery type of receiving tube.

Antenna Tuning

Binding posts on the rear panel permit connecting to either a long antenna or a short antenna. Neither antenna nor ground connections are necessary for local stations. A short indoor antenna is sufficient to give coast to coast reception.

Accessories Required

Five UV-201-A Radiotrons or five C-301-A Cunningham tubes. One six volt "A" battery. Four 22½ volt "B" batteries or two 45 volt "B" batteries.



Rear View No. 1-A Neutrodyne Receiver

Rear control panel—mounts all the binding posts, the first audio rheostat and the second audio rheostat.

Apparatus panel—mounts transformers, neutrodyne tubes and associated apparatus.

All three of these panels are rigidly braced—chassis, self-contained construction—independent of the cabinet for rigidity—made of Formica.

Wiring

Radio frequency circuits—comprised of bus-bar connections throughout.

Audio frequency circuits—comprised of braided, code-colored wiring, laced into a telephone type cable and concealed.

Filament Control

Rheostats on front panel for tubes in radio frequency circuits and for the detector tube. Individual rheostat on rear panel for fine setting of the first and second audio tubes. This complete combination



Bottom View, Showing Location of "C" Battery

One ground connection. One short indoor or outdoor antenna. One Stromberg-Carlson No. 1-A Loud Speaker. (One Stromberg-Carlson No. 2-A Head Set is furnished with each receiver)

Code No.
1-A

Description
Neutrodyne Receiver
Shipping Weight, 41 lbs.

Consumer's
Price Each
\$180.00



Under Side of Apparatus Shelf



Upper Side of Apparatus Shelf

Radio Receiver (Cont.)

No. 2 Type Console Neutrodyne



No. 2 Type Radio Receiver (Closed)

The No. 2 Type Console Neutrodyne Receiver combines the utility of a beautiful piece of furniture and an instrument that provides the most gratifying radio reception with natural richness and purity of tones over long and short distances.

The art of the cabinet maker is reflected in its graceful and artistic design, which adds to the charm and beauty of any room. Furnished in either Adam-Brown mahogany or American walnut, superbly finished.

The beautiful cabinet contains the famous Stromberg-Carlson five-tube Neutrodyne Receiver with built-in Loud Speaker and spaces for "A" and "B" batteries and battery charger all out of sight.

All that has been said on the preceding pages concerning the functioning of the No. 1-A Neutrodyne Receiver is equally applicable to the No. 2 Type. The same high-grade workmanship is found in both types. The receiving apparatus is a complete, self-supported unit which fits accurately into the space provided for it in the cabinet.

Specifications

Cabinet—American walnut or Adam-Brown mahogany. Equipped with upper compartment for the control unit assembly and the "B" batteries. Also equipped with two lower compartments—one on the right for the Loud Speaker unit and one on the left for the "A" battery and the battery charger. Each of these three compartments is very accessible. The upper compartment is provided with hinged front, top and rear doors. The two lower compartments are provided with individual front doors and a common removable rear panel. Ventilation holes per-

mit battery charging while the battery compartment doors are closed.

Dimensions—Over-all length 33½ ins.; depth 17½ ins.; height 42¼ ins. Shipping weight less accessories 130 pounds.

Control Unit Assembly—See No. 1-A Receiver on preceding page.

Loud Speaker—Built in Stromberg-Carlson type adjustable. Equipped with large rich-toned wood horn. Designed for the highest quality of reproduction and for ample volume to fill a large living room.

Wiring—Radio frequency circuits—Comprised of bus bar connections throughout.

Audio frequency circuits—Comprised of braided code-colored wiring, laced into a telephone type cable and concealed.

Power supply circuits—Comprised of leads—"A" Battery, "B" Batteries and "C" Battery.

Filament Control—See No. 1-A Receiver on preceding page.

Antenna Tuning—See No. 1-A Receiver on preceding page.

Accessories Required—Five UV 201-A Radiotrons or five C-301-A Cunningham tubes. One List No. 2782—50 ampere hour storage type "A" Battery; one List No. 2779 two ampere Battery Charger; two standard type 47 volt "B" Batteries; one ground connection; one short indoor or outdoor antenna.

Code No.	Description	Consumer's Price Each
2-A	Neutrodyne Receiver finished in American walnut.	\$310.00
2-B	Neutrodyne Receiver finished in Adam-Brown mahogany.	310.00



No. 2 Type Receiver (In Operation)

Loud Speaker



No. 1-A Loud Speaker

No. 1-A

This Loud Speaker is built to meet the requirements of the home. It gives the abundance of sound volume necessary to fill the largest room of a residence in a pleasing manner, and it reproduces not only speech, but music with true tonal characteristics.

To operate, simply plug into any standard tube receiving set. Then, programs that were coming in loud on the head set, should fill the room so that everyone can enjoy the entertainment. Neither extra batteries or extra stages of amplification are required.

The coils are built up of commercially pure, enameled, copper wire, **Layer Wound and Layer Insulated**; the magnetic field is produced by a one-piece "U" shaped, **Powerful Magnet**; the base is of wood, finished in mahogany and the horn is fibre, 25 inches high, with 13 inch bell, and with oxidized silver finish.

Each Loud Speaker includes a Stromberg-Carlson No. 60 Plug and a Durastex five foot, brown silk cord.

Code No.	Description	Consumer's Price Each
1-A	Loud Speaker	\$17.50
	Shipping Weight 10 lbs.	

Head Set



No. 2-A Radio Head Set

No. 2-A

The Stromberg-Carlson No. 2-A Radio Head Set satisfies critical radio experts in private as well as commercial service.

It satisfies, because it is sensitive, true-toned and sonorous. These qualities are assured by its **Powerful Magnets** and its equally powerful windings.

This head set not only gives satisfaction when new, but gives satisfaction through long continuous use, on account of its **Layer Wound and Layer**

Insulated Coils. It will stand up indefinitely under the highest plate voltage now prevalent for loud speaker hook-ups.

The superior qualities of this head set are the result of the knowledge gained through thirty years' experience manufacturing speech and music reproducing apparatus.

Each No. 2-A Radio Head Set comprises four distinct units:—Two No. P-15118 Receivers, One No. P-15127 Head Band and One No. R-2-K 5 Ft. Cord.

The Receiver

The No. P-15118 Receiver is equipped with a one-piece bi-polar permanent magnet, of high grade magnet steel; provided with phenol fibre spool heads, slotted soft iron pole pieces, corrosion proof diaphragm, enameled copper wire coils. All parts are encased in a receiver shell of cast non-magnetic insulating material, that is unaffected by either moisture or temperature changes. Each coil is wound to 500 ohms. The coils are connected in series. This gives a combined resistance of 2000 ohms for the 4 coils of a No. 2-A Radio Head Set.

The Head Band

A Head Band is furnished of the spring wire type, covered with heavy brown webbing, provided with slide and swivel adjustment correctly shaped, light in weight and comfortable to the operator. Knurled thumb screws are furnished on both ends to permit locking the adjustment after it is once fitted to the head. Exposed metal parts are nickel finished. Another feature of merit, in regard to the design of this Head Band is a provision for separating the

Head Set (Cont.)

receivers which permits simultaneous listening by two observers with but one No. 2-A Radio Head Set. This accomplishment is simple, because the Head Band is provided with spring stirrups which engage the receivers in such a manner that either receiver may be disengaged from the Head Band by simply spreading the stirrups.

The Cord

Each No. 2-A Radio Head Set is equipped with a 5-foot brown silk, moisture proofed, receiver cord which is forked in two branches, one branch for each receiver. This forked construction permits two persons to use Head Set simultaneously when desired—a feature of great convenience.

Code No.	Name of Part	Description	Consumer's Price Each
No. 2-A		Radio Head Set	\$5.50
P-15127	Head Band	Standard Head Band for the No. 2-A Radio Head Set	.90

Radio Head Set Parts

Code No.	Name of Part	Description	Consumer's Price Each
P-15118	Receiver	Standard Receiver for the No. 2-A Radio Head Set	\$2.50
P-15117	Diaphragm	Used regularly in the No. 2-A Radio Head Set.	.10
P-15116	Ear Cap	Standard ear cap for the receivers of the No. 2-A Radio Head Set	.15
R-2-K	Cord	A 5-foot, brown silk covered, branched, receiver cord—standard for the No. 2-A Radio Head Set	.70

Transformer

Audio Frequency Type



No. 3-A Audio Frequency Transformer

This is an ideal transformer—it is handy to mount—it is easy to connect and it is unsurpassed in operating efficiency.

Its advantageous characteristics are briefly as follows:

Uniform voltage amplification throughout the widest possible range of musical frequencies. Therefore, making the nearest practical approach to distortionless performance—one of the essentials for the correct reproduction of both speech and music.

Coils with a surplus current-carrying capacity—ample for association with any receiving tube on the market.

High primary reactance—125,600 ohms at 1000 cycles—essential for high amplification of low frequencies.

Surplus insulation—not only between coils, but also between coils and metal parts—each transformer is subjected to a 500 volt A. C. breakdown test between these parts.

Layer wound and layer insulated coils,—vacuum impregnated—a type of coil that will stand up under the highest of plate voltages.

Low core losses—the laminations are very thin and are of the best grade of silicon steel.

Moderate turns ratio—4 to 1—avoids overloading the tubes in succeeding stages.

Compact dimensions—Length $2\frac{3}{4}$ in.; width $1\frac{1}{2}$ in.; height $2\frac{1}{4}$ in.

Mounting eyelets in both top and bottom plates—a design which permits either mounting the terminals up for exposed wiring or mounting the terminals down for concealed wiring.

Combination screw and solder terminals—handy for either screw-clamp or soldered connections.

Shell type, metal-encased construction—this means that transformers may be mounted in any position and on close centers without a possibility of their inducing noise due to either electromagnetic or electrostatic coupling.

Code No.	Description	Consumer's Price Each
3-AX	Audio Frequency Transformer	\$4.50

Plug

No. 60 Universal Type



This plug is built especially for the requirements of radio service. It may be used for plugging up head sets, microphone transmitters, battery supply, etc. Fits any Radio Jack and takes any type of conductor without soldering. Adapted to cords with spade tips, cords with pin tips, cords with loops, stranded conductors either with or without tips, and of any diameter. Built for mechanical strength and electrical perfection. Consists of few parts all of which are simple.

An examination of this plug will reveal the fact that it is the only plug which has all of the following exclusive construction features:

Provided with a durable two-piece flat handle which is cast from high grade insulating substance.

Equipped with diamond shaped corrugations on the exposed sides of the handle. This roughened surface gives the user the equivalent to a pistol grip hold which facilitates plugging up and taking down connections.

Provision for the opening up of the plug for inspecting parts or changing connections by the removal of a single flush type screw which passes through one side of the handle and engages a nut that is firmly imbedded in the other side of the handle.

Recesses are cast in the handle to hold all plug parts rigidly assembled so that they are unaffected by rough usage.

Both halves of the handle open up like a book,—the stay cord functions as the hinge. This permits quick as well as accurate reassembling of the parts.

Shoulders on the plug's body engage the halves of the handle so as to take the thrust from both directions in such a manner that neither the cord tip terminals nor the binding points are called upon to bear any portion of the strain.

All parts are securely keyed against turning. This makes it impossible to loosen these parts by giving the plug a twisting movement when putting up or taking down connections.

A one-piece tip and tip rod turned from solid metal, gives a construction which ensures against loose tips.

Extra thickness of insulation between both the internal and external portions guards against short circuits.

Code No.	Description	Consumer's Price Each
60	Universal Plug	\$.60

Jacks

Nos. 147, 151 and 152

Jacks are indispensable for quick connections with amplifier circuits. They permit instantaneous automatic filament control upon the insertion of either a "loud speaker" or a "head set" plug.

Back of Stromberg-Carlson jacks is the reputation of a firm that has had 30 years' experience manufacturing high grade jacks for telephone and signalling purposes. These 30 years of telephone manufacturing experience have developed a radio jack which—

Mounts neatly and securely on Formica, Bakelite or Hard Rubber panels between $\frac{1}{4}$ and $\frac{3}{4}$ inches thick.

Takes any standard radio plug.

Is readily assembled to the panel with a nickel plated, polished hexagonal nut. This nut conceals all threads, even when the jack is mounted on thinner panels.

Requires no "take up" washers to adapt it for mounting on the thinner panels.

Is provided with a "side braced," drawn frame. This design insures rigidity and permanent alignment of all parts.

Local contacts are equipped with low resistance, electrical contact metal, nickel-silver springs and extra thick phenol-fibre insulation.

Exhibits correct design for positive electrical connections between the plug and the jack. Both plug-conductor contacts are made through jack springs, this construction eliminates the necessity for dependence on an unreliable jack sleeve contact.

Has over-lapping and extra quality, thick insulation, between the springs. The arrangement of the springs provides for spreading the terminals as necessary for facilitating soldered connections.

Jacks (Cont.)



No. 147 Jack



No. 151 Jack

Code No.	Description	Consumer's Price Each
147	This Jack permits the instantaneous connection of the Head Set directly to	\$.75



No. 152 Jack

Code No.	Description	Consumer's Price Each
	either the detector or to any succeeding amplifier stage of the cascade, cutting off unused stages. Takes No. 60 Plug.	
151	This Jack permits connections of phones in detector sets or in any circuit where no local contacts are to be opened or closed. Takes No. 60 Plug.	\$.50
152	This Jack permits the instantaneous connection of either a Head Set or a loud speaker to the detector or to any amplifier stage of the cascade, cutting off unused stages on both sides; but also gives the advantage of automatic filament control. Takes No. 60 Plug.	1.00

Microphones

Nos. 3-L and 3-C



No. 3 Panel Type

This type Radio Microphone is neatly made, strongly constructed, built of only high grade materials and designed for maximum voice transmission efficiency with minimum speech effort.

Mounts on either a wood or a formica panel. Each Radio Microphone is complete including cords which are equipped with pin tips for connecting with other parts of the transmitting apparatus.

Code No.	Type	Description	Consumer's Price Each
3-L	Panel	A Radio Microphone for panel mounting. Equipped with 25 1/4 inch arm having a vertical adjustment. All exposed parts finished in black enamel with nickel trim. Equipped with Bakelite mouthpiece. Designed for low voltage service up to six volts.	\$3.25
3-C	Panel	Same as No. 3-L but equipped for high voltage service—six to twelve volts.	3.25

Condensers

Radio Receiver and Transmitter Types

Stromberg-Carlson fixed condensers are made in various types such as: by-pass condensers, protection condensers, amplifier-coupling condensers and filter condensers.

The best grade of tin foil and paraffined paper are used in making these condensers. This tin foil and this paper are carefully rolled to the correct capacity,

impregnated with pure paraffin, cooled in iron-shaping molds, placed in tinned sheet metal cases, and sealed with a compound which will neither become brittle at a temperature as low as 0° F. nor flow at a temperature as high as 150° F.

The completed condensers are subjected to severe capacity and break down tests.

Condensers (Cont.)

Radio Receiver and Transmitter Types (Cont.)



No. 25 Condenser



No. 26-R Condenser

Nos. 30, 31, 32 and 33
Type Condenser

Code No.	Description	Consumer's Price Each	Code No.	Description	Consumer's Price Each
25	By-pass condenser. Guaranteed over 100 megohms insulation resistance. This means a very low "B" battery consumption due to leakage, only about one twentieth of the leakage prevalent on many by-pass condensers. Capacity—1 M. F. Dimensions— $3\frac{1}{2} \times 2\frac{1}{2} \times \frac{1}{4}$ in.	\$1.10	31	Protective condenser, amplifier-coupling condenser or filter condenser. Insulation Resistance—100 megohms per M. F. Voltage D. C.—1700 Capacity $\frac{1}{2}$ M. F. Dimensions— $4\frac{1}{2} \times 4\frac{1}{2} \times \frac{1}{4}$ in.	Same as No. 30.
26-R	By-pass condenser. Equivalent in insulation resistance to the No. 25 Condenser but equipped with Fahnestock clips. Capacity— $\frac{1}{2}$ M. F. Dimensions— $4\frac{1}{2} \times 2\frac{1}{2} \times \frac{1}{4}$ in.	.95	32	Protective condenser, amplifier-coupling condenser or filter condenser. Insulation Resistance—100 megohms per M. F. Voltage D. C.—750 Capacity—1 M. F. Dimensions— $4\frac{1}{2} \times 4\frac{1}{2} \times \frac{1}{4}$ in.	Same as No. 30.
30	Protective condenser, amplifier - coupling condenser or filter condenser. Insulation Resistance—100 megohms per M. F. Voltage D. C.—1700 Capacity—1 M. F. Dimensions— $4\frac{1}{2} \times 4\frac{1}{2} \times \frac{1}{4}$ in.	Manufactured only on large quantity orders—quotations upon application.	33	Protective condenser, amplifier - coupling condenser or filter condenser. Insulation Resistance—100 megohms per M. F. Voltage D. C.—750 Capacity— $\frac{1}{2}$ M. F. Dimensions— $4\frac{1}{2} \times 4\frac{1}{2} \times \frac{1}{4}$ in.	Same as No. 30.

Cords, Cordage and Cord Tips

Loud Speaker and Head Set Types
Cords

No. R-2-K-Cord

Neat and reliable connections require flexible, well insulated conductors between the various parts that comprise either a transmitting or a receiving station.

The following cords, cordage and cord tips are high grade products, which are manufactured expressly for Radio service.

Code No.	No. Conductors	Description	Consumer's Price Each
R-2-K	2	A 5-foot, brown silk covered, "Duralox," moisture proofed cord which is forked in two branches—one for each receiver of a double head set. This is the standard cord for the No. 2-A Radio Head Set. Equipped with the No. 18 Pin Type Cord Tips on both ends.	\$.70

Cords, Cordage and Cord Tips (Cont.)

Cords (Cont.)

	Code No.	No. Conductors	Description	Consumer's Price Each
	R-2-D	2	A 5-foot, brown silk covered, "Duratex" cord, moisture proofed. Used for connecting the various units of receiving apparatus. Especially desirable where first-class construction combined with neatness is essential. This cord is equipped with pin tips on both ends.	\$1.55



No. R-2-D Cord

Cordage

Place No.	No. Conductors	Description	Consumer's Price Per Ft.	Place No.	No. Conductors	Description	Consumer's Price Per Ft.
20021	1	Brown silk covered, "Duratex" cordage, moisture proofed. Cut in lengths as specified on order.	\$.10	20022	2	Brown silk covered cordage the same as No. 20021 but 2 conductors. Cut in lengths as specified on order. Aerial Outfit. Includes all necessary materials. Packed in individual cartons.	\$.15

Code No.
1-A

6.00

Cord Tips



No. 18 Cord Tip



No. 34 Cord Tip



No. 35 Cord Tip

Code No.	Description	Consumer's Price Each
18	Pin type tip used for attaching the cord to Radio Head Sets. Also very convenient to finish the end of cordage in setting up circuits. Well adapted for use with Fishstock spring binding posts.	\$.01
34	A handy, brass, nickel plated cord tip in the form of a spring clip with steel point and saw toothed jaws; for quick, reliable connections. May be soldered to any type of cordage.	.25
35	Spade tip for placing under any type of thumb nut or thumb screw binding post. Arranged for soldering to standard cords or cordage.	.01

Drop Signals

Piece Parts shown on pages 235-236

Code No.
11-A

Description

Price Each
\$4.25No. 11 Drop
as on No. 140 Drop Mousing

Standard line equipment for use in all Stromberg-Carlson magneto switchboards. Shutter is automatically restored to normal position by insertion of plug in jack, which is an integral part of the apparatus. Jack is designed to fit No. 42 Plug. Equipment consists of a drop signal and corresponding line jack assembled in one unit so that the complete apparatus may be installed or removed from the switchboard as a unit. The jack is of the double cut-off type; the line is clear of all drop connections when the plug is in the jack. Contact springs are made of nickel-silver. Conspicuousness of signal when in calling position.

Drop Signals (Cont.)

Code No.	Description	Price Each
	tion is one great advantage of this drop. When operated the shutter presents three white surfaces against a black background which immediately attracts attention from any position on the board. Coil of 500 ohms resistance is removable from back of board so that changes may be made without disturbing the operator. All terminals are of the screw type which not only facilitates testing and inspecting but also eliminates the use of a soldering copper. Engraved number plates are removable and interchangeable. Separate contacts for continuous and code ringing night alarm bells are provided so that either or both systems may be used in the same board without interference. Drops of this type are regularly mounted five per strip. No charge is made for mounting strip when 3 or more drops are ordered. Single drop measures $4\frac{1}{4} \times 1\frac{1}{8} \times 1\frac{1}{8}$ ins. Face of strip to mount 5 drops $7\frac{1}{4} \times 1\frac{1}{8}$ ins. Coil 1000 ohms resistance. Otherwise, same as No. 11-A.	\$4.35
No. 11 Drop Side View		
No. 11 Drop Rear View		
11-F		
12-A	Clearing out drop, used on magneto switchboard with No. 11 Drop line equipment. Similar to No. 11 except that it has no jack or self restoring equipment. Coil is of 500 ohms resistance. Single drop measures $4\frac{1}{4} \times 1\frac{1}{8} \times 1\frac{1}{8}$ ins. Face of mounting strip to mount 5 drops $7\frac{1}{4} \times 1\frac{1}{8}$ ins.	3.50
12-F	Coil 1000 ohms resistance. Otherwise, same as No. 12-A.	3.60
13-A	Thimble (sleeve contact) brought out to terminal for busy test on multiples, or for cord circuit functions. Jack is designed to fit a No. 55 Plug. Coil is 500 ohms resistance. Otherwise, same as No. 11-A Drop.	4.35
13-F	Coil 1000 ohms resistance. Otherwise, same as No. 13-A.	4.45
14-A	Clearing out, manual restoring type drop. Used on sure ring off cord circuits. Similar to No. 12 Drop, but with two windings of 500 ohms each, brought out to four terminals. Single drop measures $4\frac{1}{4} \times 1\frac{1}{8} \times 1\frac{1}{8}$ ins. Face of mounting strip to mount 5 drops $7\frac{1}{4} \times 1\frac{1}{8}$ ins.	4.00
16-A	Same as No. 11-A but designed for use with a No. 53 Plug.	4.35
16-F	Same as No. 11-F but designed for use with a No. 53 Plug.	4.45
17-A	Same as No. 13-A but designed for use with a No. 53 Plug.	4.35
17-F	Same as No. 13-F but designed for use with a No. 53 Plug.	4.45

Drop Mounting Strips

Code No.	Description	Price Each
140	Made of strip steel to mount five standard Stromberg-Carlson drops. Finish, dull black. Mounts on a No. 105 Switchboard. Requires a No. 33 Drop Blank for unequipped spaces. Face of strip is $7\frac{1}{4} \times 1\frac{1}{8}$ ins.	\$1.25
143	Same as No. 140 except that the night bell terminal is extended.	1.50
146-A	Made of strip steel to mount 8 standard Stromberg-Carlson drops. Finish, dull black. Mounts the same as No. 130 Jack, using No. 17 Jack Fastener. Requires No. 33 Drop Blank for unequipped spaces. Face of strip is $10\frac{1}{2} \times 1\frac{1}{8}$ ins.	4.00
146-B	Differs from No. 146-A in end logs only. Mounts the same as No. 109 Jack using No. 15 Jack Fastener. Face of strip is $10\frac{1}{2} \times 1\frac{1}{8}$ ins.	4.00

No. 140 Drop Mounting

No. 146-A Drop Mounting

Ringer Signals

Piece Parts shown on pages 219-251

All Ringer Signal prices are less gongs



No. 19-G Ringer



No. 28 Type Ringer



No. 46 Type



No. 47 Type

Code No.	Description	Price Each
10-C	A polarized, biased ringer. Made without gong points for use on the No. 102 Switchboard. Resistance 1600 ohms.	\$2.35
28-A	A polarized buzzer for use in test sets. Resistance 1000 ohms.	2.00
28-C	Same as No. 28-A. Resistance 1600 ohms.	2.10
28-H	Polarized buzzer for use in No. 105 Switchboard. Resistance 100 ohms.	1.90
35-A	Polarized, straight line ringer for use in No. 890 Mine-a-Phone. Made with impregnated coils and double permanent magnets. Mounted on a moisture proof plate. Designed for 4 inch gongs. Resistance 1000 ohms.	3.80
35-B	Same as No. 35-A. Resistance 1600 ohms.	3.90
35-E	Same as No. 35-A. Resistance 2500 ohms.	4.00
37-A	Direct current vibrating ringer used in Stromberg-Carlson Nos. 903, 904, 965, 968 and 1122 Telephones. Equipped with a vibrating armature and adjustable break contact. Resistance 20 ohms.	1.25
	Brass, nickel-plated gongs, screws and nuts, per set.	.50
46-A	Straight line polarized ringer for use in all standard Stromberg-Carlson Central Energy and Magneto Telephones equipped for straight line ringing. Armature pivots on a brass yoke bridging the pole pieces and is adjusted by a single screw. Further adjustment is obtained through eccentric gong drillings. Spool terminals are designed for either screw or soldered connections. Resistance 1000 ohms.	1.75
	Gongs (black steel), screws and nuts, per set.	.25
46-C	Same as No. 46-A. Resistance 1600 ohms.	1.85
	Gongs, screws and nuts.	.25
46-F	Same as No. 46-A. Resistance 2500 ohms.	2.05
	Gongs, screws and nuts.	.25
47-E	Harmonic ringer tuned to 16 cycles for use in a Four Party System. Pole pieces of the coils are made with a locknut adjustment which provide very close regulation of the air gap. Mounts on the same cabinet drillings as No. 46 Type Ringer. Each ringer is carefully tuned and permanently adjusted at the normal voltages and rated frequency. Resistance 2500 ohms.	2.25
	Gongs (black steel), nuts and screws, per set.	.25
47-F	Same as No. 47-E but tuned to 33 cycles. Resistance 500 ohms. Armature interchangeable with Nos. 47 G & H.	2.25
	Gongs, nuts and screws.	.25
47-G	Same as No. 47-E but tuned to 50 cycles. Resistance 500 ohms. Armature interchangeable with Nos. 47 F & H.	2.25
	Gongs, nuts and screws, per set.	.25
47-H	Same as No. 47-E but tuned to 66 cycles. Resistance 500 ohms. Armature interchangeable with Nos. 47 F & G.	2.25
	Gongs, nuts and screws, per set.	.25
47-I	Same as No. 47-E but designed for a two frequency system. Tuned to 20 cycles. Resistance 2500 ohms.	2.25
	Gongs, nuts and screws, per set.	.25

Ringer Signals (Cont.)



No. 49 Ringer



No. 51-A Buzzer



No. 962 Type Loud Ringing Bell

No. 17-A Visual Signal
on No. 117 Mounting

Code No.	Description	Price Each
47-J	Same as No. 47-I. Tuned to 60 cycles. Resistance 500 ohms.	\$2.25
	Gongs, nuts and screws, per set.	.25
47-N	Same as No. 47-E but designed for a synchronous system. Tuned to 30 cycles. Resistance 500 ohms.	2.25
	Gongs, nuts and screws, per set.	.25
47-L	Same as No. 47-K but tuned to 42 cycles.	2.25
	Gongs, nuts and screws, per set.	.25
47-M	Same as No. 47-K but tuned to 54 cycles.	2.25
	Gongs, nuts and screws, per set.	.25
49-A	Polarized, biased ringer used in a party line system which has selective signalling by means of positive and negative pulsating current. Mounts on the same cabinet drillings as the No. 46 Type. Single screw armature adjustment. Resistance 1000 ohms.	2.00
	Gongs, nuts and screws, per set.	.25
49-C	Same as No. 49-A. Resistance 1000 ohms.	2.10
	Gongs, nuts and screws, per set.	.25
49-F	Same as No. 49-A. Resistance 2500 ohms.	2.30
	Gongs, nuts and screws, per set.	.25
51-A	A.C. and D.C. buzzer for use in the No. 101 Switchboard. Resistance 900 ohms.	3.50
102-A	Polarized, biased ringer for use on old type switchboards. Complete with drop and gongs. Resistance 1000 ohms.	3.90
102-C	Same as No. 102-A. Resistance 1000 ohms.	4.00
102-D	Same as No. 102-A. Resistance 2000 ohms.	4.10
962-A	Waterproof loud ringing Signal Bells used with the No. 890 Mine-A-Phone as an extension auxiliary signal or with the No. 963 Hand Generators for separate signalling system. Frame and cover are made of cast-iron and when fastened together will overlap to form a water shed. Water-proofing features are such that the apparatus may be submerged in water without becoming inoperative. Equipped with 6-in. gongs. Ringer coils are fully protected in metal cases with all extra space filled with beeswax and the cover sealed on. Coils wound to 1000 ohms. Mounting space 17 x 13 in. Net weight 17 lbs. each.	1-4 \$10.75 Over 5 \$9.75
962-C	Same as No. 962-A but with coils wound to 1600 ohms.	11.00 10.00

Additions

For No. 22 Condenser (2 MF) add \$1.15 each.

Visual Signals

Code No.	Description	Price Each
17-A	A very compact signal which may be mounted as close as half inch from center to center and is 2½ inches long. Used as "box" signal on toll boards. Resistance 463 ohms.	\$1.75
17-A on 117 Mounting	Mounts 10 signals. Strip is finished black and provided with a designation strip. Is held in place by No. 17 Jack Fasteners. Face of strip measures 10½ x 1 in.	2.25
17-A on 118 Mounting	Mounts 20 signals. Similar to No. 117 Mounting.	2.00
	Dimensions—10½ x 1 in.	
17-A on 119 Mounting	Mounts 10 signals. Similar to No. 117 Mounting.	2.25
	Dimensions—7½ x 1 in.	



No. 1-A Terminal Block



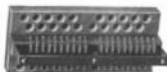
No. 2-A Terminal Block



No. 3-A Terminal Block



No. 4-C Terminal Block



No. 45 Terminal Strip



No. 45 Terminal Strip

Terminal Blocks

Code No.	Description	Price Each
1-A	Two conductors, each equipped with two screw and one solder connections. Mounted on sheet fiber. Dimensions— $1\frac{1}{2} \times \frac{1}{4} \times \frac{1}{4}$ ins.	\$.10
2-A	Same as No. 1-A but has 3 conductors. Dimensions— $2\frac{1}{4} \times \frac{1}{4} \times \frac{1}{4}$ ins.	.13
3-A	Same as No. 1-A but has 4 conductors. Used in Nos. 1109, 1110, 1113, and 1141 Telephones. Dimensions— $3\frac{1}{4} \times \frac{1}{4} \times \frac{1}{4}$ ins.	.15
4-A	Same as No. 1-A but has 5 conductors. Used in No. 1146 Telephone. Dimensions— $3\frac{1}{4} \times \frac{1}{4} \times \frac{1}{4}$ ins.	.20
4-C	Six conductors mounted on hard rubber. For use in switchboards for attaching generator leads. Dimensions— $2\frac{1}{4} \times \frac{1}{4} \times \frac{1}{4}$ ins.	.60
5-A	Same as No. 1-A but 6 conductors. Used in Nos. 965 and 1122 Telephone. Dimensions— $3\frac{1}{4} \times \frac{1}{4} \times \frac{1}{4}$ ins.	.25
6-A	Same as No. 1-A but 7 conductors. Dimensions— $4\frac{1}{4} \times \frac{1}{4} \times \frac{1}{4}$ ins.	.30
7-A	Same as No. 1-A but 8 conductors. Dimensions— $4\frac{1}{4} \times \frac{1}{4} \times \frac{1}{4}$ ins.	.35
8-A	Same as No. 1-A but 9 conductors. Dimensions— $5\frac{1}{4} \times \frac{1}{4} \times \frac{1}{4}$ ins.	.40
9-A	Same as No. 1-A but 10 conductors. Dimensions— $5\frac{1}{4} \times \frac{1}{4} \times \frac{1}{4}$ ins.	.45
13-A	Same as No. 1-A but 14 conductors. Dimensions— $7\frac{1}{4} \times \frac{1}{4} \times \frac{1}{4}$ ins.	.55

Terminal Strips

Code No.	Description	Price Per Strip
15	Consists of 25 circuits with two terminals per circuit (25 pairs). Mounted in hard rubber for use in terminal boxes. Dimensions— $10\frac{1}{2} \times \frac{1}{2} \times 2\frac{1}{2}$ ins.	\$2.50
16	Consists of 50 circuits with two terminals per circuit (50 pairs). Mounted in hard rubber for use in terminal boxes. Dimensions— $19\frac{1}{2} \times \frac{1}{2} \times 2\frac{1}{2}$ ins.	5.00
44	Consists of 20 circuits with two terminals per circuit (20 pairs). This is No. 77 Terminal Strip mounted on a wood base for use on vertical intermediate distributing frames. Dimensions— $7 \times 3 \times 2\frac{1}{2}$ ins.	2.00
45	Consists of 20 circuits with three terminals per circuit (20 triplets). This is No. 78 Terminal Strip mounted on a wood base for use on vertical intermediate distributing frames. Dimensions— $7 \times 3 \times 2\frac{1}{2}$ ins.	2.80
46	Consists of 20 circuits with four terminals per circuit (20 quads). This is No. 80 Terminal Strip mounted on a wood base for use on vertical intermediate distributing frames. Dimensions— $7 \times 3 \times 3\frac{1}{4}$ ins.	3.60
49	Consists of 25 circuits with two terminals per circuit (25 pairs). This is No. 68 Terminal Strip mounted on wood base for use on vertical main distributing frames. Dimensions— $7 \times 3 \times 2\frac{1}{2}$ ins.	2.50

Terminal Strips (Cont.)

Code No.	Description	Price Each
50	Consists of 200 circuits with three terminals per circuit (200 triplets). This is No. 78 Terminal Strips mounted on a wood base for use on vertical intermediate distributing frames. Dimensions— $84\frac{1}{2}$ x 3 x $2\frac{1}{8}$ ins.	\$28.00
62-67	See Inter-Comm-Phones.	
68	Consists of 25 circuits with two terminals per circuit (25 pairs). Mounted in hard rubber for use on main distributing frames. Dimensions— $6\frac{1}{2}$ x $1\frac{1}{2}$ x $1\frac{1}{8}$ ins.	2.50
70	Consists of 20 circuits with one terminal per circuit. Mounted in hard rubber for use as extra terminals beside main distributing frame protectors. Dimensions— $10\frac{1}{4}$ x $\frac{1}{4}$ x $1\frac{1}{8}$ ins.	1.60
71	Consists of 20 circuits with two terminals per circuit. Mounted same as No. 70. Dimensions— $10\frac{1}{4}$ x $1\frac{1}{2}$ x $1\frac{1}{8}$ ins.	2.00
72	Consists of 10 circuits with two terminals per circuit (10 pairs). Mounted in hard rubber for use in switchboards and intermediate distributing frames. Dimensions— $3\frac{1}{2}$ x $1\frac{1}{4}$ x $1\frac{1}{8}$ ins.	1.00
73	Consists of 10 circuits with three terminals per circuit (10 triplets). Mounted same as No. 72. Dimensions— $3\frac{1}{2}$ x $1\frac{1}{2}$ x $1\frac{1}{8}$ ins.	1.40
74	Consists of 10 circuits with four terminals per circuit (10 quad). Mounted same as No. 72. Dimensions— $3\frac{1}{2}$ x $1\frac{1}{4}$ x $1\frac{1}{8}$ ins.	1.80
75	Consists of 10 circuits with five terminals per circuit. Mounted same as No. 72. Dimensions— $3\frac{1}{2}$ x 1 x $1\frac{1}{8}$ ins.	2.20
76	Consists of 10 circuits with six terminals per circuit. Mounted same as No. 72. Dimensions— $3\frac{1}{2}$ x $2\frac{1}{4}$ x $1\frac{1}{8}$ ins.	2.60
77	Consists of 20 circuits with two terminals per circuit (20 pairs). Mounted same as No. 72. Dimensions— $6\frac{1}{2}$ x $1\frac{1}{2}$ x $1\frac{1}{8}$ ins.	2.00
78	Consists of 20 circuits with three terminals per circuit (20 triplets). Mounted same as No. 72. Dimensions— $6\frac{1}{2}$ x $1\frac{3}{4}$ x $1\frac{1}{8}$ ins.	2.80
79	Consists of 20 circuits with four terminals per circuit (20 quad). Mounted in hard rubber for use on intermediate distributing frame answering jacks. Dimensions— $6\frac{1}{2}$ x $1\frac{1}{4}$ x $1\frac{1}{8}$ ins.	3.60
80	Consists of 20 circuits with four terminals per circuit (20 quad). Mounted same as No. 72. Dimensions— $6\frac{1}{2}$ x $1\frac{1}{4}$ x $1\frac{1}{8}$ ins.	3.60
81	Consists of 20 circuits with five terminals per circuit. Mounted same as No. 72. Dimensions— $6\frac{1}{2}$ x $1\frac{3}{4}$ x $1\frac{1}{8}$ ins.	4.40
82	Consists of 20 circuits with six terminals per circuit. Mounted same as No. 72. Dimensions— $6\frac{1}{2}$ x $2\frac{1}{4}$ x $1\frac{1}{8}$ ins.	5.20



No. 70 Terminal Strip



No. 72 Terminal Strip



No. 76 Terminal Strip



No. 80 Terminal Strip

No. 105 Magneto Switchboard

150 Lines Capacity—Drops

The Stromberg-Carlson No. 105 Switchboard answers every requirement that is encountered in the rendering of high grade magneto telephone service. *This Switchboard is adapted not only to any type of magneto line, but to any size of Magneto exchange.* It has more features for speed, accuracy, efficiency, economy, convenience, durability and

these cabinets are built, not only for allowing service expansion, and for providing every operative convenience, but for displaying remarkable durability and for presenting a pleasing appearance:

Kiln dried quarter-sawn oak woodwork finished in dull golden oak provides a neat and durable cabinet.



Three Positions of the No. 105 Switchboard in Operation

universal adaptability than any other Magneto Switchboard.

The following three codes of the No. 105 Type Switchboard are carried in stock ready for immediate shipment:

No. 105-A Switchboard equipped with 30 lines and wired for 50 lines—capacity 150 lines.

No. 105-B Switchboard equipped with 50 lines and wired for 100 lines—capacity 150 lines.

No. 105-C Switchboard equipped with 100 lines and wired for 150 lines—capacity 150 lines.

Prices, shipping weights and additional data regarding equipment will be found on page 79.

Cabinet Design

The cabinets of the Nos. 105-A, 105-B and the 105-C Switchboards are identical in every respect, with the exception of the immediate equipment and the immediate wiring.

The following features are convincing proof that



One Position of No. 105 Switchboard with No. 1 Protector Frame and No. 1 Cable Rack

Flush design of the cabinet's end panels permits the building up of the switchboard installation as the requirements of the exchange expand, in single position units, each of 150 line capacity; always presenting the appearance of one continuous switchboard.

Heavy steel drop frame of angle construction, affords not only a support for the line signals, but also a rigid bracing for the switchboard's cabinet.

Formica veneer over the entire keyboard surface gives a dull black ebony finish with unexcelled mar-resisting and wear-resisting qualities.

Especially prepared black fibrous veneer over plug board protects against the impact of the plugs.

Short reach and wide keyboard add to the operator's convenience.

Removable front and rear lift-out panels expose all interior parts for inspection.

Low height of keyboard permits the operator to rest her feet comfortably on the floor.

No. 105 Magneto Switchboard (Cont.)

Line Equipment

Each equipped line circuit of the No. 105 Switchboard includes, one No. 11-A-500 ohm drop.

The features of this line equipment are as follows:



Left Front Perspective No. 105-G
Switchboard

Plug restored drop shutters promote speed in operating.

Prominent multi-faced drop shutters visible from every angle, increase operating efficiency.

Removable drop number plates make it convenient and economical to always have the line signals correctly designated so as to insure the elimination of errors due to incorrectly numbered drops.

Double cut-off contacts on each line jack sever both sides of the drop coil from the line. This guarantees a highly efficient, balanced talking circuit.

Removable drop coils permit economical repairs.

Unit type, drop mountings each containing groups of 5 drops, facilitate adding extensions in a most practical manner.

Line cable, extending 12 ft. from the top of the section, affords ample provision for connecting to a standard Stromberg-Carlson No. 1 Protector Frame.

Micrometer adjustment of code alarm on each line drop permits not only close adjustment of the alarm feature but also the privilege of entirely removing that feature when it is not desired.

Full metallic line circuit wiring with looped-in wire for connecting ground to all drops 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.



Rear Perspective No. 105-G
Switchboard

Cord Circuit Equipment

The cord circuits of the No. 105 Magneto Switchboard are designed for accurate operating, for fast operating, and for durability. Each fully equipped cord circuit has two No. 19 Condensers, two No. 8-23-G 5 foot Cords, two No. 42 Plugs, two No. 6 Cord Weights, one No. 100-F Key, and one No. 13-A Repeating Coil.

The features of these cord circuits are as follows:

Automatically restored ring-off shutters save the operator's time and therefore speed up service.

Ring-off signals location, as mounted on the keyboard in plain view to the operator, reduce the number of mistakes due to taking down the wrong connection.

Double ring-off signals increase the efficiency of operating by designating to the operator just which party to a connection has ring off.

Non-ring-through cord circuits eliminate much confusion between subscribers and operators because a subscriber's "ring-off" cannot pass through one of these cord circuits to the connected line.

Repeating coil type cord circuits throughout the switchboard insure maximum talking efficiency with minimum noise from inductive disturbances.

Zero-loss cord circuits—the first two cord circuits on the left—controlled by repeating coil keys furnish ideal talking conditions for long distance service.

No. 105 Magneto Switchboard (Cont.)

Operators' Telephone Equipment

A suspended operators' telephone set is regularly furnished with the No. 105 Switchboard. The following apparatus is included: one No. 20-A Induction Coil, two No. 0-1-A-5 foot Transmitter Cords, one No. D-2-B-6 foot Receiver Cord, four No. 531 Dry Batteries, one No. 93 Jack and one No. 15 Transmitter Arm.

This operators' equipment has the following features:

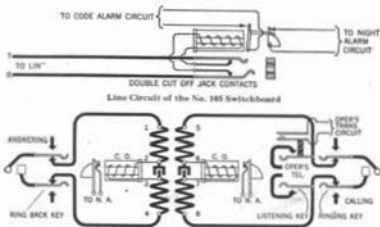
Noiseless—Flexible cords are used to suspend the transmitter so that it will not render the operator circuit noisy by picking up floor vibrations.

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. As a further sanitary

Power Ringing is recommended for the busy switchboard, it speeds up service during rush hours, and lightens the work of the operator. This switchboard is completely wired and equipped for connecting with any type of power ringing circuit.

Emergency Ringing is accomplished by means of the No. 38 generator which is of powerful five bar construction. The above mentioned No. 119 Key is utilized for switching from the source of hand generator current to the source of power generator current supply or vice-versa as required.

Signalling Indication is one of the features of this switchboard. It helps the operator because through its use she 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. It further aids the operator in ringing code signals on party lines. This Signalling Indication is accomplished by means of a ringer which responds to the flow of signalling current in the generator circuit.



Cord Circuit of the No. 105 Switchboard—Note:—The First Two Cord Circuits Also Include a Repeating Coil Key

protection the transmitter's mouthpiece is of Bakelite—a practically non-hygroscopic material.

Convenient—The quickly removed head band and the handy cut-in plug, regularly furnished, are especially convenient for the attendant who has various duties other than those of operating and who, therefore, frequently has occasion to leave the switchboard.

Convertible—It is a simple matter to change from suspended type of transmitter to the breast plate type or vice-versa—that conversion is a simple matter because the wiring is all in place for either type of transmitter. If a breast plate type of transmitter is desired the No. 2-L Operators' Telephone Set will be furnished in place of the regular suspended transmitter.

Generator Equipment

The apparatus furnished for ringing the subscriber's station instruments consists of,—one No. 38 Generator, one No. 3 Crank Shaft, one No. 119 Key, and one No. 28-H Ringer.

Keyboard Space for Mounting a Master Key affords facilities so that the switchboard may be converted readily for connecting with any of the following classes of service: Signalling with Divided Circuit Ringing, Signalling with Pulsating Ringing, or Signalling with Harmonic Ringing.

Ring Back Key on Each Cord Circuit permits ringing on the answering cord without the inconvenience of reversing the connection.

Night Alarm Circuit and Code Alarm Circuit

The following distinct and independently controlled alarm circuits are furnished with each No. 105 Switchboard:

The Night Alarm Circuit—This circuit is arranged to give a continuous ring as long as a drop shutter remains in the operated position, and while the Night Alarm Key is pushed in.

The Code Alarm Circuit—This circuit is arranged to give a buzz each time the armature of a

No. 105 Magneto Switchboard (Cont.)

line drop is actuated by a subscriber ringing on his line. In other words this code alarm is designed to repeat the code signals as they are made on the various lines with which the switchboard is connected. The value of the code alarm is to inform the operator when removed a short distance from the switchboard—as during a light load period—whether her services are required at the switchboard or whether a subscriber is simply signalling another party on his own line. This code alarm is controlled by a push button key.

The apparatus requirements for both of these alarm circuits include—One 20 ohm, 3 inch Night Alarm Bell; one 20 ohm Code Alarm Buzzer; four No. 531 Columbia Dry Batteries; one No. 119 Night Alarm Key; and one No. 119 Code Alarm Key.

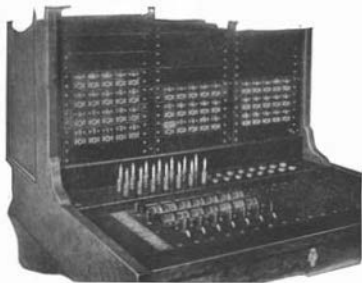
any two lines not in the same or in adjacent positions may be connected.

Transfer Circuits answer these requirements and are provided for in each position of the No. 105 Magneto Switchboard. There is space for fifteen transfer jacks in three strips of 5 each.

When transfer circuits are needed specify the following material for each group of five transfer circuits:—ten No. 140 Jacks, on 85 Mounting, five jacks in a position. Wiring in accordance with Cable Form drawing B-1731 will be furnished with the jacks.

Order Wire Keys

Where Transfer Circuits are in service it is desirable to have Order Wire Keys. Space is provided on



Close-up View of Keyshelf of No. 105-B High Efficiency Switchboard

Position Switching Key

A switchboard consisting of two or more positions requires facilities for switching the operator's set of one position onto the cord circuits of an adjacent position and vice versa. Such facilities are essential particularly during light load periods when it is desirable to have one operator handle two or more positions. This purpose is accomplished by means of what is known as a "Position Switching Key."

The No. 105 Magneto Switchboard is drilled, blanked and wired for a Position Switching Key which may be installed readily at any future time when it is needed. The requirements consist of one No. 301 Key marked "SW."

Transfer Circuit

When a magneto switchboard grows so as to require three or more operator's position equipments, it is obvious that some means must be provided for transferring calls from position to position so that

the Keyboard of each No. 105 Magneto Switchboard for three Order Wire Keys.

Provided Order Wire Keys are needed, specify for each order wire circuit in a position—one No. 300 Key. Wiring in accordance with Cable Form drawing B-1731 will be furnished with the keys.

Instruction Book

Furnished with each No. 105 Switchboard is an instruction book, known as Bulletin 1025, which gives practical directions covering the installation and operation. This volume is in fact a switchboard text book, written in an interesting manner, and readily understood by the average reader. Numerous cuts clearly illustrate the circuit operations, as well as the instructions for most efficient manner of installing the equipment. Wiring diagrams and a list of the apparatus contained in the No. 105 Switchboard are included in this volume, eliminating the use of easily lost blue prints and typewritten lists.

No. 105 Magneto Switchboard (Cont.)

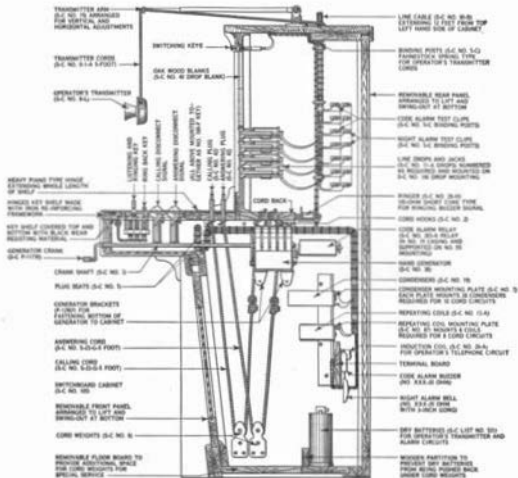
Switchboard Tools

The following set of switchboard tools is regularly furnished with each No. 105 Switchboard. These tools have been carefully designed to aid in the switchboard maintenance and are constructed of the best materials.

- No. 42 Screw Driver for changing cords in plugs.
- No. 7 Spring adjuster for jack springs.
- No. 39 Wrench for jack sleeves.
- No. 52 Screw Driver for the large, drop screws.
- No. 56 Screw Driver for the small, drop screws.

helpful hints both to the manager, wire chief and operator, and will be mailed as issued to all purchasers of our No. 105 Switchboard Equipments.

To place an order for any of the following three standard stock switchboards it is necessary to specify only the code number of the switchboard that is desired,—for instance: to order a No. 105 Magneto Switchboard which is equipped with 50 lines and 7 cord circuits, simply specify "1 No. 105-B Switchboard."



Cross Section No. 105 Type Switchboard

Service Department

The Stromberg-Carlson Tel. Mfg. Co. maintains a Service Department where bulletins are prepared on various phases of maintenance, and on operating problems met in exchanges of a size using the No. 105 Switchboard. These bulletins contain many

Standard Stock Switchboards

Code	Wired for Lines	Cords	Equipped with Shipping Lines	Cords	Weight	Price
105-A	50	15	30	5	360 lbs.	\$395.00
105-B	100	15	50	7	430 "	485.00
105-C	150	15	100	10	450 "	698.00

No. 105 Magneto Switchboard (Cont.)

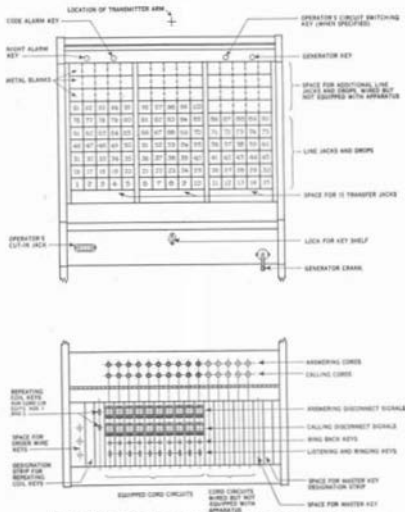
Modified Stock Switchboards

Provided, less equipment is desired than that included with the Standard Stock No. 105-A Switchboard; add a \$5.00 packing and repacking charge to the price of the complete 105-A Switchboard; then deduct, at the rate of \$2.50 per line circuit and \$15.00 per cord circuit, for the circuit equipments omitted.

On the other hand provided, more equipment is desired than that included with any particular one of the three Standard Stock Switchboards; add a \$5.00 packing and repacking charge to the price of the Standard Stock Switchboard which nearest approaches the requirements—than add to that sum, for the additional equipment needed,—at the following prices:

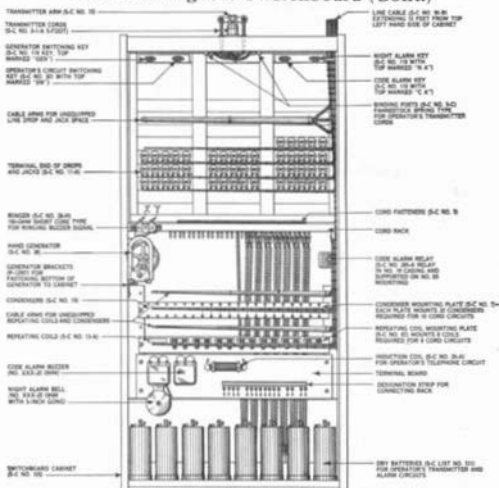
Additional line equipments.....	\$ 3.85 each
Additional cord equipments.....	18.00 "
Position Switching Key—No. 301 Key marked "SW".....	3.00 "
Transfer Circuit Unit consisting of ten No. 140 Jacks on No. 85 Mounting 5 jacks per strip with cable to alternate position.....	29.15 "
Order Wire Circuit—consisting of one No. 300 Key with cable to alternate position.....	1.25 "
Master Key—either pulsating or harmonic.....	10.00 "

Note: Protectors and protector frames are described on page 84.

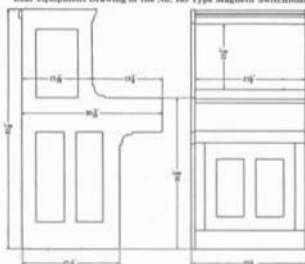


Face and Keyboard Equipment Diagram of the No. 105-C Switchboard

No. 105 Magneto Switchboard (Cont.)



Rear Equipment Drawing of the No. 105 Type Magneto Switchboard



Dimensions of the No. 105 Switchboard

No. 107 Magneto Switchboard

40 Line Capacity—Drops



No. 107 Switchboard

A very compact wall type magneto switchboard well adapted to systems which do not require an operator's constant attendance. This switchboard will connect with all types of magneto lines—full metallic lines, grounded lines, central checking lines or heavily loaded party lines that employ code ringing.

All apparatus is contained in a neat, quartered oak cabinet, finished in durable golden oak. The front section and also the keyboard are both hinged, so as to permit access to the interior parts.

Full metallic wiring is provided to the switchboard's ultimate capacity. The line circuit wiring is of

sufficient length to extend twelve feet from the back of the switchboard.

Each line equipment consists of a No. 11 Drop, provided with 500 ohm removable type drop coil. These drops have interchangeable number plates, double cut-off jack contacts and plug restored shutters.

Efficient talking connections are established between lines by means of well designed cord circuits. Each of these cord circuits includes two No. 42 Plugs, two No. 8-23-G-3 ft. Cords, one No. 12-A Ring-Off Drop, one No. 193 (Ringing and Listening) Key and one No. 178 (Ring Back) Key.

The operator's telephone equipment is comprised of a transmitter suspended from an adjustable arm; an operator's watch case, wire head band receiver; a removable cut-in plug, a cut-in jack and an induction coil.

The operator's auxiliary equipment consists of a five bar hand generator with switch and terminals for power generator. This operator's auxiliary equipment also includes a night alarm bell with controlling switch.

Dry batteries are furnished not only for the operator's set but also for the night alarm circuit.

Wall mounting space 15½ x 35 ins.

Standard Equipment and Prices

Wired for 40 Lines and 5 Cord Pairs

Code	Lines Rept.	No. of		Total		Approx. Weight Packed	Price
		No. of Cord Pairs	Cord Pairs	No. of Cord Pairs	Cord Pairs		
107-A	10	2	1	3	100 lbs.		\$275.00
107-B	15	3	1	4	105 "		327.00
107-C	20	3	1	4	110 "		327.00
107-D	25	4	1	5	115 "		350.00
107-E	30	4	1	5	125 "		379.00
107-F	40	4	1	5	130 "		419.00

No. A-11741 Magneto Switchboard

15 Line Capacity—Drops

This is a very handy, compact switchboard, just what is required in any community where an operator is not necessarily in constant attendance.

All apparatus is contained in a neat, quartered oak wall cabinet, finished in pleasing dull golden oak. The front section hinges exposing interior parts for inspection.

Full metallic wiring is provided for the line equipment to the capacity of the switchboard. This wiring is contained in a neatly formed, machine made, 15 pair cable which extends 12 ft. from the back of the switchboard. Each line circuit includes

one No. 11-A Drop mounted on a metal strip, provided with removable coil and a removable number plate.

The equipped cord circuits each include two No. 8-23-G-2 ft. Cords, two No. 42 Plugs, one No. 173 (listening and ringing) Key and one No. 12-A Drop. This ring-off signal is wound to 500 ohms resistance.

A very complete operator's equipment is supplied. This includes a handy combination telephone, a night alarm, a five bar generator, dry batteries for the operator's circuit and dry batteries for the night alarm circuit.

No. A-11741 Magneto Switchboard (Cont.)



No. A-11741 Switchboard

Standard Equipment and Prices

Wired for 15 Lines and 3 Connecting Cord Circuits

Code No.	Description	Price
A-11741-A	Wall type switchboard for magneto service. Equipped with ten No. 11-A drop lines, two connecting cord circuits and one answering cord circuit. Mounting space $9\frac{3}{4} \times 17\frac{3}{4}$ ins. Approximate shipping weight 60 lbs.	\$130.00
A-11741-B	Wall type switchboard for magneto service. Equipped with fifteen No. 11-A drop lines, two three-conductor cord circuits and one answering cord circuit. Mounting space $9\frac{3}{4} \times 17\frac{3}{4}$ ins. Approximate shipping weight 65 lbs.	150.00

No. A-11740 Magneto Switchboard

5 Line Capacity—Ringers



No. A-11740 Switchboard

This switchboard is arranged for use in connection with any standard magneto wall telephone. It is an ideal switchboard for rendering magneto service

in small communities where an operator's constant attendance is not required and where code signalling is employed on heavily loaded lines.

The cabinet is of compact wall design constructed of kiln dried quarter-sawn oak finished in dull golden oak. The front section hinges so as to permit access to the interior parts.

Each line terminates at the switchboard on an indicating drop shutter type of ringer—Code No. 102-C. These ringers are wound to 1600 ohms, are provided with sensitive clear-toned gongs and are wired in a full metallic line circuit which is adapted for use on any magneto line, full metallic lines, grounded lines, or central checking lines. A five pair cable extends the line wiring to a distance twelve feet from the switchboard's rear. The jacks associated with the ringer signals are mounted, handily, immediately above the connecting cord circuits.

Two connecting cord circuits provide facilities so that two separate conversations can be carried on simultaneously. These cord circuits each include two No. 42 Plugs, two No. 8-23-G-2 ft. Duratex Cords and one No. 55 (operator's listening-in) Jack. The latter item is mounted immediately above the cord equipment. The line ringers act as ring-off signals.

No. A-11740 Magneto Switchboard (Cont.)

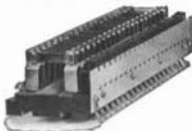
The operator's equipment consists of an answering cord and plug which is required to connect with the associated wall telephone (the telephone is not included with the switchboard). With this answering plug the operator may connect to any line equipment or cord equipment for talking and signalling purposes.

A night alarm is furnished, connected with the five ringer signals in the line circuit. This night alarm includes a 20 ohm bell, controlling switch and three dry cells.

Standard Equipments and Prices

Code No.	Description	Price
A-11740	Wall type ringer switchboard for magneto service. Wired and equipped with five lines two connecting cord circuits. One answering cord circuit and one night alarm. Wall mounting space 9 3/8 x 17 1/2 ins. Approximate shipping weight 35 lbs.	\$52.35

Protectors for Magneto Switchboard Installations



No. P-1206 Protector Strip



No. P-1207 Jumper Strip

The Stromberg-Carlson No. 69-A Protector is designed especially for use in magneto exchange service. It is of the well-known carbon block and mica-protected fuse type. It mounts 50 pairs high on the Stromberg-Carlson No. 1 Protector Frame and it is recommended not only for all No. 105 Switchboard installations but also for all Nos. 107, A-11740, A-11741-A and A-11741-B Switchboard installations.

Code No.	Description	Price
69-A	Protector consists of one No. P-1206 ten pair carbon block and mica fuse strip and one No. P-1207 ten pair jumper strip complete with Western Union type fuses.	\$6.00

Protector Frame for Magneto Switchboard Installations



Two No. 1 Protector Frames and No. 1 Cable Rack installed with No. 105 Switchboard

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

It is built for No. 105 Switchboard installations. However it is admirably adapted to any magneto switchboard installation.

Each protector frame unit mounts 50 pairs of No. 69-A Protectors.

For a 50 line installation order "One No. 1 Protector Frame" for a 100 line installation order "Two No. 1 Protector Frames" and so on to any desired capacity—adjacent units fasten together so as to always present the pleasing appearance of one continuous iron framework.

This protector frame makes a remarkably neat and practical installation at a very low cost.

Code No.	Description	Price
1	Unit type protector frame 50 lines capacity. Mounts No. 69-A Protectors.	\$6.00

Cable Rack for No. 105 Switchboard Installations

A cable rack is essential for neatness in any magneto switchboard installation.

The Stromberg-Carlson No. 1 Cable Rack is designed for carrying overhead the cabling between the No. 105 Switchboard and the No. 1 Protector Frame.

This cable rack is constructed of heavy channel iron, rust-proofed, painted black, equipped at the protector frame end with wall-mounting brackets and equipped at the switchboard end with roof of switchboard mounting brackets.

Order one No. 1 Cable Rack for each section of No. 105 Switchboard.

Code No.	Description	Price
1	Cable Rack for one position of No. 105 Switchboard, connecting with the No. 1 Protector Frame. See illustration on Page 84. Carries one, two or three fifty pair cables.	\$7.00

Private Branch Exchange Switchboards

50 and 100 Lines Capacity



Front Perspective of No. 101 Switchboard



Rear Perspective of No. 101 Switchboard

There are two types of Stromberg-Carlson Floor Mounted Private Branch Exchange (P. B. X.) Switchboards—

The No. 101 Switchboard of 50 Lines Capacity

The No. 102 Switchboard of 100 Lines Capacity

These two switchboards answer every practical requirement that is demanded in P. B. X. telephone service. They are adapted for connecting with any type of city exchange—Central Energy, Magneto, or Automatic. Furthermore, these two P. B. X. Switchboards provide ample range in capacity for any number of P. B. X. stations, up to the point where a Multiple P. B. X. Switchboard would be more economical.

The No. 101 P. B. X. Switchboard and the No. 102 P. B. X. Switchboard have identical operating characteristics—the same circuits are used in both switchboards. This means that an operator who is accustomed to handling one of these switchboards can readily handle the other.

The No. 101 P. B. X. Switchboard and the No.

102 P. B. X. Switchboard use identical circuit apparatus parts such as: relays, jacks, lamp sockets, lamps, plugs, cords, receivers, transmitters, keys, etc. Therefore, all parts are interchangeable from the No. 101 P. B. X. Switchboard to the No. 102 P. B. X. Switchboard and vice versa. On account of this interchangeability a small stock of apparatus parts will answer an operating company's requirements for extensions or for repairs to either of these switchboards.

The cabinet for the No. 101 P. B. X. Switchboard is very compact—measures only 42 $\frac{3}{4}$ ins. high, 20 $\frac{3}{4}$ ins. wide and 30 ins. deep—occupies but 3 $\frac{1}{4}$ square feet of floor space.

Cabinet Design

The cabinet for the No. 102 P. B. X. Switchboard is also very compact considering that this switchboard has a capacity of 100 lines, which is double the capacity of the No. 101 Switchboard. The height is 45 $\frac{1}{4}$ ins., the width is 25 $\frac{1}{4}$ ins., and the depth is 35 ins.

The cabinet for the No. 101 Switchboard is of

Private Branch Exchange Switchboards (Cont.)

Cabinet Design (Cont.)

single panel construction with directory cards on either side of the panel. The cabinet for the No. 102 Switchboard is of two panel construction without the directory cards.

Both cabinets have the following common characteristics:—

Minimum height permits operator looking over the switchboard's top.

Flush sides simplify matching additional sections when necessary.

Quartered oak woodwork finished in dull golden oak combines attractiveness with durability.

Removable lift out panels for both front and rear of switchboard facilitate both inspection and repairs.

Heavy piano hinge extending entirely across the keyboard guarantees ample strength where many switchboards are weak.

Maple Terminal board affords connecting facilities for all outside circuits such as line circuits, trunk circuits, battery feed circuit and power generator circuit.

Carefully made, well insulated cable forms eliminate any possibility of either cross-talk or cross-ringing originating within the switchboard. The talking conductors and also the miscellaneous conductors are of No. 22 B. & S. Gauge commercially pure copper wire.

Each conductor is wrapped with two layers of silk in reverse directions, and one layer of cotton. The latter insulation is colored in accordance with a predetermined color code. The battery and ringing leads are of No. 18 B. & S. Gauge stranded conductor with rubber covering and cotton braiding.



Front Perspective of No. 102 Switchboard



Rear Perspective of No. 102 Switchboard

Substantial keyboard lock prevents tampering with the interior parts of the keyboard pocket.

Low keyboard height of only 31 $\frac{1}{4}$ ins. permits the operator resting her feet on the floor in comfort.

Formica veneer over entire keyboard surface gives a dull black ebony finish with unexcelled mar-resisting and wear-resisting qualities.

Specially prepared black fibrous veneer over plug jack protects against the impact of the plugs.

Steel key frame mounts the keys securely flush with the keyboard's surface.

Heavily constructed, carefully drilled and tapped jack stiles support the line jacks and line lamp sockets in the switchboard's face.

Horizontally swinging relay gate mounts the terminal board, the line relays, the trunk relays, the cord relays, the condensers and the miscellaneous coils in a most accessible manner. This relay gate is of angle construction with welded corners.

Line Equipment

Each line circuit in either the No. 101 or the No. 102 Switchboard includes, when fully equipped—a No. 194-A Relay, a No. 135 Jack, a No. 121 Lamp Socket, a No. 27-A Lamp Cap and a No. 32 Lamp.

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 to the operator regardless of the line's length—the line lamp is in a local, relay-controlled circuit.

Battery economy—the high winding of the line relay requires but a minimum battery current for operation.

Reliable signal—the line lamps are equipped with highly evacuated, tipless bulbs, rugged filaments and porcelain bases.

Private Branch Exchange Switchboards (Cont.)

Equipment (Cont.)

Cord Equipment

Stromberg-Carlson P. B. X. Cord Circuits are of the double lamp supervisory type with three conductor plugs and three conductor cords. Each cord circuit includes:—two No. 53-X Plugs, two No. S-32-K-3 foot cords, two No. 6 Cord Weights, two No. 12 Lamp Sockets, two No. 27-B Lamp Caps, two No. 32 Lamps, one No. 173 Key, two No. 222-B Relays and two No. 19 Condensers.

The following equipment and circuit features are found in Stromberg-Carlson P. B. X. Cord Circuits:

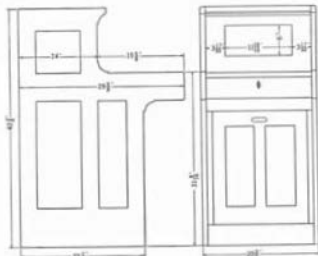
Correct Battery Feed—Condensers separate the flow of transmission battery to the showering and the calling stations so that each station gets its proper proportion of current.

Balanced Transmission—Both the tip and the sleeve battery transmission coils to each station are placed on the same relay.

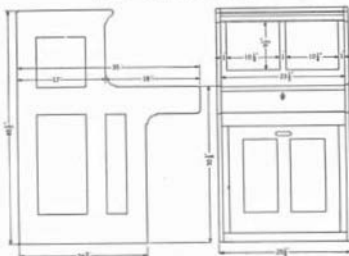
Battery Economy—The battery transmission feed not only supplies talking current, but also furnishes energy to operate the supervisory relays.

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 cord circuit.

Neat and Serviceable Keyboard Equipment—The keys mount flush on the keyboard and are neatly covered with a dull black, wear resisting substance that is a good insulator. The supervisory lamp caps are of the non-breakable type, therefore they require no unsightly guards.

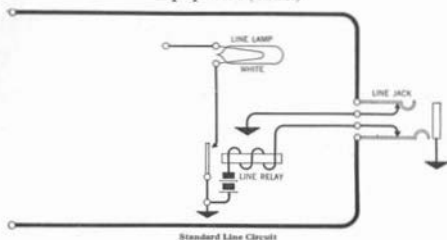


Dimensions of No. 101 Switchboard



Dimensions of No. 102 Switchboard

Private Branch Exchange Switchboards (Cont.) Equipment (Cont.)



Standard Line Circuit

Transmission Efficiency—Both the tip and the sleeve talking conductors are entirely free from either series resistances or series retardation coils.

Trunk Equipment

The trunks furnished in both the No. 101 and the No. 102 P. B. X. Switchboards are provided with universal wiring so that it is unnecessary to modify the key inside when adapting the P. B. X. trunking apparatus to connect with any of the following types of main exchanges:

- Central Energy Manual Main Exchanges through a normal loop resistance.
- Central Energy Manual Main Exchanges through an abnormally high loop resistance.
- Automatic Main Exchanges through a normal loop resistance.
- Automatic Main Exchanges through an abnormally high loop resistance.
- Magneto Main Exchanges through any practical loop resistance.

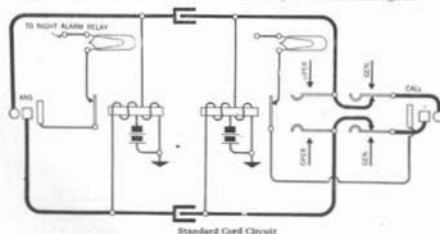
* Stromberg-Carlson P. B. X. Switchboards will be furnished equipped with trunks for service in accord-

ance with paragraph (a) unless modifications are requested to conform with the requirements as outlined in paragraphs (b), (c), (d) and (e).

Each Central Energy Manual Exchange Trunk Circuit which is arranged for operating through a normal loop resistance (see paragraph (a)) includes at the P. B. X. Switchboard—one No. 53-X Plug, one No. 8 32-K-3 foot cord, one No. 6 Cord Weight, three No. 12 Lamp Sockets, one No. 27-A Lamp Cap, one No. 27-B Lamp Cap, one No. 27-C Lamp Cap, three No. 32 Lamps, one No. 184 Key, one No. 195 Key and one No. 1-A Trunk Circuit Plate.

These trunks have the following advantageous characteristics:—

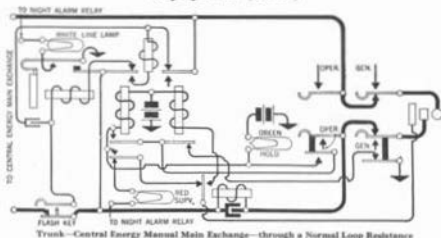
The Ending of the Trunks at the P. B. X. Switchboard on Plugs permits—the use of all the cord circuits on the P. B. X. switchboard for local to local service, the convenient connection of local lines to trunk lines for through-night service and the elimination of the complicated apparatus in the P. B. X. cord circuits that is necessary where jack ended trunks are employed. The plug ending of the P. B. X. trunks also has the advantage that the Main Exchange and the P. B. X. operators simultaneously receive disconnect signals.



Standard Cord Circuit

Private Branch Exchange Switchboards (Cont.)

Equipment (Cont.)



Triple Supervision—facilitates fast and accurate operating. A white calling lamp lights when the Main Exchange operator rings out on a P. B. X. trunk line. A green hold lamp lights when the P. B. X. operator throws her listening key to answer a call coming through the Main Exchange 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 lights when the P. B. X. 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 P. B. X. party moves the hook of his telephone up and down,—but it will not light when the operator monitors a connection. A red disconnect lamp lights when the P. B. X. party hangs up after completing a connection.

A Flashing Key—provides effective means for signalling the Main Exchange 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 Telephone Main Exchange (see paragraphs (a), (b), (c), (d) and (e) page 88). The case with which trunks may be added, omitted or modified by means of these trunk circuit plates

makes it practical to curtail P. B. X. investment to a minimum. That curtailment of investment may be accomplished not only by carrying just one type of P. B. X. switchboard in stock for connecting with any type of Main Exchange, but by equipping each P. B. X. switchboard as it goes into service with only the exact number of trunks needed for present traffic, omitting provision for future traffic requirements.

Each Central Energy Manual Exchange Trunk which is arranged for operating through an abnormally high loop resistance (see paragraph (b)), includes at the P. B. X. switchboard the same apparatus as that required for the Central Energy Manual Exchange Trunks which operate through a normal loop resistance except that a No. 2-A Trunk Circuit Plate replaces the No. 1-A Trunk Circuit Plate.

Night Switching Keys are recommended with this type of trunk—to cut the repeating coils and the associated apparatus in the No. 2-A Trunk Circuit Plate out of circuit for night service. Where night switching keys are installed in trunks that will be used for night service, the No. 195 Key is replaced by the No. 196 Key. The installation of night switching keys requires no change in the wiring of the P. B. X. switchboard.



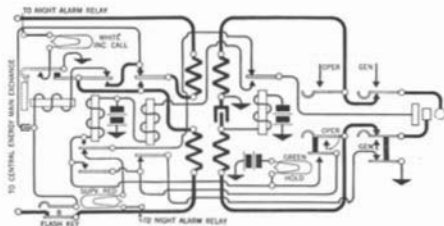
Front View, No. 1-A Trunk Circuit Plate, Relay Covers Removed



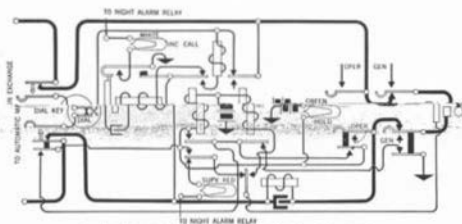
Rear View, No. 1-A Trunk Circuit Plate, Relay Covers in Place

Private Branch Exchange Switchboards (Cont.)

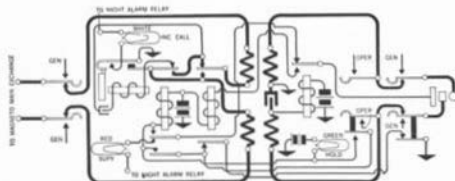
Equipment (Cont.)



Trunk—Central Energy Manual Main Exchange—through an Abnormally High Loop Resistance



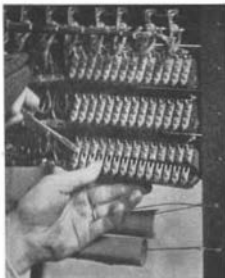
Trunk—Automatic Main Exchange—through a Normal Loop Resistance



Trunk—Magneto Main Exchange—through any Practical Loop Resistance

Private Branch Exchange Switchboards (Cont.)

Trunk Equipment (Cont.)



Attaching Terminals to No. 2-A
Trunk Circuit Plate

Each Trunk which is arranged for connecting to an Automatic Main Exchange through a normal loop resistance (see paragraph (c)) includes at the P. B. X. switchboard—one No. 53-X Plug, one No. 8-32-K-3 foot cord, one No. 6 Cord Weight, three No. 12 Lamp Sockets, one No. 27-A Lamp Cap, one No. 27-B Lamp Cap, one No. 27-C Lamp Cap, three No. 32 Lamps, one No. 194 Key and one No. 1-A Trunk Circuit Plate. Common to all of these trunks on each P. B. X. Switchboard there will be required one calling device (automatic dial).

Each Trunk which is arranged for connecting to an Automatic Main Exchange through an abnormally high loop resistance (see paragraph (d)) includes at the P. B. X. switchboard the same apparatus as that required for the Automatic Main Exchange Trunks which operate through a normal loop resistance except that a No. 2-A Trunk Circuit Plate replaces the No. 1-A Trunk Circuit Plate.

Night Switching Keys are recommended with this type of trunk—to cut the repeating coil and the associated apparatus in the No. 2-A Trunk Circuit Plate out of the circuit for night service. Where night switching keys are installed in trunks that will be used for night service, the No. 194 Key is replaced by the No. 198 Key. The installation of night switching keys requires no change in the wiring of the P. B. X. switchboard.

Each Trunk which is arranged for connecting to a Magneto Main Exchange (see paragraph (e)), includes at the P. B. X. switchboard one No. 53-X Plug, one No. 8-32-K-3 foot Cord, one No. 6 Cord Weight, three No. 12 Lamp Sockets, one No. 27-A Lamp Cap, one No. 27-D Lamp Cap, one No. 27-C Lamp Cap, three No. 32 Lamps, one No. 184 Key, one No. 199 Key, one No. 197 Key and one No. 2-A Trunk Circuit Plate.



Installing the No. 2-A Trunk Circuit Plate on the
No. 192 Switchboard

Operators' Telephone Equipment

The operator's telephone equipment that is regularly furnished with either the No. 101 or the No. 102 P. B. X. Switchboard is of the suspended transmitter type and includes—one No. 15 Transmitter Arm, one No. 8-C Transmitter, two No. O-1-A-4 foot Transmitter Cords, one No. 20-A Receiver, one No. 23 Plug, one No. D-3-B-6 foot Receiver Cord, one No. 42-A Induction Coil, two No. 204 Impedance Coils, four No. 19 Condensers and one No. 93 Operator's Cut-In Jack.

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.

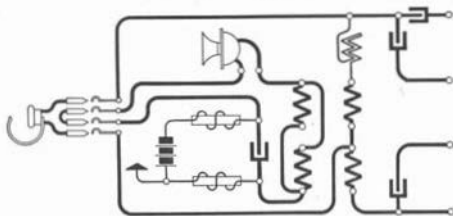
Sanitary—The operator's receiver is provided with a wire head band which is not only light in weight, but free from either dust-collecting or moisture-absorbing surfaces. The transmitter is provided with a non-hydroscopic, removable mouth-piece.

Fool-Proof—Condensers in the circuit make it impossible for the operator to cross a cord circuit with a trunk circuit by overslipping the 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 P. B. X. operator and who frequently has occasion to leave the switchboard.

Private Branch Exchange Switchboard (Cont.)

Generator Equipment



Standard Operator's Circuit

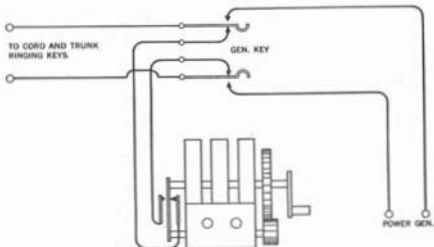
Convertible—It is a simple matter to change from breast plate type transmitter to suspended type or vice versa—the wiring is all in place for either type of transmitter. If a breast type transmitter is desired, the No. 2-A Operator's Telephone Set will be furnished in place of the regular suspended transmitter.

Generator Equipment

The operator's facilities for the ringing of station instruments consists of a generator circuit which includes:—one No. 53 Generator, one No. 3 Crank Shaft, one No. 119 Key and one No. 28-II Ringer.

Regular Ringing—is accomplished by means of 20 cycle alternating current which is brought into

the P. B. X. switchboard from a power generator. This power generator may be either a rotary converter or a vibrating converter. However, the greatest ringing economy is accomplished by using a Stromberg-Carlson No. 5-C Converter, which is of the vibrating type (see P. B. X. accessories). This converter, when connected with a Stromberg-Carlson P. B. X. 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 P. B. X. subscriber answers. Each P. B. X. Switchboard which will receive its ringing current from the No. 5-C Converter requires one No. 202-A Relay. This relay is known as the con-



Standard Generator Circuit

Private Branch Exchange Switchboard (Cont.)

Night Alarm Equipment

verter-starting relay. It is provided for in the wiring of both the No. 101 and the No. 102 P. B. X. 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. Terminals also are furnished for connecting to an outside source of power generator ringing current.

Signalling Indication—is one of the features of Stromberg-Carlson P. B. X. Switchboards. This provides a great help to operators because through its use the operators know with reasonable assuredness, not only when they are 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.

Night Alarm Equipment

To assist the operator in performing her duties each Stromberg-Carlson P. B. X. Switchboard is provided with a night alarm. The apparatus for this

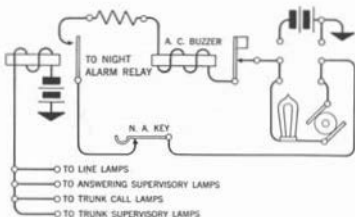
purpose includes—one No. 119 Key, one No. W.E. B-10 Relay and one No. 51-A Buzzer.

The night alarm is controlled by the Push Button Key, which is mounted near the top of the switchboard. When this key is fully "pulled out" in its operating position, the night alarm sounds simultaneously with incoming line calls; with incoming trunk calls; with the answering cord's disconnect signals and with the trunk's disconnect signals.

The following two types of night alarm circuits are available.

The Regular Night Alarm Equipment—which is arranged to operate off the switchboard's source of power ringing current. This type of night alarm will be furnished unless the *Special Night Alarm Equipment* is requested.

The Special Night Alarm Equipment—which is necessary when the power ringing current is derived from an intermittently operated Stromberg-Carlson No. 5-C Converter. This type of night alarm is arranged to operate from the switchboard's source of battery supply and requires the following additional apparatus:—one No. 202 Impedance Coil and one No. 19 Condenser.



Standard Night Alarm Circuit

Operation of the Nos. 101 and 102 P.B.X. Switchboards

The following is a complete narrative of the functions and operations of the circuits of standardized P. B. X. switchboards. The subjects are divided for convenience as follows:

- 1—Local P. B. X. Calls
- 2—Trunk Calls, Outgoing from P. B. X. Switchboard
- 3—Trunk Calls, Incoming to P. B. X. Switchboard
- 4—Direct Line Night Service over trunk.

1—Local P. B. X. Calls

(A) P. B. X. Subscriber Calls:

When a P. B. X. party desires another P. B. X. party the call is made in the usual way by removing the telephone receiver from the hookswitch, thereby lighting the line lamp in the P. B. X. Switchboard.

(B) P. B. X. Operator Answer Call:

The act of plugging into the corresponding P. B. X. line jack, located directly under the lighted line lamp, with the answering (back) plug of a P. B. X. cord circuit, cuts off the line signalling apparatus in the jack and extends the talking circuit to the P. B. X. cord circuit. The operator listens by throwing the combined listening and ringing key handle of the P. B. X. Circuit towards the plugs (looking position) so as to connect her talking equipment.

(C) Ringing the Called P. B. X. Subscriber:

If another P. B. X. party is desired then the calling plug (front) of the P. B. X. cord circuit is inserted into the jack of the desired P. B. X. line. This lights the calling (front) supervisory lamp of the P. B. X. cord circuit.

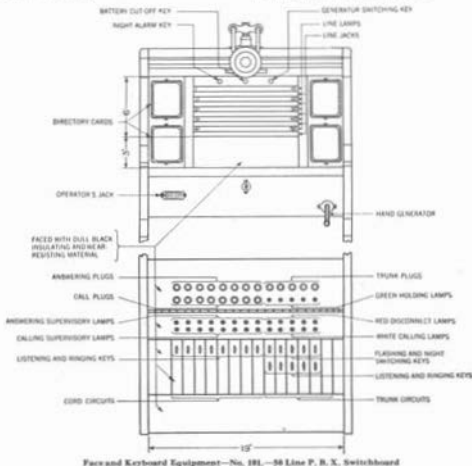
Throwing the combined listening and ringing key handle towards the operator (non-looking position) rings the desired party.

(D) Ringing with Power Generator:

When power generator current is available, then the generator switching key marked "GEN" should be depressed so that this current will be connected to the ringing key common wires. This allows the ringing to be done by the simple movement of the ringing key without any other manual operation on the part of the operator.

(E) Ringing with Hand Generator:

If the power generator current is not available then the generator switching key, marked "GEN" should have its plunger in the "out" position, so that the ringing current provided by turning the crank of the hand generator will be connected to the ringing key by common wires.



Local P. B. X. Calls (Cont.)

(F) Two P. B. X. Parties Connected for Talking:

The responding of the called P. B. X. party by the removing of the receiver from the hook of the called telephone, causes the calling (front) supervisory lamp of the P. B. X. cord circuit to be extinguished. The circuit now is completed and in the talking condition, all signal lamps associated with this particular connection being extinguished.

(G) P. B. X. Parties Disconnect:

When both P. B. X. parties hang up the receivers at the telephones, the corresponding two supervisory lamps in the connecting P. B. X. cord circuit will light. This notifies the operator that the conversation is completed and that the cord circuit used can be pulled down.

(H) P. B. X. Party Recalls:

If either P. B. X. party desires immediate attention of the operator when a conversation is completed, the moving of the hookswitch up and down slowly will flash the corresponding supervisory lamp in the P. B. X. cord circuit. This is the customary signal for the operator to listen-in on the cord circuit for further orders.

(I) Common Night Alarm:

The line lamps and the answering supervisory lamps of this standard P. B. X. switchboard are connected to a common night alarm which rings when any one or more of these non-

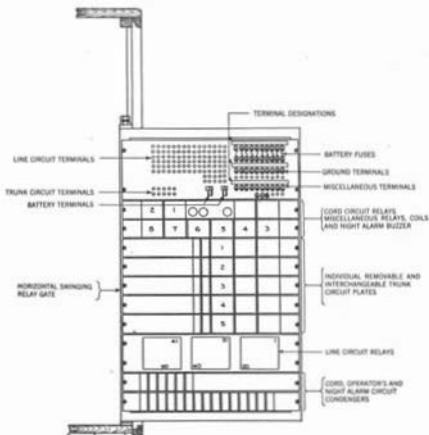
sorted line or supervisory lamps are lighted, providing that the night alarm switching key, marked "NA" is in its operated position (plunger pulled out). When this key is fully depressed (latching position) the night alarm is disconnected.

2—Trunk Calls, Outgoing from P.B.X. Switchboard

The trunk circuit used with this standardized P. B. X. Switchboard is designed to be connected to any regular subscriber's line circuit at the central office, so that the central office answering and calling functions will be the same as those of a regular telephone.

(A) Ordering of Central Connection by P. B. X. Party:

When the P. B. X. operator answers a local call from a P. B. X. line by means of a regular P. B. X. cord circuit and finds that the P. B. X. party desires a "city" line, then the answering plug of this local cord circuit is removed from the P. B. X. line jack and the plug of a non-busy trunk line inserted in its place. This allows the P. B. X. party to call any desired central office number direct. Also it allows the P. B. X. party to recall the central office operator in the customary manner for subsequent numbers by moving the telephone hookswitch up and down, and without disturbing the P. B. X. operator.



Rear Equipment No. 101-50 Line P. B. X. Switchboard

Trunk Calls, Outgoing from P. B. X. Switchboard

The P. B. X. operator must be cautioned to always answer each local call P. B. X. line lamp-signal by means of a P. B. X. cord circuit rather than through a trunk plug, so as to avoid a false calling signal at the central office. This instruction is given on a designation plate, located at the right hand side of the key shelf.

(B) Ordering of Central Connection by P. B. X. Operator.

If the P. B. X. party desires that the P. B. X. operator do the calling of the central office subscriber, then the P. B. X. operator throws the combined listening and ringing key lever of a non-busy trunk into the listening position, which is towards the plugs (locking). It is not necessary that the corresponding trunk plugs be inserted in the jack of the P. B. X. line until the P. B. X. operator knows whether the desired central office subscriber can be reached.

The operation of this trunk listening key causes a holding circuit to be locked across the trunk line and at the same time lights the line lamp at the central office. The P. B. X. operator gives the desired number to the central operator and if the called party responds, then the latter is told that a P. B. X.

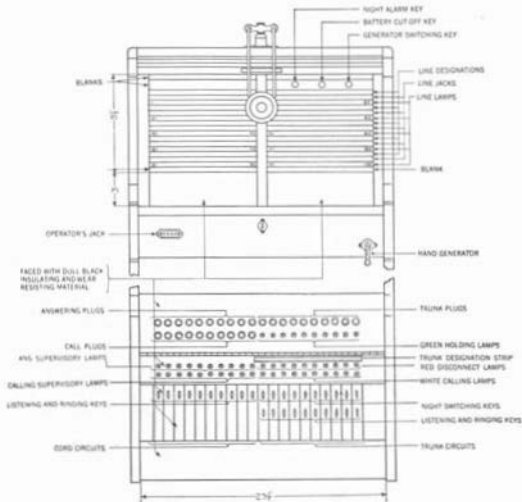
party wishes to speak and is requested to hold the line until the P. B. X. party is located. Now, the trunk plug of this particular trunk line is inserted in the line jack of the P. B. X. party who originated the call, and the P. B. X. line rung in the usual way by throwing the combined listening and ringing key of the trunk circuit towards the operator (non-locking position).

(C) Holding of Trunk Indicated by Green Lamp:

The trunk holding lamp "green" lights when the trunk listening key is first thrown and remains lighted until the P. B. X. party responds. This lamp serves as a positive indication that the trunk is being held by the operator as it lights and remains lighted only as long as the holding circuit is connected across a trunk line. This green lamp is used for no other purpose, so as to avoid confusion of signals.

(D) Trunk Holding Connection Cannot be Accidentally Released:

When the trunk holding circuit is established and the green lamp is lighted, this condition is severely locked against accidental release through crossing of plug and jack or through conductor kinks, by several new safeguards which make this trunk practically fool-proof.



Face and Keyboard Equipment—No. 102-100 Line P. B. X. Switchboard

Trunk Calls, Incoming from P. B. X. Switchboard

(K) Trunk Disconnect:

When the P. B. X. party is through talking and hangs up the telephone receiver, the central office disconnect signal is immediately operated; also a disconnect "red" signal is lighted in the trunk circuit at the P. B. X. switchboard. Either the central office operator or P. B. X. operator can pull down the connection first, without making any difference in the disconnect functions of the P. B. X. or central office switchboard.

(P) Trunk Disconnect Pilot and Night Alarm Circuit:

The red disconnect lamp in the P. B. X. trunk circuit is connected to the common night bell circuit the same as for the local line lamps and local cord circuit answering supervisory lamp.

(Q) Trunk Cleared of Unless Bridged Apparatus During Talking:

This trunk circuit is so designed that when the P. B. X. battery is connected for talking the trunk calling relay and holding coil (if the trunk is arranged for holding coil) are removed from across the circuit so as to avoid high frequency transmission losses.

(H) Trunk Instantly Available for Incoming Calls from Central when P. B. X. Party Hangs Up:

The instant the P. B. X. party hangs up, after a conversation, the trunk line calling signal circuit is re-established at the P. B. X. switchboard so that the central office can call-in on a trunk, even before the P. B. X. operator has pulled down the trunk connection. Thus it is possible to have a calling (white) lamp and a disconnect lamp (red) light on a trunk at one time. This condition is not confusing as the P. B. X. operator knows that the only way a calling signal (white lamp) can be lighted is by the central office operator ringing on the trunk line, also that the presence of a disconnect signal (red lamp) on this same trunk indicates that the P. B. X. party is through talking and has hung up. In such a case the P. B. X. operator will pull down the trunk plug and answer the trunk line the same as for any incoming trunk call, subsequently described.

(I) Trunk Flashing Keys:

If for any reason the P. B. X. operator wishes to flash the supervisory lamp at the central office, when a P. B. X. party is on the connected line, this can be done by simply throwing the combined flashing and night switching key handle towards the operator (non-looking position). This opens the trunk circuit as long as the key is held in the operated position, or the circuit can be intermittently opened and closed by the corresponding operating of this key handle. As a result of this opening and closing of the trunk line circuit at the P. B. X. switchboard, the central office supervisory lamp will be flashed, which is the customary indication for a recall or for immediate attention from the central office operator.

The P. B. X. trunk listening key handle can be thrown to listening position when "flashing back" so that the P. B. X. operator's telephone set will be on the circuit in readiness and the P. B. X. operator can respond immediately when the central operator comes in on the circuit.

This flash circuit is so arranged as to do away with disagreeable clicks which would otherwise be introduced in the connected P. B. X. subscriber's telephone as well as in the operator's head telephone, when working this key.

3.—Trunk Calls, Incoming to P. B. X. Switchboard

(A) Central Office Rings on Trunk Line to Call P. B. X. Switchboard:

As previously stated, these trunk circuits are designed to terminate in the central office on regular subscriber's line circuits. Thus the central office operator calls a P. B. X. switchboard by ringing on the trunk line the same as for calling a local subscriber's telephone.

This ringing current operates a mechanically latching type of alternating current relay in the P. B. X. end of the trunk, positively lighting a calling lamp with white cup, which is located in line with the trunk plug.

(B) Trunk Calling Night Alarm Circuit:

This trunk calling lamp (white) is connected to the common night bell circuit of the P. B. X. switchboard the same as for the local line trunks, etc.

(C) Answering a Trunk Call:

The P. B. X. operator answers a call coming in over the trunk line from central office, by throwing the lever of the associated combined listening and ringing key towards the trunk plug (looking position) so as to connect her telephone set.

(D) Trunk Automatically Held:

The act of throwing the trunk listening key lever by the P. B. X. operator provides and locks up a holding condition for the trunk and also lights a green lamp which stays lighted as long as this holding condition exists.

When the trunk is arranged for "short line" service, this condition is established by means of a retardation coil connected across the trunk, while for "long line" service, with a repeating coil in the trunk, the holding condition is maintained by the closing of the circuit through the middle of the line half of the repeating coil.

This holding condition in the trunk is necessary to keep the supervisory signals of the central office cord and trunk circuits extinguished, so that the central office portion of the connection will not be pulled down prematurely.

When the holding condition is established and the green holding lamp is lighted, then this condition is locked from further interference so that the P. B. X. operator can return the trunk listening key to normal without releasing the trunk.

This allows several calls to be answered in quick succession, holding each call as required connection to P. B. X. line, until the operator has time to complete these calls.

(E) Releasing the Trunk:

If a trunk call is not to be extended to a P. B. X. line then the operator can release the trunk without unplugging into a line jack, by simply throwing the combined listening and ringing key handle into the ringing position, towards the operator (non-looking) before letting go of the key handle. This releases the lock on the holding condition and indicates by extinguishing of the green holding lamp, that the trunk is no longer held.

(F) Extending a Trunk Call to a P. B. X. Line:

If the incoming trunk call is to be extended to a P. B. X. line, the P. B. X. operator simply inserts the corresponding trunk plug into the jack of the desired line and throws the combined listening and ringing key handle towards herself, as in ringing with a local P. B. X. cord circuit previously described. The trunk holding lamp (green) remains lighted until the P. B. X. party responds, when it is extinguished and the trunk is cleared from all bridged apparatus which is not required for talking purposes.

(G) Listening-In on Trunk Conversation does not Re-Connect the Holding Call:

If, for any reason, the P. B. X. operator listens-in on the trunk conversation, the holding coil (used on a short line trunk) will not be re-connected across the line and the green holding lamp will not be re-lighted. In this case the trunk is held by the presence of the P. B. X. telephone talking circuit apparatus, which is then across the circuit. By not having this holding coil across the circuit, bridged transmission losses, due to listening-in on a conversation are correspondingly reduced.

(H) P. B. X. Party can Flash P. B. X. Operator if Trunk Listening Key is Accidentally Left in its Operated Position:

The holding portion of the trunk circuit is so designed that the accidental leaving of the trunk listening key in its operated

Direct Line Night Service over Trunk

position (possible when the operator's head telephone is not in use) will not tie up the trunk circuit. The hanging up of the receiver at the connected P. B. X. telephone will cause the holding lamp (green) to give a steady light. Then if the P. B. X. party wishes immediate attention, the working of the hook-switch slowly up and down will cause this green lamp to flash and thereby attract the operator's attention for immediate service.

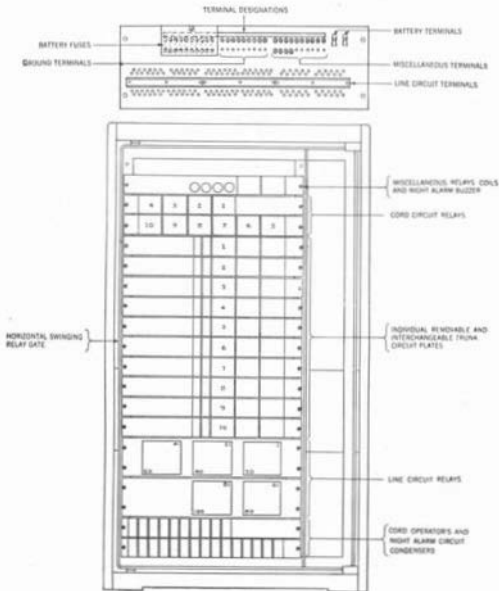
The green lamp is intended solely to indicate to the operator that the trunk is being "held" by the mechanism of the P. B. X. switchboard which is under her control. Thus any lighting of this green lamp demands the P. B. X. operator's immediate attention.

4—Direct Line Night Service over Trunk

This standard P. B. X. switchboard is designed to give night service by inserting the trunk plug into the jacks of a corresponding number of P. B. X. lines, upon which it is desired to give night service. Several important safeguards are provided to avoid interference with this night service.

When the P. B. X. is arranged for "short line" trunk service, without repeating out (No. 5-A Circuit Plate), then night service can be given without the use of special trunk switching keys. All that is necessary is to see that the battery cut-off key is depressed as described under the following heading "B."

When the P. B. X. is arranged for "long line" trunk service



Operation of Trunks from Magneto Exchange

with a repeating coil to feed talking and signaling battery from the P. B. X. switchboard to the P. B. X. subscriber (through a No. 2-A Circuit Plate), then night service can be given direct or with the aid of a night switching key. The wiring for this switching key is provided in each switchboard but the key is furnished only on special order. The operation of this key is as follows:

(A) Night Switching Key Closes Trunk Circuit from All Service and Bridged Apparatus:

A night switching key when desired for the "long line" trunk of the repeating coil type, is provided on special order. When this switching key handle is in its vertical position, the trunk is connected for "day service" with the signaling apparatus in circuit. With the handle of this key thrown towards the trunk plug, the trunk is connected through direct (the night service) without any bridged or series apparatus or coils in the circuit.

This same key lever is used as previously described for flashing purposes, by throwing the lever handle towards the operator, which is non-locking position.

The plugging up of one of these standard trunks into any P. B. X. line, with the switching key set for night service gives the same condition for that particular connected P. B. X. telephone instrument as for a regular central office subscriber's line and telephone, with the same transmission conditions for local and toll service.

(B) Night Service Assured Even when the Night Key is not Thrown:

This standardized P. B. X. switchboard is provided with the usual battery cut-off switch, so that all current for operating the P. B. X. lamps and relays, with the exception of the supervisory relays, may be disconnected when the operator leaves the switchboard at night.

The battery cut-off switch is a No. 119 Key, with top stamped "BAT", wired to connect battery when plunger is pulled out and disconnect battery when plunger is locked "in."

The retaining of battery current for those supervisory relays in the repeating coil trunk, makes it possible to signal the central office from the connected P. B. X. telephone whether the night switching key is in its correct position or not. This is a valuable safeguard because night service lines are usually employed for night watchmen or emergency purposes where reliable outgoing trunk service is vital.

Operation of Trunks From Magneto Main Exchange

When those standardized P. B. X. switchboards are equipped with ring-back keys in the trunks for use in connection with a magneto central office, these trunks will operate as follows:

(A) Trunk Calls from Magneto Central:

Calls from a magneto central office light the white calling lamp in the P. B. X. trunk, the same as calls from a Central Energy office. The P. B. X. operator answers these calls by throwing the handle of the trunk listening key, which is in line with a lighted trunk lamp, towards the trunk plug. This act extinguishes the white calling lamp and lights the green holding lamp. The green lamp remains lighted to remind the operator that she has a central office call, until the trunk is released, either by the operator throwing the listening key in the opposite direction or by the extending of the call as described in the next paragraph.

(B) Extending a Trunk Call from Magneto Central:

If the incoming call is to be extended to a P. B. X. telephone, then the P. B. X. operator inserts the trunk plug in the jack of the desired line and rings by throwing the handle of the trunk listening key towards herself. When the P. B. X. party responds the green lamp will be extinguished, showing the P. B. X. operator that the central office trunk call has been disposed of.

(C) Disconnecting Magneto to Trunk:

Now when the P. B. X. party hangs up, the red lamp, which is located in line with the trunk cord, will light to show disconnection. This red lamp can be flashed for a re-call by the P. B. X. party working the hookswitch of the telephone up and down in the customary manner for such re-calls.

The P. B. X. operator finishes the disconnection by pulling down the trunk plug and then ringing off the central office by throwing towards herself the handle of the key located next to the trunk plug.

(D) Trunk Calls to Magneto Central:

Calls from a P. B. X. party which are intended for the magneto central office are extended by the P. B. X. operator removing the local cord circuit plug, used in answering the call, and substituting a trunk plug. The P. B. X. operator now rings the magneto central office by throwing the handle of the key, located nearest to the trunk plug, towards herself, listening to supervise the connection as is customary on magneto switchboards.

Operation of Trunks From Automatic Main Exchange

When these standardized P. B. X. switchboards are equipped with dial keys in the trunk circuits and with automatic dial, then the operation of the trunks will be as follows:

(A) Trunk Calls from Automatic Central:

Calls from the central office to a P. B. X. party are handled exactly as from Central Energy main exchange as described on page 97 of this bulletin.

(B) Disconnecting the Automatic Trunks:

The disconnecting of these trunk calls is made direct to the central office when the P. B. X. party hangs up, leaving the trunk in readiness for immediate incoming calls, even before the P. B. X. operator has pulled down the connection, as described in paragraph "H" on page 97.

The red trunk lamp lights for this disconnection at the P. B. X. switchboard and can be flashed for re-call in the usual manner by working the telephone hook up and down.

(C) Trunk Calls to Automatic Central:

Calls from the P. B. X. telephone to the automatic office are made by the P. B. X. operator as follows:

First, the dial switching key handle (key nearest to trunk plug) is thrown towards the operator so as to connect the dial to the trunk and at the same time establishes the holding connection across the trunk circuit as described in paragraphs "B" and "C" on page 96 of this bulletin.

Second, the operator dials the number wanted in the automatic central office by working the dial in the regular way.

The green lamp of this particular trunk light to show that the holding condition is existing on the trunk and remains lighted until either the P. B. X. operator releases the same by hand or until the trunk is connected to a P. B. X. line and answered by a P. B. X. party. The releasing by hand is described in paragraph "E" on page 97.

(D) Trunk Automatically Held After Dialing:

After the P. B. X. operator dials the number wanted in the automatic central office, then the circuit is held by the holding condition just described, even after the trunk dial switching key is returned and until the call has been answered by the P. B. X. line or released by the P. B. X. operator as described in paragraph "E" on page 97.

(E) Trunk Night Service to Automatic Central:

Night service from some of the P. B. X. telephones to the automatic central office can be provided as described on page 91 of this bulletin by furnishing the particular P. B. X. telephone with dial, and in the case of the No. 2-A Circuit Plate (repeating coil type of trunk) throwing the night switching key so that its handle will be towards the trunk plug. The No. 1-A Circuit Plate type trunk circuit will allow the dialing through to the central office without using the night switching key. In all cases the battery cut-off switch should be thrown so as to prevent the accidental lighting of lamps in the P. B. X. switchboard during the night.

(F) Special Advantages of Automatic Trunk:

The advantages described in paragraphs "D", "G" and "H" on page 96, and "G" and "H" on page 97 apply also for this standardized trunk when used in connection with an automatic central office.

Standard Equipments, Weights and Prices of Nos. 101 and 102 P. B. X. Switchboards

To order any of the following switchboard equipments it is necessary to specify only the code number of the switchboard which has the correct provisions in equipment and in wiring. For instance—to order a No. 101 P. B. X. switchboard that is finished in dull golden oak and that is equipped with 20 lines, 4 cord pairs and 3 trunk lines it is necessary to specify only as follows:—"1 No. 101-B Switchboard No. 20 Finish."

All of the following P. B. X. switchboards are designed to operate off eleven cells of storage battery. Quotations on P. B. X. switchboards that are designed to operate off other voltages will be furnished upon request.

No. 101 Type P. B. X. Switch- boards, wired for—	Code Number	No. of Lines Installed	No. Cord Pairs Installed	No. of Trunks Installed	Approx. Weight Packed	Price Golden Oak No. 20 Finish
10 Lines	101-A	10	4	2	300 Lbs.	\$175.70
4 Cord Pairs	101-B	20	4	2	310 "	413.90
3 Trunks	101-C	40	5	2	320 "	479.55
	101-D	40	6	4	330 "	544.20
	101-E	60	8	4	340 "	609.79
No. 102 Type P. B. X. Switch- boards, wired for—	102-A	10	4	2	290 "	430.00
10 Lines	102-B	20	4	2	300 "	495.65
4 Cord Pairs	102-C	40	5	2	310 "	561.30
3 Trunks	102-D	40	6	2	320 "	626.95
	102-E	60	8	4	330 "	692.60
	102-F	80	10	4	340 "	758.25
	102-G	100	12	4	350 "	823.90
	102-H	120	14	4	360 "	889.55
	102-I	140	16	4	370 "	955.20
	102-J	160	18	4	380 "	1020.85

*Equipments marked with this symbol are carried in stock—other equipments listed can be furnished subject to slight delay in delivery.

For quotations on special woodwork and special woodwork finishes address the nearest Stromberg-Carlson office.

For more cord pairs equipped add \$14.50

For fewer cord pairs equipped deduct ... 13.00

For more C. E. Trunks equipped add ... 32.90

For fewer C. E. Trunks equipped deduct 29.60

For night switching keys add 2.10

Changes may be made in the standard impedance coil trunk circuit as follows:

For repeating coil (for long trunks) each \$5.00

For modifying trunk to connect with

local battery main exchange each 7.00

For modifying trunk to connect with

automatic main exchange (customer to

furnish dial), each 1.50

Prices are F. O. B. Rochester, N. Y., and Chicago, Ill.

Private Branch Exchange Switchboards No. 104-C Cordless—10 Lines Capacity

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 Central Energy Main Exchange but is arranged so that it requires only slight changes to adapt it for service in connection with an Automatic System. Such changes are made without sacrificing any of the essential operating features.

On account of the No. 104-C Switchboard's compact design, it is particularly desirable for office use. It may be placed on a desk or table handy for operating by a clerk, stenographer or any person who has other office duties to perform.

The apparatus used in the No. 104-C Switchboard is practically the same as that used in the Stromberg-Carlson No. 101—50 line and the No. 102—100 line P. B. X. Switchboards. This makes possible the interchanging of apparatus with these switchboards which in many instances proves an important feature because it is a means of holding the stock

requirements of a telephone company to a minimum.

The routine of operations for these switchboards is likewise standardized with the routine of the No. 101 and the No. 102 types of P. B. X. 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. 101 and the No. 102 P. B. X. Switchboards. Obviously, this standardization of operating routine is another important advantage to every telephone company that uses P. B. X. equipment,—it means maximum efficiency in operating force with minimum schooling.

Cabinet Design

As previously stated, the cabinet for the No. 104-C P. B. X. Switchboard is very compact. The principle overall dimensions are as follows:—Height—16 inches, Width—16 inches, Depth at base—12½ inches, Depth at top—11¼ inches.

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

No. 104-C Cordless—10 Lines Capacity (Cont.)



Front View 104-C Cordless Switchboard

terminals is plainly designated so as to avoid mistakes when installing the apparatus.

Unless otherwise specified on the order, the exterior cabinet work will be furnished in quarter-sawn oak and finished in dull golden oak.

The cable that is provided for inter-connecting the apparatus within the cabinet—excepting the generator leads, the battery leads and the pilot circuit wiring—will be made up of No. 22 B. & S. Gauge copper conductors with double silk and single cotton servings.

The generator leads will be of No. 22 B. & S. Gauge copper conductors with double silk servings and a cotton braid.

Battery leads and the pilot circuit conductors will be of No. 18 B. & S. Gauge copper conductors with double silk and single cotton servings.

Line Equipment

Each Line circuit includes:—one No. 194-A Relay, one No. 12 Lamp Socket, one No. 27-A Lamp Cap, one No. 32 Lamp, two No. 175 Connecting Keys and one No. 193 combined Connecting and Ringing Key.

The line circuit features for this switchboard are identical to those described on Page 86 for the No. 101 and the No. 102 types of P. B. X. 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:—one No. 222-D Relay, one No. 12 Lamp Socket, one No. 27-B Lamp Cap, one No. 32 Lamp and either a No. 198 one way listening Key or one-half of a two way No. 302 listening Key. The features of these connecting circuits are as follows:—

Key Control—All connections between either P. B. X. stations or trunks and P. B. X. stations are made by means of keys.

Balanced Transmission—Both the tip and the sleeve battery transmission coils to each station are placed on the same relay.

Battery Economy—The battery transmission 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 cord circuit.

Transmission Efficiency—Both the tip and the sleeve talking conductors are entirely free from either series resistances or series retardation coils.

The trunk lines for Main Exchange connections, each, include:—one No. 306-X Relay, one No. 263-X A B C Relay, one No. 207-B B B Relay, one No. 204-A Relay, one No. 206 Impedance Coil, two No. 22 Condensers, two No. 175 Keys, one No. 196 Key, two No. 12 Lamp Sockets, one No. 27-A Lamp Cap, one No. 27-C Lamp Cap and two No. 32 Lamps.

These trunks have the following characteristics:—

Three Lamp Supervision—A white call lamp indicates that the Main Exchange Operator is calling the P. B. X., a green hold lamp indicates that the trunk is being held by the P. B. X. operator, and a red disconnect lamp indicates when the connected P. B. X. subscriber hangs up. This disconnect lamp is associated with the connecting circuit equipment.

Key Control—As stated in a preceding paragraph, all connections between either P.B.X. stations or trunks and P. B. X. stations are made by means of keys.

Convertible—Provision for connecting with an Automatic Main Exchange is made in the wiring so that when such service is required it is necessary to change only one key in each trunk, and to install only one dial common to all the converted trunks.

Operator's Telephone Equipment

The operator's telephone equipment that is furnished with the No. 104-C P. B. X. Switchboard is of the desk stand type and includes:—one No. 586 Desk Stand, one No. D-4-A-6 ft. Cord, one No. 43-A Induction Coil, one No. 222 Impedance Coil, and two No. 22 Condensers.

Handy—This desk stand equipment permits the operator answering calls without troubling with a hand band.

No. 104-C Cordless—10 Lines Capacity (Cont.)



Rear View No. 104-C Cordless P. B. X. Switchboard

Battery Economy—This desk stand equipment has the further advantage of being very economical of battery current—no current is used except when the operator has the receiver removed from its hook.

Generator Equipment

The operator's facilities for the ringing of station instruments includes:—one No. 119 Key, one No. 53 Generator and one No. P-11730 Crank.

Regular Ringing—is accomplished by means of 20 cycle current which is brought into the P. B. X. Switchboard from a power generator. The power generator current usually is brought in either from the main exchange or from a Stromberg-Carlson No. 5-C Converter which is of the vibrating type (see P. B. X. accessories). This converter when connected with the No. 104-C 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 is provided for switching from the hand generator to the power generator or vice versa. Terminals also are provided for connecting to the outside source of power ringing current.

Night Alarm Equipment

Each No. 104-C Cordless P. B. X. Switchboard is furnished with a night alarm. The apparatus for this purpose includes:—one No. 50-L Buzzer, one No. 202-A Relay and one No. 119 Key.

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 and the trunk's disconnect signals.

The operation of the night alarm is controlled by a push button switch.

Two types of night alarm circuits are available:—

The Regular Night Alarm Equipment—which is arranged to operate off the switchboard's source of power ringing current. That type of night alarm will be furnished unless the *Special Night Alarm Equipment* is specified.

The Special Night Alarm Equipment—which is necessary where the power ringing current is derived from an intermittently operated Stromberg-Carlson No. 5-C Converter. That type of night alarm is arranged to derive its current from the switchboard's source of battery supply. It requires the following additional apparatus:—one No. 202 Impedance Coil and one No. 22 Condenser.

Operation of No. 104-C Cordless P. B. X. Switchboard

The following is a complete narrative of the functions and operations of the circuits of the No. 104-C Cordless Switchboard. The subjects are divided for convenience as follows:

- 1—Local P. B. X. Calls
- 2—Trunk Calls, Incoming from P. B. X. Switchboard
- 3—Trunk Calls, Incoming to P. B. X. Switchboard
- 4—Direct Line Night Service over Trunk

Arrangement of Keys and Lamps

The Trunk and Local Line Keys are arranged from left to right and numbered 1 to 9 and 1 to 10 respectively, with their

associated call lamp signals (white) mounted above. The Trunk Hold Lamps (Green) are mounted below the Trunk Keys. The Trunk Relaying Keys are mounted below the Trunk Hold Lamps. The connecting circuits run horizontally numbering from top down, with the associated disconnect lamps (Red) mounted at the left. A listening key is associated with each connecting circuit and is mounted at the right of the Local Line Keys. Connections may be made between any number of local lines, or between any number of local lines and a trunk, by throwing the handles of the associated keys in the same horizontal row in the same position.

No. 104-C Cordless—10 Lines Capacity (Cont.)

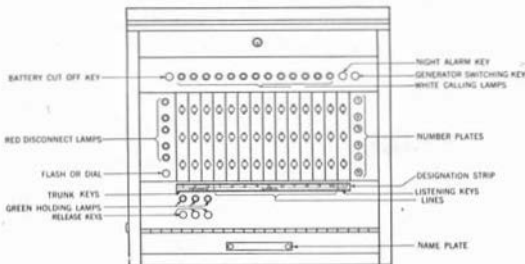


Diagram showing arrangement of apparatus in front panel of the No. 104-C Cordless P. B. X. Switchboard.
This panel is hinged at bottom to allow convenient inspection of the equipment and its connections.

1—Local P. B. X. Calls

(A) P. B. X. Party Calls:

When a P. B. X. party desires another P. B. X. party the call is made in the usual way by removing the telephone receiver from the hookswitch, thereby lighting the line lamp in the P. B. X. switchboard, corresponding to the number of the line calling.

(B) P. B. X. Operator Answers Call:

The operator answers by throwing an associated connecting key on to an idle connecting circuit, which also cuts off the line signaling apparatus and extinguishes the lamp; and then throwing the listening key associated with the connecting circuit used, which places her telephone set on the connection with the party calling.

(C) Ringing the Called P. B. X. Party:

If a connection with another P. B. X. party is desired, that party is then called by pressing down on the non-locking key in the lower horizontal row, corresponding to the number of the line wanted, which rings the telephone bell in the desired party.

(D) Ringing with Power Generator:

When power generator current is available, then the generator switching key should be depressed so that current will be connected to the ringing key common. This allows the ringing to be done by the simple movement of the ringing key and without any other manual operations on the part of the operator.

(E) Ringing with Hand Generator:

If the power generator current is not available then the generator switching key should have its plunger in the "out" position so that the ringing current provided by turning the crank of the hand generator will be connected to the ringing key common wires.

(F) Two P. B. X. Parties Connected for Talking:

The connections are then completed by throwing the connecting key associated with the called line on to the connecting circuit, to which the calling line had been previously connected. The circuit is then complete and in talking condition.

The operator may disconnect her telephone set from the

circuit at any time by restoring her listening key which is associated with that particular connecting circuit.

(G) P. B. X. Parties Disconnect:

When both P. B. X. parties hang up the receivers at the telephone, the disconnect lamp (red) associated with the connecting circuit on which they have been connected, will light. This notifies the operator that the conversation is completed and that the connecting keys may be restored to normal position.

(H) P. B. X. Party Reminds:

If either party desires the immediate attention of the operator when a conversation is completed, the moving of the hook-switch up and down slowly will flash the disconnect lamp of the connecting circuit to which they have been connected. This is the customary signal for the operator to listen-in on the circuit for further orders, which may be done by throwing the listening key on to the connecting circuit.

(I) Common Night Alarm:

The line lamps and disconnect lamps are connected to a common night alarm relay which operates a night alarm buzzer, provided that the night alarm switching key is in its operating position (See description of N. A. Circuit).

2—Trunk Calls, Outgoing from P.B.X. Switchboard

The trunk circuit is designed to be connected to any regular subscriber's line circuit at the central office, so that the central office answering and calling functions will be the same as for those of a regular telephone.

(A) Ordering of Central Connection by P. B. X. Party:

When the P. B. X. operator answers a local call from a P. B. X. Party and finds that the P. B. X. party desires a central office line, the connection is completed by throwing the associated connecting key of an idle trunk on to the connecting circuit to which the calling party has been previously connected. This bridges the P. B. X. party's telephone set across the trunk line, which operates the central office signal. Thus allowing the P. B. X. party to call any desired central office number direct.

No. 104-C Cordless—10 Lines Capacity (Cont.)

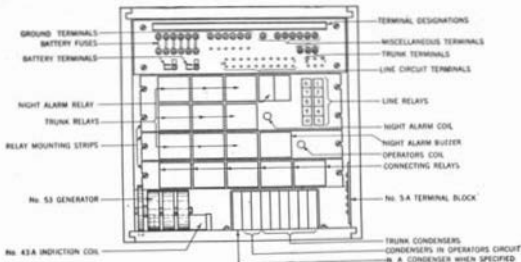


Diagram showing arrangement of apparatus inside the 104-C Cordless F. B. X. Switchboard as viewed from rear.
All equipment in plain sight and located so as to be readily accessible.

It also permits the F. B. X. party to recall the central office operator in the customary manner for calling subsequent numbers by moving the hookswitch up and down.

(B) Ordering of Central Office Connections by F. B. X. Operator:

If the F. B. X. party desires that the F. B. X. operator do the calling of the central office party, then the F. B. X. operator throws a connecting key of an idle trunk and a listening key on the line connecting circuit. It is not necessary that the calling F. B. X. party be connected to the trunk until the F. B. X. operator knows whether or not the desired central office subscriber can be reached.

The operation of the trunk connecting key and the listening key causes a holding circuit to be locked across the trunk line and at the same time lighting the line lamp at the central office. The F. B. X. operator gives the desired number to the central office operator and if the called party responds, then the latter is told that a F. B. X. party wishes to speak and is requested to hold the line until the F. B. X. party is located. The F. B. X. party who originated the call is rung in the usual way by depressing the ringing key associated with his line. The associated connecting key is then thrown on to the same connecting circuit as that to which the trunk has been connected.

(C) Holding of Trunk Indicated by Green Lamp:

The trunk holding lamp (green) lights when the trunk connecting key and the listening key are both thrown and remains lighted until the F. B. X. party responds. This lamp serves as a positive indication that the trunk is being held by the operator because it lights and remains lighted as long as the holding circuit is connected across a trunk line. In order to avoid confusion of signals this green lamp is used for only the above mentioned purpose.

(D) Trunk Holding Connection Cannot be Accidentally Released:

When the trunk holding circuit is established and the green lamp is lighted, this condition is securely locked against accidental release by several safeguards which make this trunk practically fool-proof.

3—Trunk Calls, Incoming to P. B. X. Switchboard

(A) Central Office Rings on Trunk Line to Call P. B. X. Switchboard:

As previously stated, these trunk circuits are designed to terminate in the central office on regular subscriber's line circuits. Thus the central office operator calls a P. B. X. switchboard by ringing on the trunk line the same as for calling a regular subscriber's telephone.

This ringing current operates a mechanically latching type of alternating current relay in the F. B. X. end of the trunk, positively lighting a calling lamp (white).

(B) Trunk Calling Night Alarm Circuit:

The trunk calling lamp (white) is connected to the common night alarm relay the same as for local F. B. X. lines.

(C) Answering a Trunk Call:

The F. B. X. operator answers a call coming in over the trunk line from central office, by throwing an associated connecting key and listening key on to the same idle connecting circuit.

(D) Trunk Automatically Held:

The act of throwing the trunk connecting key and the listening key handles by the F. B. X. operator provides and locks up a holding condition by connecting a retardation coil across the trunk and also lights a green lamp which stays lighted as long as this holding condition exists. This holding condition in the trunk is necessary to keep the supervisory signals of the central office end and trunk circuits extinguished, so that the central office portion of the connection will not be pulled down prematurely.

When the holding condition is established and the green holding lamp is lighted, then this condition is locked from further interference so that the F. B. X. operator can restore the listening key to normal without releasing the trunk. This allows several calls to be answered in quick succession, holding each call as requires connection to the F. B. X. line, until the operator has time to complete these calls.

(E) Releasing the Trunk:

If a trunk call is not to be extended to a F. B. X. line or the

No. 104-C Cordless—10 Lines Capacity (Cont.)

P. B. X. party does not respond, then the operator can release the trunk by pressing the non-blinking trunk releasing key, marked "REL," on its top, which is located just below the green holding lamp. This releases the lock on the holding condition and indicates that the trunk is no longer held, by extinguishing of the green holding lamp, and lighting the supervisory lamp at the central office.

(F) Extending a Trunk Call to a P. B. X. Line:

If the incoming trunk call is to be extended to a P. B. X. line, then the P. B. X. operator rings the P. B. X. party and completes the connection the same as for a local P. B. X. call.

(G) Listening in on Trunk Conversation does not Re-Connect the Holding Call:

If, for any reason, the P. B. X. operator listens in on the trunk conversation, the holding coil will not be re-connected across the line and the green holding lamp will not be re-lighted. In this case the trunk is held by the presence of the P. B. X. telephone talking circuit apparatus, which is then across the circuit. When the holding coil is disconnected from the circuit, under this condition, the bright transmission lamps, due to listening in on a conversation, are correspondingly reduced.

(H) P. B. X. Party can Flash P. B. X. Operator If Trunk Listening Key is accidentally Left in its Operated Position:

The holding portion of the trunk circuit is so designed that the accidental leaving of the listening key in its operated position will not tie-up the trunk circuit. The hanging up of the receiver at the unattended P. B. X. telephone will cause the holding lamp (green) to give a steady light. Then if the P. B. X. party wishes immediate attention, the working of the back-switch slowly up and down will cause this green lamp to flash and thereby attract the operator's attention for immediate service.

The green lamp is intended solely to indicate to the operator that the trunk is being "held" by the mechanism of the P. B. X. switchboard which is under her control. Thus any lighting of the green lamp demands the P. B. X. operator's immediate attention.

4—Direct Line Night Service over Trunk

One or more P. B. X. lines may be connected to a trunk line for direct connection with the central office for night service as follows:

By throwing the associated connecting keys of the desired P. B. X. lines and the trunk line on to the same connecting circuit and cutting off the battery from the P. B. X. switchboard by depressing the battery switching key. This will establish direct connection, enabling the P. B. X. stations to call and be called by the central office operator.

Resistance of Trunk Lines and P. B. X. Line Wires

In order to insure the positive operation of the central office line and supervisory relays, it is essential that the resistance of the trunk line wires do not exceed 500 ohms in resistance, when those central office relays have a standard adjustment for operation through 1000 ohms. This is due to the fact that the trunk holding coil in this cordless P. B. X. switchboard is 300 ohms in resistance and taken together with the foregoing line resistance, will give 1000 ohms, or the total amount of resistance through which the central office relays will work. If the central office relays will work through a resistance greater than 1000 ohms, then the trunk line resistance can be correspondingly greater. The resistance of the P. B. X. line wire should not exceed 200 ohms for reasons similar to the above.

Standard Cordless P. B. X. Switchboards for Special Use

The trunk circuit in the standard cordless P. B. X. switchboard which has been described, is designed to operate in conjunction with any type or make of centrally-operated, Central Energy system. This trunk circuit may, however, be adapted to operate in connection with subscriber-operated (so-called automatic) systems by slight changes without sacrificing any of its good features.

Trunk for Connecting to Subscriber Operated Switchboard

When the central office is of the so-called Automatic type, where the subscribers call each other by means of dials, and where the system operates on the two-wire, central battery plan, then the standardized P. B. X. switchboard can be used by making only one single change in the key equipment, wiring being provided in the switchboard cable for the dial. The flashing key is replaced by a holding make-before-break key which is wired to a dial, the latter being common to the P. B. X. switchboard.

(A) Operation of Switchboard:

The operation of the switchboard is the same in every respect as when used in connection with a centrally-operated, Central Energy system, excepting the Trunk Calls outgoing from the P. B. X. switchboard.

(B) Trunk Calls to Automatic Central:

Calls from the P. B. X. telephones to the Automatic office are made by the P. B. X. operator as follows:

First the dial switching key of the trunk to be used (key in lower horizontal row associated with trunk) is depressed so as to connect the dial to the trunk and at the same time establishes the holding connection across the trunk circuit.

The green lamp of this particular trunk, lights to show that the holding condition is existing on the trunk and remains lighted until either the trunk is connected to a P. B. X. line and answered by a P. B. X. party or is released by the P. B. X. operator.

(C) Trunk Automatically Held after Dialing:

The P. B. X. operator dials the number desired on the Automatic Central Office and then returns the dialing key to normal position. The trunk line may be connected to the P. B. X. line circuit by means of the connecting keys, either before or after the number is dialed, as the circuit is held by the holding condition established in the trunk as described in the above paragraph.

(D) Connection in Central Office Controlled by P. B. X. Telephone:

The connection in the central office is automatically controlled by the P. B. X. telephone, so that when the P. B. X. party hangs up his receiver the central office apparatus is released by the opening of the circuit and the trunk is immediately available for another incoming call, even before the P. B. X. operator has returned the connecting keys to this normal position.

(E) Trunk Disconnect:

When the P. B. X. party is through talking and hangs up the telephone receiver, the central office disconnect signal is immediately operated; also the disconnect lamp (red) of the P. B. X. switchboard connecting circuit is lighted. Either the central office operator or the P. B. X. operator can disconnect first, without causing any difference in the disconnect functions of the P. B. X. or central office switchboard.

(F) Trunk Cleared of Unless Bridged Apparatus During Conversation:

This trunk is so designed that when talking condition is established, the trunk calling relay and holding coil are removed

No. 104-C Cordless—10 Lines Capacity (Cont.)

(H) Trunk Flashing Key:

If for any reason the P. B. X. operator wishes to flash the supervisory lamp at the central office when a P. B. X. party is on the connected line, this can be done by simply depressing the non-locking key in the lower horizontal row associated with the trunk. This opens the trunk circuit as long as the key is held in the operated position, or the circuit can be intermittently opened and closed by the corresponding operating of this key. As a result of this opening and closing of the trunk line circuit at the P. B. X. switchboard, the central office supervisory lamp will be flashed, which is the customary

indication for recall or for immediate attention from the central office operator.

The P. B. X. listening key can be thrown on to the connecting circuit when "fishing back" so that the P. B. X. operator's telephone set will be on the circuit in readiness so that the P. B. X. operator can respond immediately when the central office operator comes in on the circuit.

This flash circuit is arranged to eliminate disagreeable clicks which would otherwise be introduced in the connected P. B. X. party's telephone, and in the operator's telephone when operating this key.

Standard Equipment, Weight and Price of the No. 104-C Cordless P.B.X. Switchboard

To order a Stromberg-Carlson No. 104-C Cordless P. B. X. Switchboard it is necessary to specify only the code number as follows:—

Code No.	Description	Net Price
104-C	Cordless P. B. X. switchboard in quartered-oak cabinet;	\$315.50

finished in golden oak; operates off 22 volt battery supply; wired for, and equipped with—10 lines, 3 trunks and 5 connecting circuits. Shipping Weight 105 pounds.

Test Set for P. B. X. Trunk Circuit Plates (For the No. 101 and the No. 102 Switchboards)



No. 3-A Test Set for P. B. X. Circuit Plates

The development of the Trunk Circuit Plate and the standardization of Stromberg-Carlson P. B. X. Switchboards so that the Trunk Circuit Plates could be interchanged from one P. B. X. switchboard to another P. B. X. switchboard has developed a

demand for the Stromberg-Carlson No. 3-A Test Set. This test set is designed for the purpose of thoroughly and quickly testing trunk circuit plates.

The No. 3-A Test Set contains all the apparatus required to put trunk circuit plates through their proper sequence of operations; it duplicates the operation of the trunks as they exist in practice. With the No. 3-A Test Set a trunk circuit plate is tested by simply slipping it into grooved slots—no soldering or other connecting work is required,—there is a shoe on the No. 3-A Test Set which has spring clips that engage the terminals of the trunk circuit plate. The test is then made quickly and accurately by simply manipulating keys and by observing the action of the lamps.

Every telephone company using several Stromberg-Carlson P. B. X. Switchboards should have a No. 3-A Test Set in its repair shop. This permits the centralizing of the repair work on all trunk circuit plates at one point,—then it is necessary to carry in stock only a couple of extra trunk circuit plates which can be used to replace defective circuit plates that are being tested.

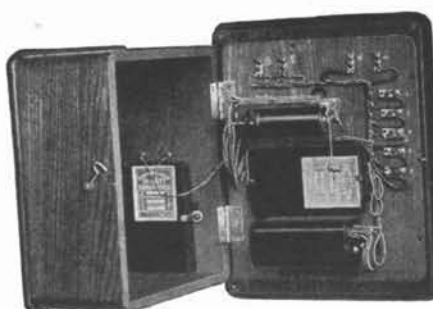
Detailed instructions are furnished with each No. 3-A Test Set.

Code No.	Description	Price
3-A	Test Set for the Trunk Circuit Plates of the No. 101 and the No. 102 P. B. X. Switchboards.	\$135.00

No. 5 Type P. B. X. Ringing Converter



Closed View No. 5 Type P. B. X.
Converter



Open View No. 5 Type P. B. X.
Converter

This piece of apparatus converts 20 to 22 volt battery current to 25 cycle ringing current.

The equipment consists of a vibrator with pole-changing contacts, a transformer of the step-up type and a condenser to suppress contact sparking. These pieces of apparatus are neatly connected by means of a hand-formed cable which is brought out to four binding posts—two for the incoming battery current and two for the outgoing ringing current.

The complete complement of parts and the wiring is contained in a compact oak cabinet which is finished in dull golden oak. This cabinet measures only 9 x 11¼ x 5⅝ inches. It is provided with a hinged cover and it is equipped with drillings for four mounting screws.

The No. 5 Type Ringing Converter will carry a heavy load—it will ring simultaneously as many as forty bells bridged across one circuit.

The No. 5 Type Ringing Converter operates economically—it consumes only .03 of an ampere when ringing without load, only .09 of an ampere when ringing one bell and only .12 of an ampere when ringing eight bells.

The No. 5 Type Ringing Converter is built to stand up under hard usage—it consists of only a few parts all of which are, not only simple in design, but substantial in construction. It is self-protecting—it cannot be injured by ringing on a short-circuited line and it requires neither auxiliary lamps nor other resistances in the ringing leads.

The No. 5 Type Ringing Converter is readily connected to Stromberg-Carlson P. B. X. Switchboards—each No. 101 or No. 102 P. B. X. Switchboard is wired so that it may be supplied with ringing current from the No. 5 Converter by merely adding a No. 202-A Starting Relay. The complete wiring is provided in either of these switchboards for the control of the converter through the starting relay. The arrangement is such that the converter will be set in operation whenever a calling plug of a P. B. X. cord circuit is inserted in the jack of a P. B. X. line or whenever the P. B. X. operator answers a trunk call from the main exchange. In either case, the converter continues to operate until the called party responds or the operator abandons her attempts to obtain an answer.

List No.	Description	Price
5-A	Ringling Converter to be used only where two sets of storage batteries are supplied.	Without the No. 202-A Starting Relay—\$26.00. With the No. 202-A Starting Relay—\$28.20.
5-B	Identical to the No. 5-A Converter excepting that it is equipped with a noise-killing device and therefore, must always be specified where the P. B. X. is supplied from the current of but one battery.	Without the No. 202-A Starting Relay—\$28.00. With the No. 202-A Starting Relay—\$30.20

Tungar Rectifiers—for Battery Charging



List No. 2816 Tungar Rectifier

Where a P. B. X. switchboard cannot derive its battery supply from a central telephone exchange there is no better source of operating current than that afforded by a Tungar Rectifier floating a small storage battery.

That type of rectifier is designed to operate continuously across the P. B. X. battery and to deliver just enough current to keep the battery normally charged.

Simple to Install—The Tungar Rectifier is equipped with two double conductor cords. The installation is completed by connecting one of those cords to any convenient lamp socket, provided the lamp socket is on a 60 cycle 105-125 volt circuit and

Tungar Rectifiers (Cont.)

by connecting the other cord to the battery—the red lead to the positive pole—the black and white lead to the negative pole. The Tungar Rectifier requires only a small space. Its dimensions are $6\frac{1}{4}$ x $9\frac{1}{4}$ x $7\frac{1}{8}$ inches.

Easy to Operate—Just turn on the switch in the lamp socket; regulate the resistance stick until the proper charging current has been obtained and then inspect the battery on monthly periods.

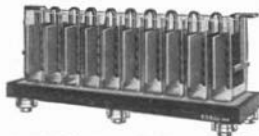
Economical to Operate—The energy taken from the lighting circuit with a .5 ampere 30 volt charge, will be less than 60 watts. The cost per day for this current at a \$.05 rate will be about \$.07. Further economy is accomplished with this rectifier because its constant operation requires the installation of only a minimum size of battery.

List No.	Description	List Price
2814	Tungar Rectifier operates off 60 cycle 115 volt circuit (voltage limits 105-125). Delivers 30 volt charging current at .3 to .5 amperes.	\$50.00
2815	Renewal Bulb for List No. 2814	5.00 net
2816	Tungar Rectifier complete, of the 2 bulb type, with List No. 2817 external reactance and with ammeter. Operates from 60 cycle 115 volt circuit (voltage limit 105-125). Delivers 30 volt charging current at 3 amperes.	110.00
2818	Renewal Bulb for List No. 2816.	7.00 net

Battery

The following battery will answer those requirements:—

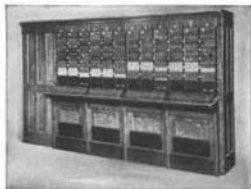
List No.	Description	List Price
2813	Battery for P. B. X. installations of not over 100 lines capacity, and for floating continuously across a Tungar Rectifier. This battery includes:—twelve glass jars (one extra), eleven elements, eleven glass covers, two bolt connectors, two terminal lugs, one hydrometer, one wooden sand tray, six single petticoat insulators and electrolyte. The capacity of this battery is 12 ampere hours and its normal charging rate is $1\frac{1}{2}$ amperes.	\$62.49



Typical P. B. X. Battery with Sand Tray and Insulators

As stated in the preceding paragraphs a P. B. X. Switchboard installation which includes a Tungar Rectifier also requires a small battery—one only large enough to absorb the noise of the rectifier and to carry over surges in the traffic load.

Multiple Switchboards Super-Service—for Central Energy Exchanges



Front Perspective of Four No. 12 Super-Service Switchboard Sections with Cable Section

Stromberg-Carlson Super-Service Switchboards are designed for Central Energy Multiple Exchanges of any size—from two positions up. These switchboards are the result of over 30 years' experience



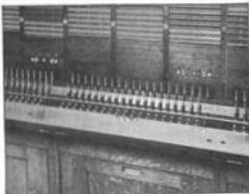
Rear Perspective of Four No. 12 Super-Service Section with Cable Section and with Terminal Section

building apparatus for telephone operating companies. They are furnished with many novel features not only in circuit design but in apparatus arrangement.

Multiple Switchboards (Cont.)

The line equipment, however, is of the standard well-known three wire bridging type which consists of a line relay, a cut-off relay, a lamp signal and a jack. This line circuit may be arranged in an associated lamp multiple with one or more appearances of multiple lamps or it may be arranged with auxiliary answering jacks. The exact arrangement of the lamp signals for most economical operating depends upon the size of the exchange.

The cord circuits are each equipped with the



Close-Up View of Keyboard and Face Layout for No. 12 Super-Service Section

following seventeen features most of which are exclusive characteristics of Stromberg-Carlson Super-Service Switchboards. These features provide not only remarkable speed in operating but remarkable accuracy in operating.

Operator's Bar—prevents the operator from plugging in on an established connection and makes it impossible for more than one operator to answer a call.

Advance Plugging-In—speeds up service by permitting the operator to plug up one call while she is answering a previous call,—the operator's hand set is held from the second call until she has disposed of the first call.

Operator's Listening Indication—indicates by means of a dimmed answering supervisory lamp which cord circuit is bridged by the operator's set. This takes the guesswork out of listening without keys. It relieves the operator from the fatigue that is due to the mental strain of studying cord location.

Operator's Secret Service—prevents the operator from listening upon an established connection.

Audible Busy Test—guards against connecting a party with a busy line,—it gives a distinctive series of clicks in the operator's ear when she tests the thimble of the called party's multiple with the tip of a calling plug.

Instantaneous Ringing Cut-Off—protects the called subscriber from being rung in the ear—it cuts off the ringing current the instant the called subscriber answers.

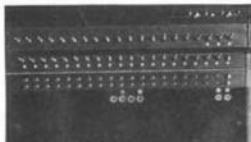
Calling Subscribers Ringing Control—stops the ringing when the calling subscriber abandons the call and therefore not only saves ringing current but relieves the operator of close supervision.

Reverting Call Ringing—assists subscribers on the same line to ring one another because it provides

facilities to ring a subscriber with only the calling cord plugged up. This not only eliminates reverting call jacks but also prevents confusion in the handling of the reverting calls.

Operator's Cut-In—connects the operator with the calling party the instant an answering cord is plugged into the calling party's line. This feature also eliminates the listening key and disconnects the operator from the cord circuit the instant the ringing is started.

Operator's Ringing Control—requires but one push of the proper frequency button to start the ringing. It necessitates but four ringing buttons common to all the cord circuits on an operator's position—one button for each ringing frequency and



Close-Up View, Looking Vertically Down Upon the Keys and Plugboard of Super-Service Switchboard Section No. 12

it permits fast touch methods of key location in place of the slow sight methods of key location that were necessary on older types of switchboards which bristled with sixty or more ringing control buttons to an operator's position.

Machine Ringing—continues the ringing intermittently and independently of the operator's ringing control buttons. It requires no supervision on the part of the operator.

Ringing Tone—consists of a uniform ringing tone which is independent of either ringing frequency or of line length. It denotes to the calling subscriber that the operator has established ringing conditions. This feature makes it unnecessary for the operator to lose time informing the subscribers that she is ringing their parties.



View of Open Keyboard, on Super-Service Section No. 12

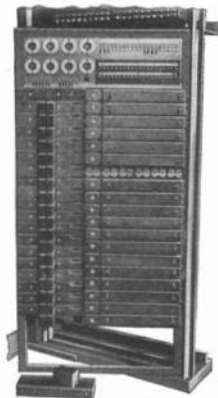
Multiple Switchboards (Cont.)

Dark Keyboard—darkens both supervisory lamps during the ringing period. This eliminates confusion of signals and consequently relieves the operator of studying signals.

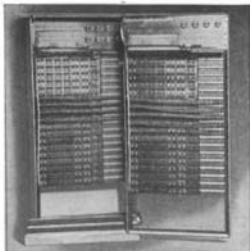
Positive Supervision—informs the operator of each step she is to take on a connection. This reduces operator's nerve strain to a minimum.

Flash Recall—flashes the answering supervisory lamp and therefore helps the calling subscribers regain the operator's attention to his recall.

condenser, etc. The latter parts obviously are not essentially handy to the operator. This reduction in the number of keys between the keyboard apparatus and the remaining apparatus of the cord circuit makes it practical to place all of the cord circuit apparatus, with the exception of what mounts before the operators, out in the terminal room where it is convenient to inspect and maintain.



Cord Circuit Apparatus Section of Relay Bay Showing One Gate Partly Closed



Cord Circuit Apparatus Section of Relay Bay Showing One Gate Open



View of No. 7-A Cord Circuit Plate

Call Registration—registers accurately the number of calls answered by each operator. This feature not only shows the value of each operator but also provides data for traffic studies.

Emergency Ringing—furnishes emergency ringing facilities when only uninterrupted ringing current is available.

All the above mentioned features are essential for fast and accurate operating. The Operator's Ringing Control Feature, however, not only has helped add speed with accuracy but has permitted many remarkable improvements in central office layout and in keyboard layout.

The reason why the Operator's Ringing Control Feature permits improvements in central office layout is because fewer wires are required between the cord circuit's keyboard apparatus and the remaining parts of the cord circuit such as; relays,

The reason why the Operator's Ringing Control Feature permits improvements in keyboard layout is because fewer keys are required to an operator's position. With Operator's Ringing Control the indicating four party ringing keys individual to each cord circuit are eliminated. The four party ringing is accomplished by only four ringing control buttons common to an operator's position,—one ringing control button for each frequency.

All of the above mentioned circuit features and layout improvements combined in one switchboard speed up service to a point where a change from the conventional switchboard section design is essential to place sufficient lines before an operator so that she can work to the limit of her possibilities.

The No. 12 section is built especially for the Stromberg-Carlson Super-Service Switchboard. It is a switchboard section which is built to give operators an opportunity to reach sufficient calls so they can work to the limits of the possibilities that are

Multiple Switchboards (Cont.)

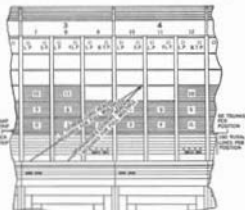
derived by the seventeen Super-Service Switchboard Features. The following are the outstanding details in the design of this section:

Capacity 3000 lines in a six panel associated lamp multiple.

Capacity 1200 lines in a five panel associated lamp multiple.

Short cord reach to maximum capacity.

Shallow keyboard pockets especially designed to give maximum knee room to the operators.



Front Elevation of Two No. 12 Super-Service Switchboard Sections with 1200 Line Lamps and Associated Jacks Arranged in a 5-Panel Multiple

Accessibility of both the answering and the calling plugs.

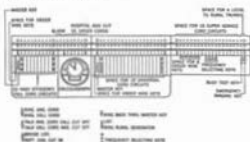
Piano hinge extending entirely across the width of the keyboard.

Smooth formica veneer over the entire keyboard's surface—finished in dead black.

A light weight, swinging relay gate for mounting the miscellaneous relays, impedance coils and condensers.

Terminal board for mounting the position fuses, enclosed under a metal fireproof covering.

Convenient location of cord circuit terminals for connecting the keyboard apparatus with the relays and condensers which are located in the terminal room.

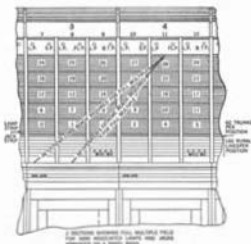


Layout of—One Toll Position, One Rural Position and One Local Super-Service Position, in Three No. 12 Super-Service Sections

Simplicity of keyboard due to the absence of all individual four party keys.

Accessible location of both the answering and the calling plugs. Each level of plugs is raised so as to be in convenient position for quick handling.

Sloping position of the supervisory lamps so as to provide a prominent signal to the operator.



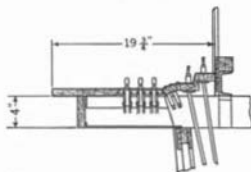
Front Elevation of Two No. 12 Super-Service Switchboard Sections with 3000 Line Lamps and Associated Line Jacks Arranged in a Six-Panel Multiple

Heavy steel frame reinforcement which extends from the roof of the section to the floor and supports face equipment, multiple cable, relay gate and terminals.

Fire screen protection designed so as to completely isolate the multiple cables, multiple jacks and multiple lamps from the lower portion of the section.

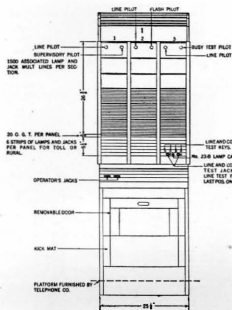
Cord rack design which makes it easy to change cords.

Swinging gate for miscellaneous relays, impedance coils and condensers.

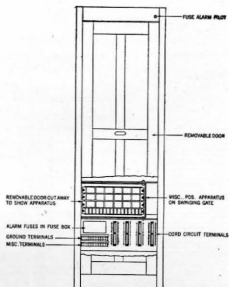


Cross Sectional View Exhibiting Design of the Keyboard as Furnished by either Toll or Rural Positions

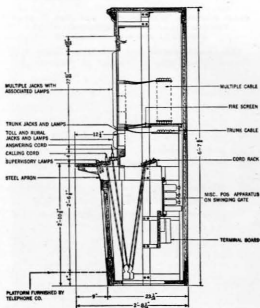
Multiple Switchboards (Cont.)



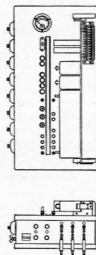
Front Elevation of No. 12 Super-Service Section



Rear Elevation of Super-Service Section No. 12



Cross Sectional View of No. 12 Super-Service Section

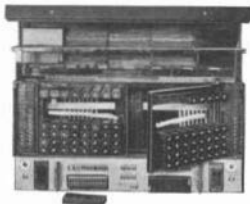


Test Set for Checking the Operation of the No. 7-A Cord Circuit Plate

Toll Switchboards



Front Perspective of Standard Toll Section



Rear Perspective of Standard Toll Section

Stromberg-Carlson Toll Switchboards are found in many of our nation's important toll centers.

They are designed to meet the most exacting requirements of toll service.

Their outstanding features are briefly as follows:

Circuit design and apparatus design that ensure not only unexcelled operating efficiency, but also unexcelled transmission efficiency.

Convenient sized units of two positions per unit.

Rigid steel self-supporting framework, covered with high grade woodwork which will be furnished in either dull golden oak or mahogany finish.

Provision for joining adjacent sections rigidly together, bolting steel framework to steel framework, without any interposing woodwork. This forms a continuous face equipment.

Roomy keyshelves—very deep and very wide with provision for mounting a calculagraph between operators.

Remarkable accessibility ensured by horizontally swinging relay-gates, removable front and rear panels, hinged keyshelves and ample spacing of all apparatus.

Stromberg-Carlson engineers will gladly furnish additional data regarding toll boards, upon request.



A Stromberg-Carlson Toll Switchboard in Operation

Chief Operators' Information and Monitors' Switchboards



Front Perspective Two-Position Chief Operator's Desk



Rear Perspective, Two-Position Chief Operator's Desk, with Panels in place



Front Perspective, Single Position Chief Operator's Desk



Rear Perspective, Two-Position, Chief Operator's Desk, with Panels removed

In central office installations means are necessary for supervising and for informing not only the operators but also the subscribers.

Stromberg-Carlson Chief Operator's, Information, and Monitor's Switchboards provide highly developed facilities for such requirements.

The operators' answering time is checked by lamps which are multiplexed from the line pilots of each "A" operator's position.

The operators' disconnect time is checked by lamps which are multiplexed from the supervisory pilots of each "A" operator's position.

The operators' conversations with subscribers and also the subscribers' conversations with the operators are checked by means of noiseless tape to each operator's talking circuit.

Instructions are given to all the operators by means of Instruction Trunks which go directly to the operators' telephone circuits.

The service to particular subscribers is checked by means of Observation Trunks which terminate on easily-shifted plugs. These plugs are located in the terminal room where they readily are connected temporarily with any subscribers line.

Information is given to subscribers by means of trunks called Information Trunks. These trunks are generally multiplexed before the "A" operator on jacks which appear in the Outgoing Trunk Multiple Space and are terminated before the information operator on either lamp and key-ended trunks or on lamp and jack-ended trunks. These information trunks relieve the "A" operator of answering questions,—in fact, they relieve the "A" operators of every duty excepting the making of regular connections in the most efficient manner.

Stromberg-Carlson Chief Operator's, Information and Monitor's Switchboards are made to meet the particular requirements of any central office. In small offices one combination chief operator's, information and monitor's switchboard may answer all requirements. In larger offices, however, conditions often require a separate information switchboard.

The wide experience of Stromberg-Carlson engineers in providing proper facilities for some of the World's largest telephone exchanges renders them capable of furnishing valuable data to any operating company that is in need of Chief Operator's, Information or Monitor's switchboards. Such data will be supplied upon request and without obligation.

Wire Chief's Switchboard



Single-Position Wire Chief's Desk

A first-class wire chief's desk, table, or turret is indispensable to any modern telephone system. It takes the guesswork out of trouble-hunting. It makes the work of the wire chief and the maintenance forces far more effective. It not only indicates the kind of trouble but also the place of trouble. It should be a part of every central energy telephone plant.

Stromberg-Carlson Wire Chief's Switchboards are supplied in desk types, upright floor types, and wall types. They are equipped with high grade apparatus and well-designed circuits. Provision is made for all of these tests:

1. Continuity Tests.
2. Tests for Short Circuits.
3. Tests for Grounds.
4. Tests for Crosses with other telephone or current carrying lines.
5. Location of Crosses and Grounds (with Wheatstone Bridge).
6. Measuring Voltages of Batteries.
7. Measuring of Resistances.

Prices and detailed description matter will be furnished upon request.

Switchboard Accessories

Main Distributing Frames



Terminal Room, Showing Relay Rack Between the M. D. F. and the I. D. F.

Stromberg-Carlson Main Distributing Frames for central energy installations are furnished in two standard types:

In verticals of 100 line capacity on the arrester side and 125 line capacity on the horizontal (street) side.

In verticals of 160 line capacity on the arrester side and 200 line capacity on the horizontal (street) side.

The 100 line capacity verticals are essential for the smaller Super-Service Switchboard installations where the relay racks are not equipped with gates for the position relays and where only one operator's



Terminal Room, Showing I. D. F. Between the M. D. F. and the R. R.

position of relay equipment is installed to a relay bay.

The 160 line capacity verticals are essential for the larger Super-Service installations where relay racks are equipped with gates for the position relays and where two positions of relay equipment are installed to a relay bay.

Both of the above mentioned types of main distributing frames are rigidly constructed of bar iron and steel angles. This ironwork is thoroughly rust-proofed with a durable black paint.

Excepting upon initial installations, these main distributing frames are provided in sections of three verticals to a bay (corresponding to a bay of relay

Switchboard Accessories (Cont.)—Storage Batteries

rack ironwork). The initial installation, however, always consists of at least four verticals. This is because the first vertical of the initial installation is never used for regular subscribers' lines but is reserved for miscellaneous circuits. After the initial installation, extensions are made in multiples of three verticals at a time.

Stromberg-Carlson Main Distributing Frames—unless otherwise specified—are equipped with arrester mounting bars which are arranged to take Cook's

Nos. 100 and 105 Protectors in banks of 20 pairs. Mounting bars will be furnished, however, for any other standard types of protectors.

Priests and equipment sketches will be supplied, free of charge, for any main distributing installation. When asking for such data include:—the number of verticals required; whether 100 line capacity verticals or 100 line capacity verticals are wanted; the ceiling height; the number of pairs to a street cable; and the type of protector which is preferred.

Storage Batteries

Chloride Accumulators are furnished on all complete Stromberg-Carlson central energy telephone office installations.

These storage batteries are required in central energy installations for the following purposes:

Main Battery which is required to provide transmission battery current and to supply signalling battery current. This battery is usually of 20, 24, 40 or 48 volts.

Booster Battery which is required to increase the main battery voltage for toll transmission. This battery is necessary only on 20 and 24 volt systems and is utilized to raise the battery potential up to approximately 48 volts so as to improve the transmission over long distance lines.

"Noise Killer" Battery which is required to absorb the sharp wave forms generated by a harmonic converter so as to eliminate the possibility of the harmonic converter making the talking circuits noisy. A ten cell battery is always used for this purpose. The size of the

battery depends upon the amount of load upon the converter.

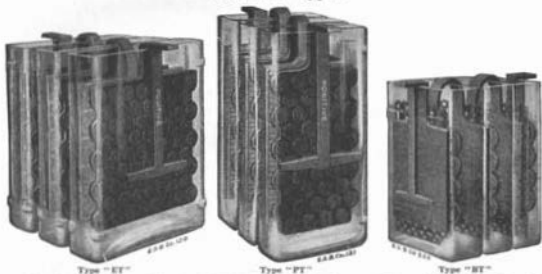
The desirable size for a main battery is dependent upon the number of lines, the calling rate, the answering time, the length of conversation period, the time required for the operator to restore an abandoned connection, the voltage of the telephone system, and the reliability of charging facilities.

Booster batteries and "noise killer" batteries are usually small batteries, of eight to forty ampere-hour capacity for the booster battery and six to twenty-four ampere-hour capacity for the "noise killer" battery.

The voltage of individual cells—all capacities—is slightly over two volts on open circuit, when fully charged, but during the discharge period—at the eight hour rate—drops gradually to one and seventy-five hundredths volts at the end of the discharge period.

In telephone practice an eleven cell battery is considered a twenty-four volt battery and a twenty-two cell battery a forty-eight volt battery.

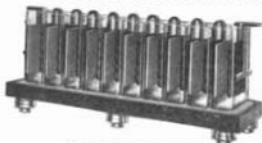
Two-Plate Types



Manufacturers' Type	ET	CT	PT	ET
Discharge rate	8	13½	3	4½
Discharge rate in Amperes for:				
5 hours	1	2	4½	6½
3 hours	1½	3	6	9
Normal Charging Rate	8½	11½	3	4½
Outside dimensions				
Length	11½	21½	21½	21½
Width	3½	6¼	6	8¾
Height	6¾	8	12	11

Manufacturers' Type	ET	CT	PT	ET
Weight of electrolyte required for one cell, in pounds	1	2½	1½	5½
Weight of cell complete with electrolyte in glass jar, in pounds	3½	7½	13½	22

Switchboard Accessories (Cont.)—Storage Batteries



Ten-Cells Type CT on Sand Tray

When ordering complete storage battery outfits of the two plate type as above listed the order should read as follows: One complete (10, 11, 20 or 22) cell type (BT, CT, FT or ET) storage battery outfit.

A complete storage battery outfit when ordered as indicated in the preceding paragraph includes the following requirements:

One positive terminal plate for each set of batteries.

One negative terminal plate for each set of batteries.

One element (couple) for each cell in a battery,—omitting one cell. In other words: ten cells require but nine elements.

One glass jar for each cell in the battery (one extra jar to take care of breakage).

Two connectors for each set of cells.

One floating mercury thermometer.

One hydrometer for each set of cells.

One wood sand tray for each set of cells.

Six glass insulators to each multiple of 10 or 11 cells.

Two terminal lugs for each set of cells.

One filling of electrolyte with (10% excess electrolyte to cover evaporation).

One set of instructions.

Type "D"—Multi-Plate



Type "D" with Glass Sand Tray

Size of Plates 6 by 6 inches

Manufacturers Type		D-3	D-5	D-7
Discharge Rate in Amperes for:	8 hours	21½	5	7½
	5 hours	3½	7	10½
	3 hours	5	10	15
Normal Charge Rate		2½	5	7½
Outside dimensions of glass jars, in inches:	Length	3½	5½	6½
	Width	7½	7½	7½
	Height	10¼	10¼	10¼
Weight of electrolyte in glass jars, in pounds		7½	11½	14½
Weight of cell complete with the electrolyte in glass jars, in pounds		20½	32½	42½
Height of cell from bottom of glass jar to top of strap, in inches		15½	15½	15½

Manufacturers Type		D-9	D-11	D-13
Discharge Rate in Amperes for:	8 hours	10	12½	15
	5 hours	14	17½	21
	3 hours	20	25	30
Normal Charge Rate		10	12½	15
Outside dimensions of glass jars, in inches:	Length	8¼	9¼	11
	Width	7½	7½	7½
	Height	10¼	10¼	10¼
Weight of electrolyte in glass jars, in pounds		17½	20	24
Weight of cell complete with the electrolyte in glass jars, in pounds		53¼	62¼	74½
Height of cell from bottom of glass jar to top of strap, in inches		15½	15½	15½

When ordering complete storage battery outfits of this type the order should read as follows: one complete (10, 11, 20 or 22) cell type (D-3, D-5, D-7, D-9, D-11 or D-13) storage battery outfit.

A complete storage battery outfit when ordered as indicated in the preceding paragraph includes the following requirements:

One element for each cell.

One set of separators for each cell (5 extra wood separators for each set of cells).

One glass jar for each cell (one extra for each set of cells to cover breakage).

One hydrometer for each set of cells.

One thermometer for each set of cells.

One glass cover for each set of cells (one extra to cover breakage).

One glass sand tray for each cell (one extra for each set of cells to cover breakage).

One bolt connector for each cell (one extra).

One filling of electrolyte for all the cells in the set (10% excess of electrolyte to cover evaporation).

One set of instructions.

Switchboard Accessories (Cont.)—Storage Batteries

Type "E"



Type "E-7" with Glass Sand Tray

Size of Plates 7 $\frac{3}{4}$ by 7 $\frac{3}{4}$ inches

Manufacturer's Type	E-5	E-7	E-9
Discharge Rate in			
Amperes for:			
8 hours	10	15	20
5 hours	14	21	28
3 hours	20	30	40
1 hour	40	60	80
Normal Charge Rate	10	15	20
Outside dimensions			
Length of glass jar, in	5 $\frac{3}{8}$	6 $\frac{1}{8}$	8 $\frac{1}{8}$
Width	9 $\frac{1}{8}$	9 $\frac{1}{8}$	9 $\frac{1}{8}$
Height	12 $\frac{3}{4}$	12 $\frac{3}{4}$	12 $\frac{3}{4}$
Weight of electrolyte in glass jar, in pounds	15 $\frac{1}{2}$	20 $\frac{1}{2}$	25 $\frac{1}{2}$
Weight of cell complete with the electrolyte in glass jar, in pounds	58	80	100 $\frac{1}{4}$

Manufacturer's Type	E-5	E-7	E-9
Height of cell from bottom of glass jar to top of strap, in inches	17 $\frac{3}{4}$	17 $\frac{3}{4}$	17 $\frac{3}{4}$
Manufacturer's Type	E-11	E-13	E-15
Discharge Rate in			
Amperes for:			
8 hours	25	30	35
5 hours	35	42	49
3 hours	50	60	70
1 hour	100	120	140
Normal Charge Rate	25	30	35
Outside dimensions			
Length of glass jar, in	9 $\frac{1}{8}$	11	12 $\frac{3}{4}$
Width	9 $\frac{1}{8}$	9 $\frac{1}{8}$	9 $\frac{1}{8}$
Height	12 $\frac{3}{4}$	12 $\frac{3}{4}$	12 $\frac{3}{4}$
Weight of electrolyte in glass jar, in pounds	30 $\frac{1}{4}$	35 $\frac{1}{4}$	40
Weight of cell complete with the electrolyte in glass jar, in pounds	121 $\frac{1}{2}$	141 $\frac{1}{4}$	162 $\frac{3}{4}$
Height of cell from bottom of glass jar to top of strap, in inches	17 $\frac{3}{4}$	17 $\frac{3}{4}$	17 $\frac{3}{4}$

When ordering complete storage battery outfits of this type the order should read as follows: one complete (10, 11, 20 or 22) cell type (E-5, E-7, E-9, E-11, E-13 or E-15) storage battery outfit.

A complete storage battery outfit when ordered as indicated in the preceding paragraph includes the following requirements:

One element for each cell.

One set of separators for each cell (5 extra wood separators for each set of cells).

One glass jar for each cell (one extra for each set of cells to cover breakage).

One hydrometer for each set of cells.

One thermometer for each set of cells.

One glass cover for each set of cells (one extra to cover breakage).

One glass sand tray for each cell (one extra for each set of cells to cover breakage.)

One bolt connector for each cell (one extra).

One filling of electrolyte for all the cells in the set (10% excess electrolyte to cover evaporation).

One set of instructions.

Type "F"

Size of Plates 11 by 10 $\frac{1}{2}$ inches

Manufacturer's Type	F-9	F-11	F-13
Discharge Rate in			
Amperes for:			
8 hours	40	50	60
5 hours	56	70	84
3 hours	80	100	120
1 hour	160	200	240
Normal Charge Rate	40	50	60
Outside dimensions			
Length of Style A glass jar, in	8 $\frac{1}{8}$	9 $\frac{1}{8}$	11
Width	12 $\frac{3}{8}$	12 $\frac{3}{8}$	12 $\frac{3}{8}$
Height	17	17	17
Outside dimensions of lead-lined wood tanks, in inches			
Length	13 $\frac{3}{8}$	15 $\frac{1}{8}$	16 $\frac{3}{8}$
Width	15	15	15
Height	20 $\frac{3}{8}$	20 $\frac{3}{8}$	20 $\frac{3}{8}$

Manufacturer's Type	F-9	F-11	F-13
Weight of electrolyte, in pounds			
In Style A glass jar	55	62	69
In wood tank	86	99	111
Weight of cell complete, with glass jar			
electrolyte, in			
wood	174 $\frac{3}{4}$	201 $\frac{3}{4}$	229
tank	250	292	332
Height of cell in Style A glass jar, from bottom of sand tray to top of strap, in inches	23 $\frac{3}{4}$	23 $\frac{3}{4}$	23 $\frac{3}{4}$

Switchboard Accessories (Cont.)—Storage Batteries

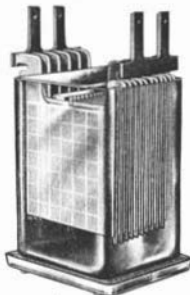


Type "F" in Style "B" Glass Jar and with Wood Sand Tray

Manufacturers' Type	F-15	E-17	F-19
Discharge Rate in Amperes for:			
8 hours	70	80	90
3 hours	98	112	126
1 hour	280	320	360
Normal Charge Rate	70	80	90
Outside dimensions of Style A glass jars, in inches:			
Length	12 $\frac{3}{4}$		
Width	12 $\frac{3}{4}$		
Height	17		
Outside dimensions of lead-lined wood tanks, in inches:			
Length	18 $\frac{3}{4}$	20	21 $\frac{3}{4}$
Width	15	15	15
Height	20 $\frac{3}{4}$	20 $\frac{3}{4}$	20 $\frac{3}{4}$
Weight of electro- lyte, in pounds:			
In Style A glass jar	76		
In wood tank	123	133	145



Type "F" Cell in Lead-Lined Tank



Type "F" in Style "A" Glass Jar and with Glass Sand Tray

Manufacturers' Type	F-15	F-17	F-19
Weight of cell (In Style A complete, with glass jar, electrolyte, in wood in pounds: tank.....)	258	372	411 452
Height of cell in Style A glass jar, from bottom of sand tray to top of strap, in inches.....	23 $\frac{3}{4}$		

When ordering complete storage battery outfits of this type, in style A glass jars, the order should read as follows: one complete (10, 11, 20 or 22) cell type (F-9, F-11, F-13, F-15, F-17 or F-19) storage battery outfit in style A glass jars.

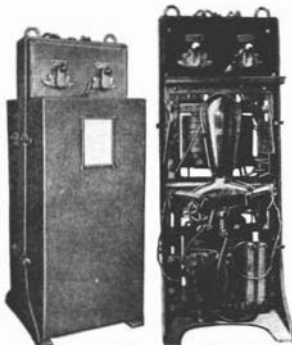
A complete storage battery outfit when ordered as indicated in the preceding paragraph includes the following requirements:

- One element for each cell.
- One set of separators for each cell (5 extra wood separators for each set of cells).
- One glass jar for each cell (one extra for each set of cells to cover breakage).
- One hydrometer for each set of cells.
- One thermometer for each set of cells.
- One glass cover for each set of cells (one extra to cover breakage).
- One glass sand tray for each cell (one extra for each set of cells to cover breakage).
- One bolt connector for each cell (one extra).
- One filling of electrolyte for all the cells in the set (10% excess electrolyte to cover evaporation).
- One set of instructions.

Where lead lined tanks are required write for complete specifications. Include with your request for specifications, the number of cells required and the ampere hour capacity of the battery necessary to properly handle the load.

Battery Charging Equipment—Rectifiers

Type AT Rectifier



50-Ampere Type AT Rectifier
with Cover in Place

50-Ampere Type AT Rectifier
with Cover Removed

Most modern central energy telephone exchanges use some form of Mercury Arc Rectifier to charge batteries. There are many reasons for this universal employment of the mercury arc rectifier. Several of the reasons are included in the following descriptive paragraphs:

1. Rectifiers are the most efficient means of converting alternating electrical currents to the unidirectional currents (direct currents).
2. Rectifiers operate without rotating parts:—in fact, there are no moving parts in a rectifier.
3. Rectifiers require little attention. It is common practice to leave the rectifier unattended while it charges the battery.
4. Rectifiers are very flexible. The same rectifier will operate off either 110 volts or 220 volts by simply changing the connecting links.
5. Rectifiers thoroughly insulate the telephone battery system from the lighting circuit, by means of an insulating transformer.
6. Rectifiers may be used for charging the battery simultaneous with the discharge of the battery. This is possible because each rectifier is provided with a series damping (resistance) coil, which subdues all of the noises that are made by the pulsations of the rectified charging current.

7. Rectifiers are practically self-regulating,—after the dials have been properly set, the rate of charging remains practically constant.
8. Rectifiers may be ordered of only the proper size for present charging requirements because when the growth of the battery plant necessitates additional charging facilities an additional rectifier unit may be installed and operated in parallel with the initial installation.
9. Rectifiers give their full current rating through all periods, during the charge of the battery, even up to the time when the battery is completely charged.

Style No.	Description
220, 241	Type A. T. operates on 60 cycle circuit. Range of voltage 110 or 220. Charges 8 or 11 cells at a normal charging rate of 10 amperes. Mounts on the wall. Provided with wiring for measurement instruments but not equipped with measurement instruments. Shipping weight—485 lbs.
220, 246	Type A. T. operates on 60 cycle circuit. Range of voltage 110 or 220. Charges 11 to 17 cells at a normal charging rate of 30 amperes. Mounts on the floor—upright type—without provisions for measurement instruments. Shipping weight—550 lbs.
300, 305	Type X. A. T. operates on 60 cycle circuit. Range of voltage 110 or 220. Charges 11 to 25 cells at a normal charging rate of 50 amperes. Mounts on the floor—upright type—without provisions for measurement instruments. Shipping weight—900 lbs. This outfit is similar in appearance to the regular A. T. type rectifier,—but is automatic in operation—in that it has a motor tilting device for the bulb so arranged that the rectifier is not only self-starting when alternating current is applied at the beginning of the charging period but also self-starting when alternating current is re-applied during the charging period and after an interruption in the power service. As a further convenience this rectifier is equipped with an alarm bell which rings whenever the power is interrupted during a charging period.



10 Ampere Type AT Rectifier

Switchboard Accessories (Cont.)

Battery Charging Equipment—Motor-Generators

Noiseless Telephone Motor-Generators

There are some localities where it is advantageous to charge telephone exchange batteries with a motor-generator set,—for instance: always in places where only direct current power supply is available and often in places where the rectifier tubes are subject to damage while in transit.

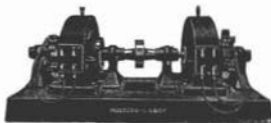
The following motor-generators are designed particularly for charging telephone batteries. With this purpose in mind the design of these motor-generators includes finely divided commutators and smooth core armatures.



Small, Direct-Current Charging Motor-Generator

Motor, Direct Current

Type and Size Frames	Watt Output	Volts Motor	Catalog No.	Approx. Speed R. P. M.	Approx. Shipping Weight Pounds	Approx. Floor Space in Inches
K $\frac{1}{4}$	75	115	302200	1,750	160	24 x 10 $\frac{1}{4}$
		230	302201			
K $\frac{1}{2}$	175	115	302202	1,750	200	24 x 10 $\frac{1}{4}$
		230	302203			
HD 12	275	115	302204	1,750	300	35 x 13
		230	302205			
HD 1	400	115	302206	1,750	375	35 x 13
		230	302207			
M 1	1,000	115-230	302150	1,750	800	44 $\frac{1}{4}$ x 17
M 2	1,750	115-230	302151	1,750	1,200	48 $\frac{1}{2}$ x 18
M 3	3,000	115-230	302152	1,750	1,600	60 $\frac{1}{4}$ x 23 $\frac{1}{2}$
M 5	4,000	115-230	302156	1,150	2,000	64 $\frac{1}{2}$ x 27 $\frac{1}{2}$
M 7 $\frac{1}{2}$	7,000	115-230	302157	1,150	2,500	69 $\frac{1}{2}$ x 29 $\frac{1}{2}$
M 10	9,000	115-230	302158	1,150	3,000	75 x 28 $\frac{1}{2}$
M 15	12,500	230	302159	1,150	4,300	82 $\frac{1}{2}$ x 32
M 20	20,000	230	302160	1,150	6,000	89 $\frac{1}{2}$ x 33 $\frac{1}{2}$
M 30	35,000	230	302161	1,150	7,500	109 $\frac{1}{4}$ x 35

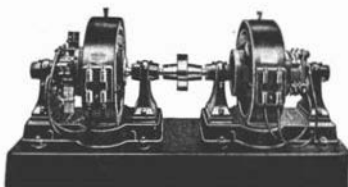


Type "M" Direct-Current Motor Coupled to Noiseless Type "M" Generator

Switchboard Accessories (Cont.)

Battery Charging Equipment

Noiseless Telephone Motor-Generators



Motor, Alternating Current 60 Cycles, Single or Polyphase

Frame Generator	Watt Output	Volts Motor	Catalog No. 2 or 3 Phase	Single Phase	Approx. Speed R.P.M.	Approx. Shipping Weight Pounds	Approx. Floor Space in Inches
K $\frac{1}{4}$	75	110 220		302400 302401	1,750	140	24 x 10 $\frac{1}{2}$
K $\frac{1}{2}$	175	110 220	302300 302301	302402 302403	1,750	170	24 x 10 $\frac{1}{2}$
HD 12	275	110 220	302302 302303	302404 302405	1,750	350	30 x 12
HD 1	400	110 220	302304 302305	302406 302407	1,750	400	35 x 15
M 1	1,000	110 220*	302250	302350 302351	1,700	650	47 x 20
M 2	1,750	110 220*	302251	302352 302353	1,700	800	47 $\frac{1}{4}$ x 18 $\frac{1}{2}$
M 3	3,000	110 220*	302252	302354 302355	1,700	1,200	60 $\frac{1}{4}$ x 23 $\frac{1}{2}$
M 5	4,000	110 220*	302256		1,100	1,650	64 $\frac{1}{4}$ x 26 $\frac{1}{4}$
M 7	7,000	110 220*	302257		1,100	2,500	69 $\frac{1}{2}$ x 26 $\frac{1}{2}$
M 10	9,000	110 220*	302258		1,100	2,800	80 $\frac{1}{2}$ x 29
M 15	12,500	110 220*	302259		1,100	3,800	88 $\frac{1}{4}$ x 36
M 20	20,000	110 220*	302260		1,100	4,500	97 $\frac{1}{2}$ x 33

* Polyphase motors can also be furnished for either 110, 440, or 550 volts.

Switchboard Accessories (Cont.)

Exchange Ringing Equipment

Ringing current for telephone exchanges can be generated by any of the following equipments, all of which are practical. Nevertheless, care should be exercised so as to be sure to choose the particular equipment that is best fitted for the conditions under which it will operate.

Vibrating Converters which are provided with a tuned reed and which operate from either batteries or power circuits, depending upon the particular type of vibrating converter that is selected.

Static Converters which have no moving parts and which consist of nothing more than a

transformer for reducing the voltage from an alternating current power circuit.

Rotating Converters which generally consist of a motor-generator set designed to convert either direct current or alternating current to ringing current of one or more frequencies.

The following paragraphs not only list Stromberg-Carlson Exchange Ringing Equipment of the Vibrating Type, the Static Type, and the Rotating Type but also give the prospective buyer sufficient descriptive data so that the proper Exchange Ringing Equipment readily may be selected.

Vibrating Converters—Single Frequency, Battery Type



No. 1 Pole Changer Type Converter
Closed for Operation

This is a vibrating converter which provides a simple and an efficient ringing equipment for exchanges serving 500 to 2000 subscribers. It consists of an electrically driven vibrator which carries contact springs that are arranged to reverse a 24 volt direct current from 16 to 20 times per second thus giving a 24 volt alternating current at a frequency of 16 or 20 cycles depending upon the adjustments. The alternating current obtained in this manner is stepped up to approximately 90 volts by putting it through a transformer which also is included in the equipment. This completes the transformation and the current is delivered to the ringing current terminals of the converter at the proper voltage and frequency. The primary current for the operation of the converter can be supplied by a battery of 36 dry cells connected in multiple-series with 18 cells per series or by 11 storage cells. The battery also is used for operating the vibrating element.

The complete equipment is contained within a well-built cabinet which occupies a space 12 x 12 in. and stands 14½ in. high. It is provided with a



No. 1 Type Pole Changer Converter
with Cover Raised

hinged cover and a dust-proof, glass-topped compartment for the vibrator, as shown in the accompanying illustrations. The operation of the vibrator readily can be observed without opening the cabinet. The vibrators and transformers used in converters of this type are the same as those used in Stromberg-Carlson Harmonic Converters in which the ringing current voltages and frequencies must be very accurately defined, therefore, the same degree of constant high efficiency may be expected from this equipment. All parts of the vibrator are mounted upon a heavy slate base which maintains a high insulation between parts having different potentials and also prevents loss of adjustment due to moisture and temperature changes.

When operated with dry cells, special contacts and a starting relay are included in the equipment. These conserve the energy of the dry cells because the vibrator operates only during the ringing period, or in other words,—while the operator is actually holding a ringing key in its ringing position.

The specifications for standard Stromberg-Carlson Converter Outfits are as follows:

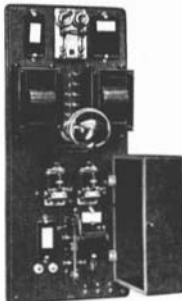
Switchboard Accessories (Cont.)—Vibrating Converters

Code No.	Description	Code No.	Description
1-A	Single vibrating converter, standard frequency 16 cycles. Outfit consists of 1 Vibrator, 1 Transformer and associated apparatus mounted in a cabinet. This converter is adapted for either dry battery or storage battery operation. Shipping weight approximately 50 lbs. Size of packing case 14 x 14 x 17 ins.	1-B	Single vibrating converter, standard frequency 20 cycles. Outfit consists of 1 Vibrator, 1 Transformer and associated apparatus mounted in a cabinet. This converter is adapted for either dry battery or storage battery operation. Shipping weight approximately 50 lbs. Size of packing case 14 x 14 x 17 ins.

Vibrating Converters—Single Frequency Power Circuit Type



No. 1-A Direct Converter, Closed



No. 1-A Direct Converter, Open

These converters are designed to operate directly connected to a 110 volt, 60 cycle power circuit. Each type of converter changes the frequency of the impressed circuit from 60 cycles to 16 or 20 cycles and reduces the voltage to the proper value for telephone ringers, viz: 90 or 100 volts.

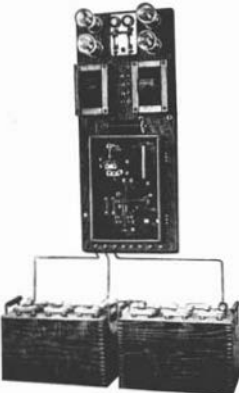
The operation of the converter is quite simple. The 60 cycle alternating current is first changed to direct current by means of two vibrating rectifiers. This rectified current is, in turn, changed to a 20 cycle alternating current by a pole-changing element and sent through a transformer which delivers the alternating current at 90 volts and 20 cycles. Terminals also are furnished for the delivery of 100 volt 20 cycle current. The pole changer element is provided with extra weights for the vibrator so that the frequency can be decreased to 16 cycles per second, if desired.

All of the apparatus is mounted upon a substantial oak backboard with a glass-covered, dust-proofed housing over the vibrators which also serves to deaden the slight humming sound when the converter is in operation. The complete converter occupies a wall space 29 x 12 inches and projects 5 1/4 inches

from the wall, exclusive of the lamp. The control switch, the double-pole fuse block with 1/2 ampere plug-fuses and power circuit terminals are located at the top of the backboard. A standard 110 volt—100 watt tungsten lamp serves as resistance to protect the converter against short-circuits and overloads. When three or more operators' positions are served by the converter a lamp of higher wattage should be used in place of the standard lamp. The ringing current terminals are at the lower end of the backboard and are plainly marked to facilitate proper connections.

The contacts used in this converter are all interchangeable and are made of a very hard contact metal which wears exceedingly well and will operate a long time without even readjustment. Practically the only attention they require is occasional cleaning of contact surfaces with fine emery cloth or a fine-grained file. The converter requires only 10 watts per hour for its operation—about half that required for an ordinary-sized electric lamp. The total power cost per month ranges from 18 to 96 cents depending upon the hours of service and the cost of the power. This type of converter is carried in the following codes:

Switchboard Accessories (Cont.)—Vibrating Converters

Code No.	Description	Code No.	Description
L 7-A	Furnishes 20 cycles alternating current for straight line ringing. Operates from 110 volt—60 cycle power or lighting circuit.		negative pulsating currents for biased ringer, selective party line signalling. Same as No. L 7-A but equipped with extra vibrator springs and additional terminals at the lower end of the backboard. Shipping weight, approximately 80 lbs.
L 8-A	Furnishes 20 cycle alternating current for straight line ringing and positive and		
		L 15-A	Furnishes 20 cycle alternating current for straight line ringing. Operates from 110 volt—60 cycle power or lighting circuit. This converter also is equipped for emergency storage battery operation, therefore, it is recommended for installations where the source of primary power supply is not continuous. The shift from primary power to storage battery operation is automatic. Battery charging takes place during the periods when primary power is available and is discontinued when the power current is on. Two sets of twelve volt storage batteries—any standard type—are necessary to operate the converter. These batteries are furnished only when specifically mentioned in the order.
		L 21	Similar in general appearance and operation to the L 15-A, but double the capacity. Designed for use in magneto exchanges equipped with 500 to 800 telephones. Operates from 110 volt, 60 cycle circuit. Delivers 20 cycle alternating current for straight line ringing. Two sets of twelve volt storage batteries—any standard type—are necessary to operate the converter. These batteries are furnished only when mentioned in the order.
		L 16-A	Furnishes 20 cycle alternating current for straight line ringing and positive and negative pulsating current for biased ringer, selective party line signalling; otherwise the same as the No. L 15-A. The extra vibrator springs and the additional terminals are mounted at the lower end of the backboard. Shipping weight approximately 85 lbs.

No. L 15-A Direct Converter

Vibrating Converters—Multi-Frequency Type

These converters are furnished in four types which cover the requirements for not only four frequency harmonic ringing but also four frequency asynchronic ringing.

All four types transform direct current at a potential of 20 volts to four separate and distinct ringing currents at the constant frequencies and the constant voltages that are required for Stromberg-Carlson Harmonic and Asynchronic Signalling Systems.

Both the voltages and the frequencies are accurately maintained with wave forms closely approximating a sine wave.

The operation of these converters is a development of the vibrating reed principle in that the reversing of the current at the required number of times per second is accomplished by means of an electromagnetically driven vibrator which carries the necessary contact points.

All parts of the converter vibrators are assembled upon heavy slate bases so as to be unaffected by either moisture or changes in temperature. Condensers are provided at the contact points so as to eliminate excessive sparking. Transformers also are provided, associated with each vibrator in the converter and arranged for stepping up the interrupted primary current as required for ringing purposes.

The equipment is mounted within a substantially-built and handsomely-finished, dull golden oak cabinet. This cabinet occupies a floor space 18½ x 31½ inches and stands 28 inches high. A removable front panel affords access to the transformer, condenser, and battery compartments and a removable, glass-topped cover allows convenient inspection of the working parts. All types of these converters are arranged to carry the ringing load of an exchange up to 10,000 lines capacity.

Switchboard Accessories (Cont.)—Vibrating Converters



No. 3-A Harmonic Converter, Closed



No. 3-A Harmonic Converter, Open

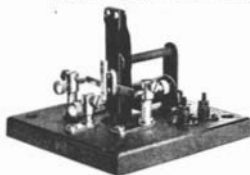
Code No.	Description
2-A	Vibrating Multi-Cycle Harmonic Converter, equipped with 4 Vibrators, 4 Transformers and associated equipment. Designed to operate from a 20 volt storage battery. Standard harmonic frequencies 16 $\frac{1}{2}$, 33 $\frac{1}{2}$, 50, 66 $\frac{2}{3}$ cycles. Shipping weight approximately 450 lbs. Size of packing case 23 $\frac{1}{2}$ x 36 $\frac{1}{2}$ x 40 $\frac{1}{2}$ ins.
2-B	Vibrating Multi - Cycle Synchronic Converter equipped with 4 Vibrators, 4 Transformers and associated equipment. Designed to operate from a 20 volt storage battery. Standard synchronic frequencies 30, 42, 54, 66 $\frac{2}{3}$ cycles. Shipping weight approximately 450 lbs. Size of packing case 23 $\frac{1}{2}$ x 36 $\frac{1}{2}$ x 40 $\frac{1}{2}$ ins.
3-A	Vibrating Multi-Cycle Harmonic Converter equipped with 8 Vibrators, 8 Transformers and associated equipment. Designed to operate from a 20 volt storage battery. Standard harmonic fre-

Code No.	Description
	quencies 16 $\frac{1}{2}$, 33 $\frac{1}{2}$, 50, 66 $\frac{2}{3}$ cycles. Shipping weight approximately 450 lbs. Size of packing case 23 $\frac{1}{2}$ x 36 $\frac{1}{2}$ x 40 $\frac{1}{2}$ ins.
3-B	Vibrating Multi - Cycle Synchronic Converter equipped with 8 Vibrators, 8 Transformers and associated equipment. Designed to operate from a 20 volt storage battery. Standard synchronic frequencies 30, 42, 54, 66 $\frac{2}{3}$ cycles. Shipping weight approximately 450 lbs. Size of packing case 23 $\frac{1}{2}$ x 36 $\frac{1}{2}$ x 40 $\frac{1}{2}$ ins.

Noise Killer Equipment is required where a No. 2-A, a No. 2-B, a No. 3-A or a No. 3-B converter is operated from the same storage battery which supplies transmission current to the switchboard. This "noise killer" equipment consists of a Stromberg-Carlson No. 18 Impedance Coil in the battery leads and a set of 10 cells of "floating" storage battery bridged across the battery supply leads to the converter.

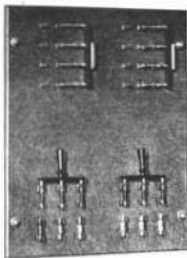
The standard battery used for this purpose, by plants of not over 3500 lines, consists of 10 cells of auxiliary storage battery,—type "B. T." Chloride Accumulator. Larger plants require proportionately larger batteries.

The function of the "noise killer" equipment—as the name implies—is to prevent noise being generated by the converter, back into the telephone system through the storage battery when the telephone system and the converter are operated simultaneously from the same battery. Obviously, this "noise killer" battery is not necessary if the converter does not operate from the same battery that supplies the telephone system with talking current.



Vibrator, Harmonic Converter

Switchboard Accessories (Cont.)—Vibrating Converters



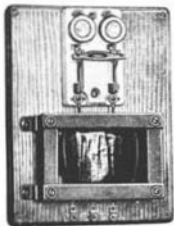
Converter Control Panel

A No. 1 Type Vibrating Converter Control Panel is essential for use in connection with a No. 2-A, a No. 2-B, a No. 3-A or a No. 3-B converter. (Provided, a converter is ordered with new exchange

equipment it is recommended that the apparatus, as listed for these control panels, preferably should be mounted on a panel that is built as part of the regular power switchboard.) This type of Converter Control Panel is furnished in the following codes:

- | Code No. | Description |
|----------|---|
| 1 | Vibrating Converter Control Panel for use with one or two single frequency converters, includes the following apparatus:— |
| 2 | Triple pole, single throw switches for starting one or two converters. |
| 1 | Four pole, double throw switch for connecting the ringing current of either converter to the exchange. |
| 1 | Four pole, double throw switch for reversing the battery on the converter vibrator contacts. |
| 1 | Battery switch for connecting the converter to either of two storage batteries. |
| 6 | Fuse mountings with enclosed tubular fuses for protecting the battery circuits of both converters. |
| 1 | Panel 18 x 24 x 1/8 in. completely wired and equipped with the above mentioned switches and fuses. |
| 1-N | Vibrating Converter Control Panel same as No. 1 but including a No. 18 Impedance Coil and arranged for use with a "noise killer" battery. |

Static Converters



No. 1-A Direct Ringing Static Converter

Where either 110 or 220 volt, 25 cycle alternating current power service is available, this static converter will answer the requirements for exchanges provided only regular alternating, single frequency, ringing equipment is installed.

This type of static converter consists of an oak backboard upon which is mounted a combination fuse block, a knife switch, and a 25 cycle transformer. The transformer takes current from the power mains at its rated voltage of 110 or 220 volts and reduces that potential to approximately 90 volts which is

correct for ringing purposes. The knife switch provides a convenient means for connecting and disconnecting the source of power supply. The fuse block protects the equipment from damage due to either overloading or short circuits.

Obviously, the operating expenses of this outfit are very low. Current is consumed only when the operator is ringing on a line. The no-load current consumption is not sufficient to start a commercial electric meter. There are no moving parts to require replacement or maintenance expense. Installation is a simple matter. The converter is placed in operation by simply connecting the power service to the fuse terminals, the ringing leads from the switchboard to the outer terminals and the ground lead to the middle terminal.

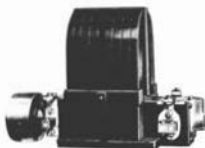
These converters are graded in two standard designs which differ only in regard to the voltage of the power circuits with which they are adapted to connect.

- | Code No. | Description |
|----------|--|
| L 1-A | Static Converter operates off a 25 cycle 110 volt power circuit and delivers 19 cycle ringing current at a potential of 90 volts. Mounting space 12 x 7½ inches. Shipping weight approximately 20 lbs. |
| L 1-B | Static Converter operates off a 25 cycle 220 volt power circuit and delivers 19 cycle ringing current at a potential of 90 volts. Mounting space 12 x 7½ ins. Shipping weight approximately 20 lbs. |

Static Converters cannot be supplied for frequencies other than 25 cycles. Furthermore, they cannot be supplied with pulsating ringing current attachments.

Switchboard Accessories (Cont.)—Storage Batteries

Rotating Converters—Belt Driven Power Generators



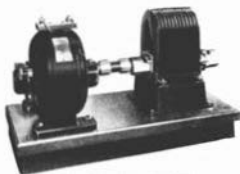
Type M.S. Generator

These belt driven power generators meet the requirements of magneto exchanges or central energy exchanges from 100 to 1800 subscribers, depending upon the size of the machine selected.

They are of the magneto type provided with tungsten steel magnets, substantially equipped bearings, and a carefully-designed lubrication system. The equipment includes a 2½ inch pulley which has a 1½ inch crowned face. All types derive ringing current at a frequency of 19 cycles and a potential of 90 volts when driven at their normal rate of speed at 1150 revolutions per minute. The regular equipment does not include pulsating equipment, however, these generators can be supplied with attachments for pulsating ringing. Furthermore, they can be furnished with a belt-tightening sub-base.

Mfr's Cat. No.	Description
MS-3	Rotating Converter, belt driven type equipped with 12 bars and arranged to deliver 15 watts of ringing current at a potential of 90 volts and a frequency of 19 cycles. Shipping weight 50 lbs.

Rotating Converters—Magneto Type Motor Generators



Magneto Type Motor-Generator

These sources of ringing current are designed to operate from either direct current or alternating current power circuits, depending upon the type of outfit which is selected.

As shown in the illustration the equipment is mounted on a heavy slate base which insulates the machine from grounds. This base in turn is mounted upon a wood sub-base which not only protects the slate from cracking but also serves as an additional insulation. The motor and the generator are connected by a flexible coupling which is made up of two springs that are wound in opposite directions. This coupling studies the load on the motor and prevents undue wearing of the bearings on either the motor or the generator. Both machines are fitted with long bearings which are lubricated by a ring-oiling system. The motor is equipped with two line terminals on top of the frame. No additional appa-

ratus is required for starting the motor with the exception of either a standard knife switch or a standard snap switch.

The generator is equipped with tungsten steel bar magnets. The normal speed of these outfits is 1150 revolutions per minute. At this speed they generate ringing current at a potential of 80 volts and a frequency of 19 cycles. The following standard motor-generators are for exchanges from 110 subscribers up to 1500 subscribers, depending upon the size of the machine selected.

Code/No.	Description
310081	Motor—HD 18, 115 volt d. c. Generator—MS 3, 80 volt, 19 cycle, 15 watt. Shipping Weight—100 lbs. Floor Space—22 x 10 ins.
310082	Motor—HD 18, 230 volt d. c. Generator—MS 3, 80 volt, 19 cycle, 15 watt. Shipping Weight—100 lbs. Floor Space—22 x 10 ins.
310087	Motor—HS 18, 110 volt a. c. Generator—MS 3, 80 volt, 19 cycle, 15 watt. Shipping Weight—110 lbs. Floor Space—22 x 10 ins.
310088	Motor—HS 18, 220 volt a. c. Generator—MS 3, 80 volt, 19 cycle, 15 watt. Shipping Weight—110 lbs. Floor Space—22 x 10 ins.

Switchboard Accessories (Cont.)

Rotating Converter—Motor Generator Sets



Large Multi-Cycle Motor-Generator Set

These outfits are designed for use in connection with large central energy offices which employ harmonic selective ringing for signalling subscribers. Each motor-generator set includes one motor directly connected on a common sub-bus with four ringing generators—one generator for each of the standard harmonic frequencies namely:—16 $\frac{1}{2}$, 33 $\frac{1}{2}$, 50, 66 $\frac{2}{3}$ cycles per second at 75, 100, 135, 175 volts respectively.

The direct current motor-generator sets are equipped with a speed governor. The alternating current motor-generator sets require no speed governor but are geared to and equipped with a direct current exciter.

Information regarding "Busy-Back", "Howler", "Don't Answer", "Flashing Recall" and "Machine Ringing" attachments, for use in connection with all types of telephone exchange signalling equipment, are covered completely under the heading of "Interrupters."

The following types of ringing motor-generator sets are available:

Mfr's Cat. No.	Description	Mfr's Cat. No.	Description
302700	Multi-Cycle Motor-Generator Set, consists of four M. R. 50-watt generators, directly connected to one, constant speed, direct current motor. Designed to operate off 115 volt power circuit and to deliver ringing current at 16 $\frac{1}{2}$, 33 $\frac{1}{2}$, 50 and 66 $\frac{2}{3}$ cycles per second. Watt output of each generator—50. Approximate shipping weight of complete outfit—500 lbs. Approximate floor space—54 x 11 $\frac{1}{2}$ ins.	302703	Multi-Cycle Motor-Generator Set, consists of four M. R. 50-watt generators, directly connected to one, single phase, constant speed, alternating current motor with exciter. Designed to operate off 220 volt power circuit and to deliver ringing current at 16 $\frac{1}{2}$, 33 $\frac{1}{2}$, 50 and 66 $\frac{2}{3}$ cycles per second. Watt output of each generator—50. Approximate shipping weight of complete outfit—475 lbs. Approximate floor space—77 x 14 ins.
302701	Multi-Cycle Motor-Generator Set, consists of four M. R. 50-watt generators, directly connected to one, constant speed, direct current motor. Designed to operate off 230 volt power circuit and to deliver ringing current at 16 $\frac{1}{2}$, 33 $\frac{1}{2}$, 50 and 66 $\frac{2}{3}$ cycles per second. Watt output of each generator—50. Approximate shipping weight of complete outfit—500 lbs. Approximate floor space—54 x 11 $\frac{1}{2}$ ins.	302705	Multi-Cycle Motor-Generator Set, consists of four M. R. 150 watt generators, directly connected to one, constant speed, direct current motor. Designed to operate off 115 volt power circuit and to deliver ringing current at 16 $\frac{1}{2}$, 33 $\frac{1}{2}$, 50 and 66 $\frac{2}{3}$ cycles per second. Watt output of each generator—150. Approximate shipping weight of complete outfit—850 lbs. Approximate floor space—74 x 15 ins.
302702	Multi-Cycle Motor-Generator Set, consists of four M. R. 50-watt generators, directly connected to one, single phase, constant speed, alternating current motor with exciter. Designed to operate off 110 volt power circuit and to deliver ringing current at 16 $\frac{1}{2}$, 33 $\frac{1}{2}$, 50 and 66 $\frac{2}{3}$ cycles per second. Watt output of each generator—50. Approximate shipping weight of complete outfit—675 lbs. Approximate floor space—77 x 14 ins.	302706	Multi-Cycle Motor-Generator Set, consists of four M. R. 150 watt generators, directly connected to one, constant speed, direct current motor. Designed to operate off 220 volt power circuit and to deliver ringing current at 16 $\frac{1}{2}$, 33 $\frac{1}{2}$, 50 and 66 $\frac{2}{3}$ cycles per second. Watt output of each generator—150. Approximate shipping weight of complete outfit—850 lbs. Approximate floor space—74 x 15 ins.
		302707	Multi-Cycle Motor-Generator Set, consists of four M. R. 150 watt generators, directly connected to one, single phase, constant speed, alternating current motor with exciter. Designed to operate off 110 volt power circuit and to deliver ringing current at 16 $\frac{1}{2}$, 33 $\frac{1}{2}$, 50 and 66 $\frac{2}{3}$ cycles per second. Watt output of each generator—150. Approximate shipping weight of complete outfit—1,200 lbs. Approximate floor space—72 x 14 ins.
		302708	Multi-Cycle Motor-Generator Set, consists of four M. R. 150 watt generators, directly connected to one, single phase, constant speed, alternating current motor with exciter. Designed to operate off 220 volt power circuit and to deliver ringing current at 16 $\frac{1}{2}$, 33 $\frac{1}{2}$, 50 and 66 $\frac{2}{3}$ cycles per second. Watt output of each generator—150. Approximate shipping weight of complete outfit—1,200 lbs. Approximate floor space—74 x 15 ins.

Switchboard Accessories (Cont.)

Interruption



Small Interrupter



Large Interrupter

In modern telephone exchanges—especially common battery—interrupting devices are required to produce various tones such as:—"Howler", "Busy Back", and "Don't Answer." Furthermore, an interrupting device is essential for association with "Machine Ringing" and "Flashing Recall" installations.

The best practice is to combine all of these interrupters on one frame, then, one direct-connected electric motor will operate not only the tone wheels but also the interrupter contacts.

Stromberg-Carlson central office installations regularly are furnished with one of the following two types of interrupters,—either the small type N-C Interrupter or the large type N-C Interrupter. Obviously, the larger machine is essential where the size of the exchange requires more than a duplicate set of interrupter springs. As a general rule the smaller machine answers all the requirements of exchanges which have equipped fewer than ten operators' positions.

On both types of interrupters the "Howler" tone current is taken directly from a high speed ring which is divided into sectors. The "Busy Back" and the "Don't Answer" tones are derived by passing the tone from this high speed ring through properly-timed, slow speed, contact springs.

The intermittent current which is required for "Machine Ringing" service is derived by passing each frequency of ringing current through sets of make and break contacts. Two sets of these make and break contacts are provided for each ringing frequency. One set operates 180 degrees behind the other set. This arrangement divides the current load on the ringing converter.

The intermittent current for "Flashing Recall" likewise is controlled by two sets of "make contact" springs which are controlled by cams operating 180 degrees apart.

Stromberg-Carlson Exchange Equipment Engineers gladly will give additional information regarding interrupters for any size of telephone exchange. When writing for such data be sure to state: The Voltage of Power Supply, the Frequency of Power Supply, the Number of Ringing Frequencies to be interrupted, and the Number of Ringing Lead Sets that are run to the operators' positions, also include Complete Data regarding the features that are installed on the switchboard.

Provided, the source of power supply is not reliable, emergency ringing interrupters designed to operate from the main battery of the exchange will be necessary. Therefore, include with your data a description of the exchange battery for instance:—state, the number of cells, the ampere hours capacity, also whether the battery is divided into two sets or operates in one set.

Switchboard Accessories (Cont.)

Bell Test Sets



No. 1 Type Bell Test Set, Closed View

These outfits are very handy where multi-cycle ringing—either harmonic or synchronous—is installed.

The function of a Test Bell Set is to check the accuracy of the ringing frequencies as delivered by any multi-cycle ringing converter. The bells of these Test Sets are arranged to respond only to the proper frequency or ringing current. Two types are available—one for harmonic ringing and one for synchronous ringing.

Code No.	Description
1-A	Harmonic Ringing Test Bell Set includes: 4 Harmonic Ringers accurately tuned to 16½, 33½, 50, 66½ cycles. 1 Non-Inductive test resistance



No. 1 Type Bell Test Set, Open View

Code No.	Description
1	Resistance shunt key.
1	Frequency key to switch any one of the four frequencies from the converter to the Test Bell Set's circuit.
The above mentioned apparatus is assembled in a metal cabinet finished in dull golden-oak. Shipping weight of complete outfit approximately—40 lbs.	
1-B	Synchronous Test Bell Set similar to No. 1-A Harmonic Test Bell Set but provided with ringers accurately tuned to synchronous frequencies of 30, 42, 54, and 66½ cycles.

Power Switchboards



Power Switchboard

Complete installations of Stromberg-Carlson Central Energy Telephone Exchange Apparatus include suitable means for properly controlling the various machines, batteries and electric circuits that are required in the modern telephone central office.

One of the most important items in these control facilities is the unit known as the Power Switchboard.

Owing to the importance of that unit, all measurement instruments, knife switches, fuses and circuit breakers on Stromberg-Carlson Power Switchboards are, not only of the highest grade of standard design, but are carefully mounted upon best quality, heavy slate panels. These panels, in turn, are carefully machined, beautifully finished, and rigidly mounted upon heavy, iron framework.

Each piece of apparatus that is mounted on these power switchboards is distinctly labeled with an engraved and polished name plate.

All the wiring and all the apparatus is strictly in accordance with the requirements of the National Board of Fire Underwriters.

Stromberg-Carlson Exchange Equipment Engineers gladly will furnish preliminary drawings, specifications, and estimates on power switchboards for any size of exchange.

When asking for such information, it is advisable to accompany your request with not only a sketch of your present power switchboard, but also a brief description of any contemplated changes in the exchange equipment.

Switchboard Accessories (Cont.)

Protectors



No. 100 Protector

Mfr's
Cat. No.

100

Description

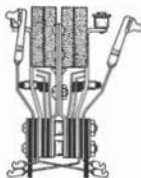
Equipped with wire-wound, self-soldering heat coils that operate accurately, and with carbon block arresters treated with the Cook anti-dust process and speeded with celluloid dielectrics. Heat coils are mounted in a horizontal position and are very easily removed or replaced.

When operated, this protector opens the circuit, grounds the line, and operates an alarm signal. To reset, simply push the switchboard spring back over the heat coil. No need to change, turn or resolder. The installation is very easy as the switchboard solder lugs are brought out on one side and the line lugs on the other. Ample clearance is allowed to facilitate soldering.

Retaining springs are unusually heavy, which insures a positive and permanent tension between lightning arrester carbons and ground plate. To permit toothpicking,



No. 105 Protector



Detail of No. 100 Protector

Mfr's
Cat. No.

Description

a special ground carbon is used. Toothpicks, run into this groove, keep the ground and the alarm spring open when the heat coil operating spring is released. Ease of testing is an important feature of this protector. The test plug is slipped over the protector permitting testing through or around the heat coils. When the test plug is removed the protector is reset. This protector is furnished with wire wound heat coils not exceeding 4 ohms. These coils operate in less than 210 seconds on .5 ampere and will carry .35 ampere for 3 hours when tested at a temperature of 68° F. Heat coils with different operating characteristics may be furnished on special order.

10

This protector has the same characteristics as to operation, resistance, installation, testing, etc., as No. 100. It differs in that the spring is held in place by low-melting point solder which is melted by the generation of heat in the heat coil when any abnormal current passes through.

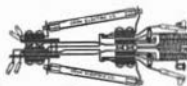
To reset protector after operation the spring must be resoldered, which is done by means of a clamp and soldering iron.

105

Combination of No. 100 Protector with line fuses. The design and insulation afford excellent protection between line and switchboard circuits. The switchboard circuits are returned from the protector between the ground plates. Fuses are of composition type, 4 $\frac{1}{4}$ ins. long and are furnished in 3 ampere capacity unless otherwise specified.

10-W

A combination of No. 10 Protector with fuses. Fuses are composition type 4 $\frac{1}{4}$ ins. long, of 3 ampere capacity.



Detail of No. 105 Protector

Magneto Telephones

No. 896 Wall Type



Left Perspective View of No. 896 Telephone



Open View of No. 896 Telephone

The Stromberg-Carlson No. 896 Magneto Wall Telephone is adapted to any magneto service requirements—long lines, short lines, town lines, or heavily loaded rural lines. Every part of this telephone is built for efficiency, durability and convenience.

The Transmitter is of the solid back long distance, granular carbon cup type; equipped with bakelite mouthpiece.

The Receiver is of the bi-polar, long distance, magnetic type; provided with bakelite ear cap and bakelite shell.

The Induction Coil is double wound over a laminated soft iron core and is highly efficient on low battery voltage.

The Ringer is built for sensitive operation; provided with clear toned black enamelled gongs and a quick "one screw" adjustment.

The Generator is furnished in powerful 3 and 5 bar types.

The Wiring is of the universal type. This permits the telephone being carried as stock connected for regular bridging service but readily convertible to any of the following five additional kinds of service without either adding or splicing conductors.

"Bridging Service with Sure-Ring Condenser"

"Bridging Service with Non-Interfering Push Button"

"Bridging Service with Silent Ringer"

"Bridging Service with Divided Circuit Ringing"

"Bridging Service with Harmonic Ringing"

All wiring is contained in a single cable. Every conductor is accessible, readily traceable by means of color code and in plain view. Hinged joints and "back board" groove wiring are entirely eliminated. The conductors all are covered with braided insulation.

The Cabinet is built of quarter-sawn oak, finished in dull golden oak, easy of access and provided with:—door hinged on the left—writing shelf inclined at a convenient angle—flushed holes for wall mounting screws—a handy screw lock and a rotary self-cleaning arrester.

The Shipping Weight is only 25 pounds (less batteries) packed in corrugated cartons,—Shipping Weight with two dry cells 29 pounds.

Magneto Telephones (Cont.)

No. 1000 Desk Telephone

A popular Magneto Desk Telephone for either business or residence service. Consists of the No. 992 Desk Stand and the No. 327 Desk Set Box, connected by a 6 ft. Duratex three conductor cord.

The Desk Stand is of rugged all metal construction; finished in durable dull black enamel with nickel trim; and includes the No. 7-L Transmitter, the No. 27-A Receiver, and the No. 39-A Induction Coil. The mouthpiece, receiver shell and the ear cap are made of bakelite. A quickly removed plate mounts the induction coil, hook-switch and cord terminals as a single unit inside the base of the desk

stand and in a readily accessible position. The base is equipped with a leather collar to prevent scratching.

The Desk Set Box is made of quarter-sawn oak with golden finish, contains the generator, ringer, line terminals, cord terminals and rotary lightning arrester. Provision also is made in this desk set box to contain the "Sure-Ring" Condenser and the "Non-Interfering Ringing Push Button" key when these features are ordered.

Shipping weight without dry batteries 31 lbs., with two dry batteries 33 lbs.

Bridging Type

Code No.	Description	F. O. B. Shipping Points			
		Chicago Roch.	Atlanta Kans. City	Seattle San Fran.	Toronto
1000-R	Three bar generator with 1000 ohm ringers, used for town lines.	\$16.65	\$17.05	\$17.65	\$21.90
1000-I	Five bar generator with 1600 ohm ringers, used for rural lines.	17.15	17.55	18.15	22.55
1000-L	Five bar generator with 2500 ohm ringers, used for rural lines.	17.40	17.80	18.40	22.90

Harmonic Type

The No. 1000 Desk Type Magneto Telephone equipped with three bar harmonic generator will be furnished equipped for any harmonic frequency such as 16½, 30, 33½, 42, 50, 60 and 66½. When ordering be sure to state frequency desired. Price F. O. B. Rochester or Chicago \$17.65, F. O. B. Kansas City or Atlanta \$18.05, F. O. B. San Francisco or Seattle \$18.65, F. O. B. Toronto \$23.30.

Additions

For Sure-Ring Condenser (on 5 bar telephones only) order by adding the letter "K" to code number.

For Non-Interfering Push Button add letter "P" to code number (on 5 bar telephones only).

"P" Non-Interfering Push Button	.35	.35	.35	.45
"K" Sure Ring Condenser	.60	.60	.60	.80

Batteries are not included in the price of the telephones as above mentioned, but if ordered with the telephones, the batteries will be supplied at the following prices.

List No. 531 Dry Batteries	.31	.33	.35	.35
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No. 1000 Desk Telephone

Magneto Telephones (Cont.)

No. 1138 Combination Telephone

The No. 1138 Combination Telephone is a light, convenient instrument for either residence or office service. It is comprised of the No. 10-L Combination Telephone (which includes the No. 36 Hookswitch Box) with 4 foot 4 conductor Duratex Cord and the No. 327 Desk Set Box.

The No. 10-L Combination Telephone is equipped with Stromberg-Carlson Standard carbon transmitter and Stromberg-Carlson Standard magnetic receiver. The hookswitch box, not only serves to contain the induction coil and the hookswitch, but also serves to suspend the telephone.

The Desk Set Box which is a quarter-sawn oak cabinet finished in dull golden oak, mounts the ringing equipment, the line terminals and the ground terminal. It is equipped with rotary self-cleaning lightning arrester and is furnished with complete wiring diagram for either regular station or extension telephone service.

Dimensions of Desk Set Box 11 x 9 x 6 inches. Shipping weight complete without dry batteries, 24 lbs. with two dry batteries, 28 lbs.



No. 1138 Combination Telephone

Bridging Type

Code No.	Description	F. O. B. Shipping Points			
		Roch. Chicago	Kans. City Atlanta	San Fran. Seattle	Toronto
1138-R	Three bar generator used with 1000 ohm ringers for town lines.	\$17.50	\$17.90	\$18.50	\$23.00
1138-I	Five bar generator used with 1600 ohm ringers for rural lines.	18.00	18.40	19.00	23.70
1138-L	Five bar generator used with 2500 ohm ringers, for rural lines.	18.25	18.65	19.25	24.05

Harmonic Type

A No. 1138 Combination Type Magneto Telephone; equipped with three bar harmonic generator, will be furnished equipped for any harmonic frequency, such as: 16 $\frac{2}{3}$, 30, 33 $\frac{1}{3}$, 42, 50, 60 and 66 $\frac{2}{3}$ cycles. **When ordering be sure to state the frequency desired.** Price F. O. B. Rochester or Chicago \$18.50, F. O. B. Kansas City or Atlanta, \$18.90, F. O. B. San Francisco or Seattle \$19.50, F. O. B. Toronto \$24.35.

Additions

For Sure Ring Condenser (on 5 bar telephones only) order by adding the letter "K" to code number.

For Non-Interfering Push Button add letter "P" to code numbers (on 5 bar telephones only).

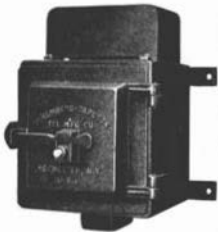
"K" No. 26 T Sure Ring Condenser	.60	.60	.60	.80
"P" Non-Interfering Push Button	.35	.35	.35	.45

Batteries are not included in the price of the telephones as above mentioned, but if ordered with the telephones the batteries will be supplied at the following prices.

List No. 531 Dry Batteries.	.31	.33	.35	.35
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Magneto Telephones—Ironclad

No. 890 Mine-A-Phone



No. 890 Mine-A-Phone
Showing Plunger Lock



No. 890 Mine-A-Phone Showing Outer Door Open

Mounting space—14 x 17 inches. Net weight—80 pounds. Packed for domestic shipment in individual boxes 22 x 16 x 14 inches. Gross weight—125 pounds. Packed for export two instruments in a box—31 x 20 x 14 inches. Gross weight for export per box of two instruments—225 pounds.

Mine-A-Phones are designed to satisfy the laws of any state that requires a telephone system in every mine.

The **Mine-A-Phone** is a moisture-proof, gas-proof, concussion-proof, fire-proof and water-proof magneto telephone which is built especially for mine-service, but which is adapted to all telephone systems in either underground or exposed surface localities.

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. The outer door is equipped with a gas-tight rubber gasket and compression lever catch, arranged for either a key or a plunger type lock. Opening this outer door permits use of the instrument for either signalling or talking.

The inner door is hinged for opening during repairs, but is otherwise held securely closed by machine screws and a felt gasket. This inner door mounts the transmitter, receiver and generator crank.

The **Generator**—is of powerful five bar construction mounted in a fully protected position behind the inner door.

The **Transmitter**—is of the solid back long distance carbon cup type, provided with bakelite mouthpiece.

The **Receiver**—is of the bi-polar, magnetic long distance type, provided with bakelite ear cap and bakelite shell. An automatic cord take-up device prevents the receiver cord being caught when the outer door is closed after conversation.

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

The **Hook Switch**—is of pressure, plunger construction, positive in operation and not dependent upon gravity.

The **Terminal Box**—is mounted on the underside of the telephone. This box contains two line terminals and a ground terminal. These terminals pass through water-tight bushings to the interior of the telephone so that it is unnecessary to open the instrument when making connections. The entrance hole to the terminal box is threaded for $\frac{1}{2}$ " conduit.

The **Wiring**—is of the regular bridging type arranged so that more than one telephone may be placed on a line, when required. Provision is also made for a condenser in the receiver circuit, if desired. When this condenser is installed, leaving a receiver down will not interfere with ringing other telephones on the same line.

The **Battery Space**—is of ample size to accommodate two standard dry cells which supply the talking current for the transmitter.

Prices Less Batteries

Code No.	Description	Quantity	F. O. B. Shipping Point			
			Rock. Chicago	Kan. City	San Francisco	Toronto
890-I	5 Bar	1 to 4	\$46.00	\$47.75	\$49.25	\$60.75
	1600 ohms	5 & over	41.50	43.25	44.75	54.80
890-L	5 Bar	1 to 4	46.25	48.00	49.50	61.00
	2500 ohms	5 & over	41.75	43.50	45.00	55.10

Central Energy Telephones

Stromberg-Carlson Central Energy Telephones are unexcelled for talking efficiency in either local or long distance service. They are made in five distinct types—

Desk Telephones—the No. 986 Desk Stand and No. 1156 Desk Set Box.

Wall Telephones—the No. 1155

Ironclad Telephones—the No. 950-BY

Combination Telephones—the No. 10-C Combination Telephone and No. 1158 Desk Set Box.

Automatic Telephones—the No. 1150 and the No. 1157

No. 986 Desk Stand

A distinctively attractive instrument of rugged construction, light in weight and carefully balanced, finished with durable black enamel and nickel trim. Provided with bakelite receiver ear cap, receiver bell and transmitter mouthpiece. Equipped with No. 7-C Transmitter, No. 27-A Permanent Magnet Receiver, No. D-3-A 6 foot Cord and booster talking circuit.

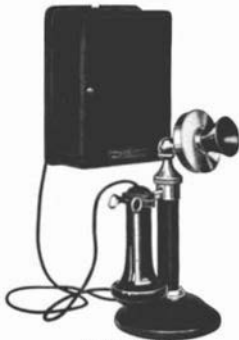
This desk stand is provided with many unique maintenance economy features such as:—

A neat ball and socket transmitter arm joint—one slight turn to the knurled socket is all that is necessary to stiffen the action of this joint and to hold the mouthpiece adjusted at the right angle.

An easily inspected base—a quarter turn to one screw opens the base, exposing wiring connections and hookswitch contacts.

A quickly removed transmitter—bayonet slots permit removal of transmitter by simply loosening three screws.
Weight—3½ lbs.

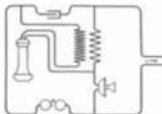
Code No.	Description	Price Each
986	Desk Telephone, less Desk Set Box \$7.10 (Induction coil, condenser, and ringer furnished with Desk Set Box).	



No. 986 Desk Stand
With No. 1156 Type Desk Set Box



No. 986 Desk Stand
With Base Plate Removed



Booster Telephone Circuit

Desk Set Boxes

No. 1156 Type Desk Set Box

Used with No. 986 Desk Stand

Case is made of pressed steel with a black enamel finish. Gongs are mounted inside the box leaving a very neat and sanitary exterior. Equipment consists of either the No. 46 Straight Line Ringer or the No. 47 Harmonic Type Ringer, together with No. 21 Condenser and No. 43-A Induction Coil. Weight—5 lbs.

Code No.	Ringer	Condenser	Price Each
1156 BY	1000 ohms	1 M.F.	\$5.80
1156 EY	16 Cycle Harmonic	"	6.30
1156 FY	33 "	"	6.30
1156 GY	50 "	"	6.30
1156 HY	66 "	"	6.30

Enclosed gongs—give a neat appearance; have no inaccessible place for dust to accumulate.

A convenient retaining screw—loosened a few turns, opens the box, exposing all the working parts for inspection or repairs.

Ringer—is accurately adjusted and equipped with clear-toned gongs.

Specially tuned ringers to be used either with High and Low frequency systems or with Synchronic ringing systems can be furnished when specified, at no additional cost. When ordering specify the Code No. of Desk Set Box and the frequency desired as:—for High and Low frequency systems,—20 and 60 cycles; for Synchronic frequency systems,—30, 42, and 54 cycles.

Biased ringer (No. 49 Type) can be furnished with straight line ringer equipment if specified. When biased ringer is desired add "Z" to the code number. There is an additional charge of \$.10 each.



Open View of No. 1156 Type Desk Set Box

No. 1158 Type Desk Set Box

Used with No. 10-C Combination Telephone



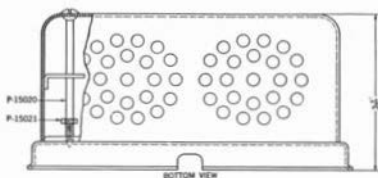
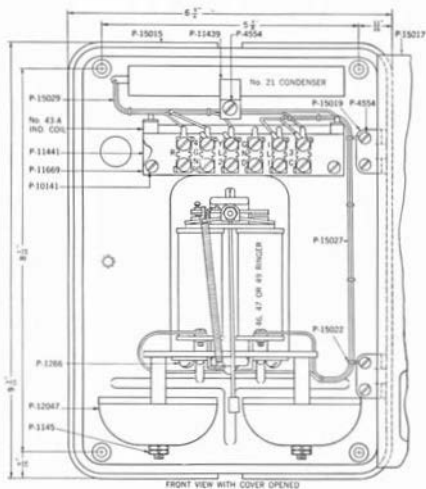
No. 1158 Type Desk Set Box.

Wired for operating the receiver on a local circuit tapped to the secondary winding of the induction coil. The box and external appearance is the same as the No. 1156 Type. Equipped with either the No. 46 Straight Line Ringer or the No. 47 Harmonic Type Ringer and No. 21 Condenser. This Desk Set Box differs from No. 1156 Type only in the omission of No. 43 Induction Coil.

Weight—4½ lbs.

Code No.	Ringer	Condenser	Price Each
1158-B	1000 ohms	1 M.F.	\$5.30
1158-E	16 Cycle Harmonic	"	5.80
1158-F	33 "	"	5.80
1158-G	50 "	"	5.80
1158-H	66 "	"	5.80

For information regarding specially tuned and biased ringers see No. 1156 Type.



Line Diagram Showing Piece Numbers of Parts Used in No. 1136 Type Desk Set Base

Wall Telephones

No. 1155 Type Wall Telephone

A very compact telephone which presents a neat appearance for use in residences and hotels. Gongs are enclosed, together with the other working parts, in a pressed steel box, finished in black enamel and nickel trim. Box is so designed that all the parts are easily accessible. Equipment consists of either No. 46 Straight Line or No. 47 Harmonic Type Ringer, No. 21 Condenser, No. 43-A Induction Coil, No. 27-A Receiver with No. R-2-G 3 ft. Cord, No. 7-C Transmitter and No. P-13821 Hookswitch. The telephone is wired for "Booster Circuit".

Enclosed gongs—give a neat appearance, —have no inaccessible place for dust to accumulate and reduce the tendency of subscribers to damage the instrument by attempting to change tone of gongs.

A convenient retaining screw—loosened a few turns, opens the box, exposing all the working parts for inspection or repairs.

Bayonet slots—permit removal of transmitter by simply loosening three screws.

Transmitter—is of the solid back, carbon cup, long distance type, provided with bakelite mouthpiece.



No. 1155 Type Wall Telephone

A neat transmitter arm—gives a handy vertical adjustment to the transmitter.

Weight—7½ lbs.

Code No.	Ringer	Condenser	Price Each
1155 BY	1000 ohms	1 M.F.	\$10.45
1155 EV	16 Cycle Harmonic	"	10.95
1155 FY	33 " "	"	10.95
1155 GY	50 " "	"	10.95
1155 HY	66 " "	"	10.95

Specially tuned and biased ringers can be furnished as specified under No. 1156 Type Desk Set Box.



Open View No. 1155 Type Wall Telephone

Ironclad Telephones

No. 950 B. Y. Iron Clad "Central Energy"

Weatherproof Telephone

An ironclad, moisture-proof, gas-proof, concussion-proof, fire-proof and water-proof "Central Energy" telephone which is built especially for systems in either underground or exposed surface localities which require extra strong, well-insulated and dependable service.

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

Outer-Door—is equipped with a gas-tight rubber gasket and compression lever catch, arranged for either key or plunger type lock. Opening outer door permits use of the instrument for either signalling or talking.

Inner-Door—is hinged for opening during repairs, but is otherwise held securely closed by machine screws and a felt gasket. Inner door mounts the transmitter and receiver.

Transmitter—is of the solid back long distance carbon cup type, provided with bakelite mouthpiece.

Receiver—is of the bi-polar, magnetic long distance type, provided with bakelite ear cap and bakelite shell. An automatic cord take-up device prevents the receiver cord being caught when the outer door is closed after conversation.

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

Hookswitch—is of pressure, plunger construction, positive in operation and not dependent upon gravity.

Terminal Box—is mounted on the underside of the telephone. Contains two line terminals and a ground terminal. These terminals pass through water-tight bushings to the interior of the telephone so that it is unnecessary to open the instrument when making connections. Entrance hole is threaded for $\frac{1}{2}$ " conduit.

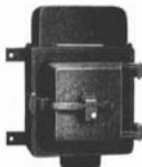
Wiring—is the regular "Booster Circuit".

Weight—62 lbs.

Code No.	Ringer	Condenser	Price Each (Over Delivery)	
			1-4	5 and Over
950-BY	1000 ohms	1 M.F.	\$42.75	\$38.50

Additional Features

Additional for Key Snap Lock (Pe. 8468) each \$1.50
Additional for Extra Keys (Pe. 8534) each... .35



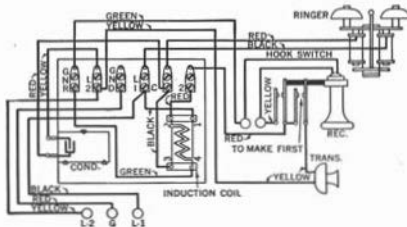
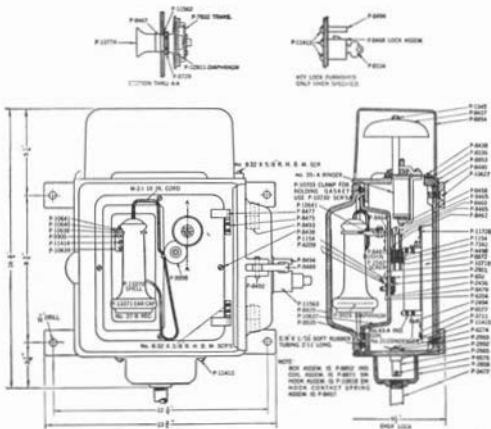
No. 950 B.Y. Ironclad Telephone



Open View No. 950 B.Y. Ironclad Telephone



Showing Inner Compartment No. 950-BY
Ironclad Telephone



Combination Telephones

No. 10-C Combination Telephone

Used With No. 1158 Type Desk Set Box

For convenience and practical design, the No. 10-C Combination Telephone is unequalled. When out in use it requires no desk space as it hangs on the hookswitch box which may be mounted on the wall, side of desk or any vertical surface. The instrument is light in weight and so constructed that when the receiver is held to the ear the transmitter mouthpiece naturally comes in the correct position for conversation. The convenience of always having one hand free and still be at liberty to move from one side of the desk to the other cannot be overestimated. Handle and mouthpiece are made of hard rubber. Other parts are finished in black enamel.

The equipment includes:—a No. 19 Hookswitch Box, a No. C-4-B 4 foot, Four Conductor Cord, a standard long distance transmitter and receiver. The induction coil is mounted in the hookswitch box.

Weight of Combination Telephone—1 lb., complete with hookswitch box packed for shipment—2½ lbs.

Code No.	Description	Price Each
10-C	Combination Telephone, complete with hookswitch box.	\$8.70

No. 11 Type

Stromberg-Carlson No. 11 Type Combination Telephone is used primarily as a testing set, but it may be conveniently used in apartment house service, and also in extension station equipment for office or residence.

It is simple in design—easy to carry—fits nicely in the coat pocket. Dimensions—8¾ x 2½ x 2½ inches. Finish, black enamel and nickel.

Equipped with long distance transmitter and

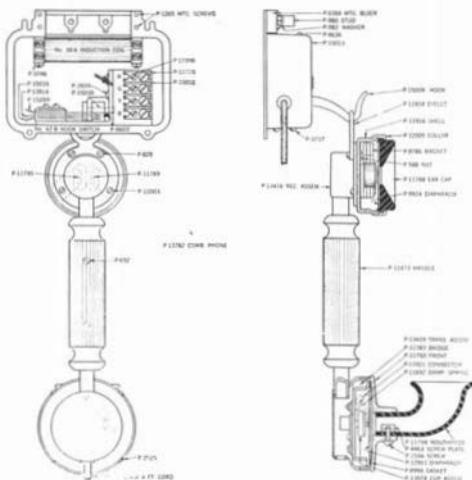
bipolar receiver, mounted upon a flat steel tubing handle. The finger switch placed within the handle requires but slight pressure, either way, for positive operation. Detachable plates are provided at both ends of the handle so that the transmitter, receiver, and cord connections may be easily examined, and conveniently changed when necessary. All exposed parts, except the bakelite ear cap, and finger switch, are made of metal so that the instrument will withstand hard usage.



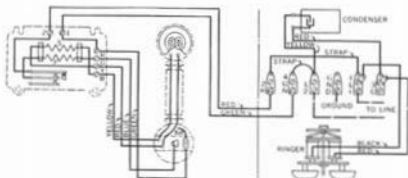
No. 10-C Combination Telephone



No. 11 Type Combination Telephone Equipped with Test Clips



Line Diagram Showing Piece Numbers of Parts Used in No. 10-C Combination Telephone



Wiring Diagram of No. 10-C Combination Telephones Used with No. 1158 Type Desk Set Box

Combination Telephones (Cont.)

No. 11 Type (Cont.)

- 11-C Used with Central Energy telephone systems not only as an extension telephone but also as a pocket test set for inspectors and for linemen. A non-locking finger switch closes the line circuit through the transmitter and the receiver connected in series. Furnished complete with No. C-2-C 6 ft. Moisture-proofed Cord. Cord ends are provided with test clips (No. 34 Cord Tips). \$8.00
- 11-D Used with Central Energy and machine switching systems for testing and for service observation. Transmitter and receiver are wired in series with a $\frac{1}{2}$ M.F. condenser which is enclosed within the handle. A non-locking finger switch when operated to call central shunts out the condenser. Furnished complete with No. C-2-C, 6 ft. Moisture-proofed Cord. The free cord ends are provided with test clips (No. 34 Cord Tips). \$8.75
- 11-E Used with Central Energy and machine switching systems for testing and for service observation. The transmitter and the receiver are wired in series with a non-locking finger switch which has a pair of contacts that are normally closed so as to shunt out a $\frac{1}{2}$ M.F. condenser which is located in the handle. Furnished complete with No. C-2-C, 6 ft. Moisture-proofed Cord. The free cord ends are provided with test clips (No. 34 Cord Tips). \$8.75
- 11-L Used with magneto equipment such as the No. 843 Test Set and the portable field telephones. A non-locking finger switch is wired so that when operated it will close the contacts which control the flow of battery current through the transmitter. Furnished complete with No. C-3-B, 6 ft. Moisture-proofed Cord. \$8.00

Wiring Diagram of No. 11-C
Combination TelephoneWiring Diagram of No. 11-D
Combination TelephoneWiring Diagram of No. 11-E
Combination TelephoneWiring Diagram of No. 11-L
Combination Telephone

Automatic Telephones

Code No. 1150 Type

Automatic Dial Type Desk Telephone

An automatic desk stand, well constructed and finished in dull black enamel with nickel trim. Column is placed off center on base so as not only to allow ample space for the dial, but also to protect the dial from damage. Telephone is wired for Booster Circuit and is equipped with a three spring type (make and break contacts) dial connection. Furnished with No. 7-C Transmitter, No. 27-A Receiver with No. R-2-G 3 ft. cord, and No. D-3-C 6 ft. Cord. *Used in connection with the No. 1155 Type Desk Set Box to make a complete unit.*

A neat ball and socket transmitter arm joint—one slight turn to the knurled socket is all that is necessary to stiffen the action of this joint and to hold the mouthpiece adjusted at the right angle.

An easily inspected base—a quarter turn to one screw opens the base, exposing wiring connections and hookswitch contacts.

A quickly removed transmitter—bayonet slots permit removal of transmitter by simply loosening three screws.

Weight—3½ lbs.

Code No.	Description	Price Each
1150-A	Desk Stand (less dial)	\$7.10
1150-M	Desk Stand (dial opening covered with blank)	7.10

Opening for dial is adapted for mounting the Automatic, Western Electric, Kellogg or Northern Electric (Canada) dials. Prices for telephones equipped with dials on application.

The No. 1150-M Desk Stand is designed for temporary manual service. The wiring is connected for regular "Central Energy" system and dial opening covered with blank. It is a simple matter, however, to install the dial and transfer to an automatic system at any time.

Code No. 1157 Type

Automatic Dial Type Wall Telephone

This automatic wall telephone is constructed the same as the No. 1155 Type except that there is an opening in the front of the case for mounting the dial.

Weight—7½ lbs.

Code No.	Ringer	Condenser	Price Each without dial
1157 BYZ	1000 ohms	1 M.F.	\$10.45
1157 EY	16 Cycle Harmonic	"	10.95
1157 FY	33 "	"	10.95
1157 GY	50 "	"	10.95
1157 HY	66 "	"	10.95

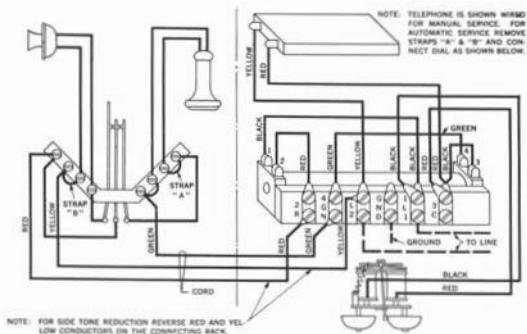
For information regarding dials see the No. 1150 A & M Desk Stand.



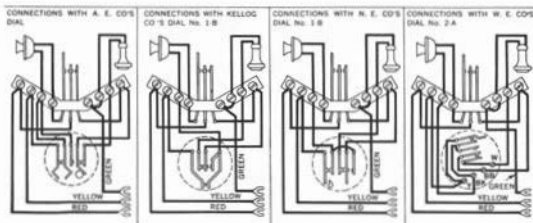
No. 1150-A Desk Stand With Dial



No. 1157 Type Wall Telephone With Dial



Wiring Diagram of No. 1156-A Desk Stand Connected to No. 1156 BYZ Desk Set Box Ringer Circuit



Wiring Diagrams Showing No. 1156-A Telephone Wired to Various Types of Dials

Inter-Comm-Phone System No. 1

Selective Ringing—Selective Talking

12 and 22 Stations Capacity

This type of system will satisfy the telephone service requirements for the majority of offices, factories, public buildings and large residences where the volume of traffic necessitates simultaneous conversations, yet is not large enough to justify the use of a switchboard system and the salary of an operator. With this type of apparatus each telephone station may select, ring and talk with any of the other stations without interfering in the least with any of the remaining stations which may be using the system at the same time. For example, it is possible with a fully equipped twenty-two station system to carry on eleven separate conversations without cross-talking, cross-ringing or other interference. The system is ready for instant service during any period of the day, and is particularly adapted to systems which require neither the services of an attendant nor the privilege of connections with a public telephone exchange.

Stromberg-Carlson Inter-Comm-Phone Systems are furnished either with or without facilities for connecting to a public telephone exchange. Provided that connections with a public telephone exchange are desired, the telephone company should be consulted before planning on a privately owned telephone system. This precaution is urged because most operating companies will not connect their wires to apparatus such as switchboards or telephones which they do not own and maintain.

Kind of Service

The service rendered by the Stromberg-Carlson Inter-Comm-Phone System No. 1 is divided under four distinct classifications as follows:

Local service which provides private communication facilities between a certain group of stations including provision for connecting with the public telephone service.

Local private service between a certain group of stations including provision for connecting with a central energy public service exchange. In this instance, one of the stations acts as an answering station and handles the incoming calls. The outgoing calls are controlled directly by the local stations.

Local private service between a certain group of stations including provision for connecting with a magneto public service exchange. In such systems, not only the incoming calls, but also the outgoing calls are handled and transferred at the answering station.

Local private service between a certain group of stations including provision for connecting with an automatic public service exchange. In this type of system, the outgoing calls are controlled from the local stations. Each of the station instruments may be equipped with a dial for such service and connected to the trunk line by means of the trunk button in the key-box. All incoming calls are handled and transferred by the answering station.

Operation

To establish a connection with another local station it is only necessary to press one button once, a distinct advantage over many other types of intercommunicating telephone systems. In this system

the same button is used for selecting and ringing the desired telephone. The push button switching keys used in all Stromberg-Carlson Inter-Comm-Phone instruments have three operating positions, normal, talking and ringing. When the button is pushed all the way down a circuit is closed which rings the bell of the distant telephone. When the button is released it snaps back half way to the talking position and completes the talking circuit with the telephone called. The receiver is then removed and the conversation opened in the usual way. The switching keys interlock by means of a tumbler plate so that when a call is made any key button remaining in the talking position is restored to the normal position when any other key button is pressed.

To answer a call the connection is made with the party calling by pressing the white "Home" button and by taking the receiver from the hook. It is unnecessary to restore the "Home" button after a call is answered because this operation is performed automatically when the next call is made.

Standard Equipment

Stromberg-Carlson telephone apparatus and accessories for Inter-Comm-Phone System No. 1 are furnished in two standard sizes, viz., 12 and 22 station capacities. These sizes will meet practically all operating conditions and requirements. It is unnecessary to purchase a complete system of 22 stations capacity when only 16 telephones are needed for present use, simply install 16 telephones of 22 stations capacity with their accessories. Additional telephones may be conveniently added at any time without disturbing either wiring or operation of the telephones originally installed. The use of exchange line service decreases the total capacity of the telephone instruments for local service by the number of exchange lines equipped. Telephones in system No. 1 are furnished in two styles, the Central Energy Wall Telephone, and the Central Energy Combination Telephone. Description and illustrations of both these types of telephones will be found on pages 137 and 138 of this bulletin.

The equipment of each telephone instrument includes a standard long distance transmitter, a standard long distance receiver, a three position type-switching key mechanism and a complete complement of associated minor apparatus. All parts are of the same high quality as those used in Stromberg-Carlson regular city exchange apparatus and give uniformly excellent service.

Cabling of System

System No. 1 employs full metallic circuit wiring between all stations. Stromberg-Carlson cables are furnished of proper capacity and contain all wires essential to the operation of the system. These cables are made up so that any pair of wires may be identified by their coloring which makes the installation work and testing a comparatively simple task. Two types of these cables can be had, viz., the braided sheath type and the leaded type. The cable with painted braid sheath is recommended for interior use in places where certain that the cable will not be subject to dampness, acid fumes or mechanical injury. The leaded cable should be specified for all out-

Inter-Comm-Phone System No. 1 (Cont.)

door use or places where it may be subject to either moisture or corrosive fumes. If iron conduit is used for cable runs the leaded cable should be installed to avoid the effects of condensation in the pipes.

Splices or junctions in the cable should be made with Stromberg-Carlson terminal boxes which are made for all sizes of the standard cable.

Battery

Two separate sets of dry cells are required for the

operation of this system, one set of 7 cells to supply current for talking purposes and the other from 7 to 10 cells for ringing the telephone bells. The exact number of cells in the ringing battery depends upon the length of the lines. For systems including less than 1000 feet of cable 7 cells will be plenty—the battery for longer systems should be proportionately increased to compensate for the drop in voltage due to the added resistance of the circuits.

Telephones for Inter-Comm-Phone System No. 1

No. 903 Type Central Energy Wall Telephone



No. 903-B Telephone

Wall telephones of this type are often preferred for Inter-Comm-Phone Stations. The reason no doubt is because each telephone, in itself, a complete station unit mounted in a neat box and including, not only the key box, but also the talking and signalling apparatus. This combination cuts both installation and maintenance charges to a minimum.

All parts are readily accessible when the hinged front section is opened. As a further convenience, the line cable terminates directly upon screw type key terminals, which remain stationary when the front section of the box is swung open.

Furnished in two standard sizes as follows:

Code No.	Description	List Price Each
903-B	Capacity—12 Stations Includes—complete talking, signalling and switching key apparatus for one station in quartered oak cabinet, finished in dull golden oak. Cord—No. R-2-G Receiver Cord 36 inches long. Mounting space—12½ x 9½ x 4½ ins.	\$66.00
903-C	Capacity—22 Stations. Includes—complete talking, signalling and switching key apparatus for one station in quartered oak cabinet, finished in golden oak. Cord—No. R-2-G. Receiver Cord 36 inches long. Mounting space—12½ x 9½ x 4½ ins.	99.00

No. 1128 Type Combination Telephone

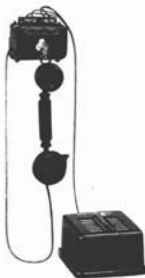
This combination telephone is very convenient both for office and for residence use. It has the further advantage that it may be installed as either a wall or desk telephone outfit.

The switching key, the vibrating ringer, the impedance coil, the line terminals, and the battery terminals are all contained in the key box. Furnished in two standard sizes as follows:

Code No.	Description	List Price Each
1128-B	Capacity—12 Stations Includes—No. 10-I Combination Telephone, with hookswitch box and No. 9-B Metal Key Box, finished in durable dull black enamel. Cords—No. C-4-B 4 ft. Telephone Cord and No. D-5-C 6 ft. Key Box Cord. Mounting space of key box—5½ x 6¾ ins.	\$ 81.00
1128-C	Capacity—22 Stations. Includes—No. 10-I Combination Telephone, with hookswitch box and No. 10-R Metal Key Box, finished in durable dull black enamel. Cords—No. C-4-B 4 ft. Telephone Cord and No. D-5-C 6 ft. Key Box Cord. Mounting space of key box—5½ x 9½ ins.	114.00

With—

Stromberg-Carlson Inter-Comm-Phone System No. 1 you press one button once to call and talk with your party.



No. 1128-B Telephone

Telephones for Inter-Comm-Phone System No. 1 (Cont.)

Automatic Types of Instruments

When System No. 1 connects with an automatic public telephone exchange it is necessary to equip both the answering and regular stations with dial type instruments. Stromberg-Carlson dial type Desk Stands and Wall Telephones are available for that purpose. Complete information will be furnished upon request.

Trunk Line Equipments

Where connections are made with a public telephone exchange in addition to the local service given by the Inter-Comm-Phone System, it is necessary to equip each exchange trunk line at the answering station with one of the following extension bells. These extension bells contain, in a neat oak box, all the equipment that is required for the proper reception and transfer of the calls between the Inter-Comm-Phone System and the public telephone exchange.

Before planning on a privately owned telephone system which is to be arranged for connecting with a public telephone exchange, consult the proper officials of the telephone company. This precaution is urged because most operating companies will not connect their wires to apparatus such as switchboards or telephones which they do not own and maintain.



No. 907 Trunk Type
Extension Bell

Code No.	Description	List Price Each
907-A	Automatic Type —Connects with Automatic main exchange, equipped with bell, condensers, impedance coil and relay. Mounting space 9 x 11½ x 7 ins.	\$45.00
907-B	Magneto Type —Connects with Magneto main exchange which is arranged for battery calling. Equipped with bell, condensers, impedance coil and relay. Mounting space 9 x 11½ x 7 ins.	45.00
907-C	Central Energy Type —Connects with Central Energy main exchange. Equipped with bell, condensers, impedance coil and relay. Mounting space 9 x 11½ x 7 ins.	42.00
907-L	Magneto Type —Connects with Magneto main exchange which is arranged for Magneto calling. Equipped with bell, condensers, impedance coil and hand generator. Mounting space 9 x 11½ x 7 ins.	57.00

When two trunk line extension bells are installed at the answering station, they should be ordered with gongs of different tones, so that the attendant may readily identify the line that is called.

Accessories for System No. 1

Inter-Comm-Phone Cable

As stated on the preceding page, the connections between the various telephone instruments are formed by means of Stromberg-Carlson standard cables which are designed especially for this purpose. These are cables furnished in two types;—one with a tightly woven exterior braid for exposed cabling in dry buildings and the other with a lead sheath for cable runs out-of-door—also for cable runs in buildings which will not always be kept entirely free from dampness or for cable runs which are protected by conduits.

All wires in standard intercommunicating cables are tinned copper, with single silk and single cotton insulation, and are colored in accordance with a standard color code. These wires are twisted in cores and are saturated with beeswax compound to facilitate installation work, and to protect the cable from moisture.

The cables used with System No. 1 are made up entirely of wires in pairs. All wires in each cable are No. 22 B. & S. Gauge, except the two pairs used for talking and signalling battery which are No. 18 B. & S. Gauge. Cables with braided covering are indicated by the suffix "B" to the Code Number; likewise cables with a lead sheath are indicated by the suffix "L" to the Code Number—for instance: Code Number 60-B indicates a braided covering, and Code Number 60-L indicates a lead covering.



No. 44-L Cable

Code No.	No. of Pairs	No. of Stations	Approximate Diameter	Approx. Weight per 1000 ft.	Price per 100 feet
60-B	14	12	¼ in.	130 lbs.	\$ 51.00
60-L	14	12	½ in.	333 "	75.00
61-B	24	22	¼ in.	195 "	78.00
61-L	24	22	½ in.	680 "	112.44

Telephones for Inter-Comm-Phone System No. 1 (Cont.)

Terminal Boxes

Stromberg-Carlson standard terminal boxes should be used for making all terminals, branches and splices in the cabling system. These terminals consist of a white wood box with a removable cover in which are mounted the required number of composition base locknut terminals. The use of these terminal boxes greatly facilitates installation work and subsequent testing of the system. Standard terminal boxes for use with the Inter-Comm-Phone System No. 1 are as follows:

Code No.	For Cable No.	Mounting Space	No. of Pairs	Approx. Weight	List Price
62	60	6" x 8"	14	3 lbs.	\$12.00
63	61	6" x 12"	24	3 "	18.00



No. 62 Terminal Box

Bell Ringing Transformer

Where 110 volt 60 cycle alternating current power or lighting circuits are available a Stromberg-Carlson Type "D" Bell Ringing Transformer can be used instead of a ringing battery for furnishing the ringing current used for signalling purposes. This type of transformer is provided with secondary taps which generate three different voltages—6, 14 and 20 volts, and which adapt it for use in systems of varying sizes. It consumes no current except during the ringing period. It is fire-proof and may be short-circuited without injury or impairing its efficiency.

Code No.	Description	List Price
Type "D"	Dimensions—7½ x 4½ x 3¼ ins.	\$22.00
110 volt	Approximate shipping weight—11 lbs.	
60 Cycle		
Bell Ringing Transformer.		

Inter-Comm-Phone System No. 2

Selective Ringing—Common Talking

6 and 11 Stations Capacity

This system furnishes service equivalent in all respects to the No. 1 System, except that it cannot transmit more than one conversation at a time and that it is not arranged for connections with a public service telephone exchange. It is recommended for small local service systems in which there is seldom a necessity for simultaneous conversations, as in small commercial establishments, factories, clubs and residences. The circuits of this system are more simple and do not require the three position switching key, and as a consequence the apparatus is less expensive although equal in talking and ringing efficiency to the No. 1 System.

Kinds of Service

The wiring and equipment of this system are arranged for local service between all stations. Each station may call any other station without interfering with the remaining stations—however, as above mentioned, only one conversation can be carried on at a time.

Any or all stations may be called in rapid succession for the purpose of giving general instructions or general conversations.

This system also can be arranged so that any station can be denied the means of calling certain other stations.

All conversations are carried on by means of a single pair of talking circuit wires, which are common to all stations.

Operation

To call a station it is only necessary to push the button on the calling telephone corresponding to the

station wanted and to remove the receiver from the hook and place it to the ear in the usual way. Calls are answered as with city or town telephones by simply taking the receiver from the hook and responding. Before calling, the user should determine whether or not the system is in use, by "listening-in" for a moment.

Standard Equipment

The instruments and accessories for this Inter-Comm-Phone System are furnished in two standard sizes, viz., 6 and 11 station capacities. If a smaller number of stations is required a partial equipment may be purchased for immediate operation and additional apparatus installed at any future time as required. The instruments are termed 6 and 11 station instruments, because a push button is not included for the "home" station. For example, six telephones each equipped with 5 push buttons, constitute a full capacity six station system. The various types of telephones, equipped for use with this system, are illustrated and described on Page 160

Cabling of System

The talking circuit for this system consists of only one pair of wires common to all the stations.

The ringing circuit, however, requires more elaborate wiring. An individual conductor is necessary to each station. In addition to this; another wire, common to all stations; is essential to complete the return circuit of the ringing current.

Splices, branches and terminals should be made with Stromberg-Carlson standard terminal boxes.

Inter-Comm-Phone System No. 2 (Cont.)

Battery

One centrally located set of dry cells is required to supply both talking and ringing current for this type of system. The exact number of cells required depends upon the length of the lines. For systems including less than 1,000 feet of cable, 7 cells are generally sufficient. The number of cells should be proportionately increased to compensate for the drop in voltage due to the added resistance of the circuits.

Impedance Coil

One No. 13-A Impedance Coil is required for each Inter-Comm-Phone System No. 2.

This Impedance Coil is placed in the battery; leads to the common talking feed circuit as to prevent cross talk.

Telephones for Inter-Comm-Phone System No. 2

Telephones for this type of system are made in two standard sizes for 6 and 11 stations capacity and in two types, viz., Wall and Combination Telephone outfits. Each instrument includes in its equipment a Stromberg-Carlson standard transmitter, a Stromberg-Carlson direct current receiver and all associated minor apparatus. Five or ten single contact

push buttons, as required by the size of the system, are mounted in the telephone or on separate push button block, for ringing the other telephones connected to the system. The complete telephone set consists of the number of pieces shown in the corresponding illustration.

No. 1122 Type Wall Telephone

A wall mounted station instrument in a wooden cabinet, which is provided with a hinged front section. This construction affords convenient access to the interior apparatus.

In the 6 station wall telephones of this type, the push buttons are mounted in a single vertical row. But in the 11 station wall telephones of this type, the push buttons are mounted in a double row.

Furnished in two standard sizes as follows:

Code No.	Description	List Price
1122-A	Capacity—6 Stations Includes—complete talking, signalling and push button apparatus for one station, in a quartered oak cabinet, finished in dull golden oak. Cord—No. R-2-G. Receiver Cord 36 inches long. Mounting space— $10\frac{1}{2} \times 5 \times 8\frac{3}{4}$ ins. Approximate shipping weight—7½ lbs.	\$37.80
1122-B	Capacity—11 Stations Includes—complete talking, signalling and push button apparatus for one station, in a quartered oak cabinet, finished in dull golden oak. Cord—No. R-2-G. Receiver Cord 36 inches long. Mounting space— $10\frac{1}{2} \times 5 \times 8\frac{3}{4}$ ins. Approximate shipping weight—7½ lbs.	42.00

No. 1122-B Telephone

No. 1139 Type Combination Telephone

Users find this telephone very handy, because it mounts without desk room on either the wall or the side of the desk, and because it is convenient in conversation,—one hand is always free, for writing purposes while the other hand is engaged in holding the telephone.

The hookswitch box contains not only the hookswitch, but also a concealed, 20 ohm, vibrating buzzer.

Furnished in two standard sizes as follows:

Code No.	Description	List Price
1139-A	Capacity—6 Stations Includes—No. 10-S Combination Telephone, and No. 5 Push Button Block Cord—No. C-2-B 4 ft. Telephone Cord. Mounting space of push button block— $4\frac{1}{4} \times 3 \times 1\frac{1}{4}$ ins. Approximate shipping weight of complete telephone—6 lbs.	\$52.20
1139-B	Capacity—11 Stations Includes—No. 10-S Combination Telephone, and No. 10 Push Button Block. Cord—No. C-2-B 4 ft. Telephone Cord. Mounting space of push button block— $6\frac{1}{4} \times 3 \times 1\frac{1}{4}$ ins. Approximate shipping weight of complete telephone—6 lbs.	55.00

No. 1139-A Telephone

Inter-Comm-Phone System No. 2 (Cont.)

Accessories for System No. 2

No. 13 Impedance Coil

No. 13-A
Impedance Coil

One No. 13-A Impedance Coil is required for each No. 2 Inter-Comm-Phone System, regardless as to whether the system is partially or fully equipped. This impedance coil is required to regulate the supply of current to the transmitters of the various telephones.

Code No.	Description	List Price
13-A	Each No. 13-A Impedance Coil includes a wooden mounting block and Fahnstock spring clip binding posts. Mounting space—3 x 7 1/4 ins. Shipping weight—1 lb.	\$ 6.00

Cable



No. 60-L Cable

The connections between the various stations of a No. 2 Inter-Comm-Phone System are made by Stromberg-Carlson Inter-Comm-Phone cables. These cables are made in two standard sizes with either braided or leaded sheath. Use the cable with the exterior braid for exposed cabling in dry buildings and the leaded cable for installations out-of-doors in damp buildings and in conduit work.

Both types of cable are made up of the required number of wires which are twisted into cores and waxed. Two pairs of the wires are No. 18 B. & S. Gauge for the common talking and common return ringing circuits and the balance No. 22 B. & S. Gauge single conductors. Each wire is tinned and insulated with one serving of silk and one serving of cotton applied in opposite directions. The outer servings of the wires are dyed a distinctive color or combination of colors for identification purposes.

Cables with braided coverings are indicated by the suffix "B" added to the code number; likewise cables with a lead sheath are indicated by the suffix "L" added to the code number—for instance: Code No. 77-B Cable indicates a braided covering and Code No. 77-L Cable indicates a lead covering.

Code No.	No. of Conductors	No. of Stations	Approximate Braided	Diameter Leaded	Approx. Weight Per 100 ft.	List Price Per 100 ft.
77-B	10	6	1 1/2 in.	6 1/2 in.	127 lbs.	\$27.00
77-L	10	6	1 1/2 in.	1 1/2 in.	27 lbs.	39.60
78-B	15	11	1 1/2 in.	8 1/2 in.	303 lbs.	30.00
78-L	15	11	1 1/2 in.	1 1/2 in.	32 lbs.	49.80

Terminal Boxes



No. 62 Terminal Box

Stromberg-Carlson standard terminal boxes should be used for making all terminals, branches and splices in the cabling system. These terminals consist of a white wood box with a removable cover in which are mounted the required number of composition base locknut terminals. The use of these terminal boxes greatly facilitates installation work and subsequent testing of the system. Standard terminal boxes for use with the No. 2 Inter-Comm-Phone system are as follows:

Code No.	For Cable No.	Space	Mounting No. of Pairs	Approx. Weight	List Price
62	78	6" x 8"	14	3 lbs.	\$12.00
67	77	6" x 8"	7	3 "	9.00

Inter-Comm-Phone System No. 3

Central Station System—10-30 Stations Capacity

In many cases the telephone service requirements are for communication between one master station and a number of outlying stations as in schools, small hotels and public institutions. To meet such requirements the Stromberg-Carlson Inter-Comm-Phone System No. 3 has been developed. This system performs the desired functions in an entirely satisfactory manner and at a comparatively low price. The equipment is highly efficient and requires no more attention than an ordinary system of call bells.

Kind of Service

The arrangement of this system provides for talking and ringing between the master station and all outlying stations over a three wire circuit consisting of a pair of common talking circuit wires and an individual signalling wire to each station. The outlying stations cannot call each other direct but must first call the master station which in turn calls the desired station. In this way there is a constant check on all calls between outlying stations through the master station. Only one conversation can be maintained at a time.

Inter-Comm-Phone System No. 3 (Cont.)

Operation

To call the master station from an outlying station the user presses the ringing button and then places the receiver to the ear in the usual manner. To call an outlying station from the master station the user presses the ringing button opposite the name or number of the desired outlying station and then removes the receiver from the hook. Calls from one outlying station to another are made by calling the master station and requesting the attendant to call the other station as described above.

Standard Equipment

Telephone instruments and accessories for Inter-Comm-Phone System No. 3 are furnished in two sizes viz., 5 and 10 stations. It is unnecessary to purchase a fully equipped system unless the complete equipment is actually required, as additional outlying stations can be installed at any time provided that the master station capacity is of sufficient size. The various types of telephone instruments for this system are illustrated and listed on this page and on the following page.

Wiring System

As stated in the preceding paragraph three wires are required between each outlying station and master station. Two of these wires are common

talking wires and may extend from station to station if local conditions permit.

Stromberg-Carlson three conductor No. 18 B. & S. Gauge rubber covered and braided interior telephone wire is recommended. Office wire and annunciator wires are unsuitable for telephone installations as their insulating qualities are inferior.

Battery

One centrally located set of dry cells is required to supply both talking and ringing current for this type of system. The exact number of cells required depends upon the length of the lines. For systems including less than 1,000 feet of cable 7 cells are generally sufficient. The number of cells should be proportionately increased to compensate for the drop in voltage due to the added resistance of the circuits.

Bell Ringing Transformer

Bell Ringing Transformers are unnecessary with this system, because the same battery that supplies the talking current also supplies the ringing current.

No. 13-A Impedance Coil

One No. 13-A Impedance Coil is required for each Inter-Comm-Phone System No. 3.

This Impedance Coil is placed in the battery leads to the common talking feed circuit so as to prevent cross talk, and is included as part of the No. 1118 Desk Telephone.

Telephones for Inter-Comm-Phone System No. 3

Master Station Equipment—No. 1118 Type Desk Telephone

There is no handier Master Station Equipment than this Desk Telephone—it can always be located on a desk or table within arm's reach of the attendant.

Stromberg-Carlson No. 1118 Desk Telephones are arranged so that the buzzer is mounted, concealed from view in the base of the No. 1146 Desk Stand.

Furnished in two standard sizes as follows:

Code No.	Description	List Price
1118-A	Capacity—5 Stations Includes—the No. 1146 Desk Stand, one No. 5 Push Button Block, one No. 13-A Impedance Coil, one No. 4-A Terminal Block and one 20 ohm Vibrating Buzzer. Cords—No. R-2-G Receiver Cord 36 inches long. No. D-4-C Desk Stand Cord 6 ft. long. Mounting space of push button blocks each $4\frac{1}{4} \times 3 \times 1\frac{1}{4}$ ins. Approximate shipping weight of complete telephone 7 lbs.	\$51.00
1118-B	Capacity—10 Stations Includes—the No. 1146 Desk Stand, one No. 10 Push Button Block, one No. 13-A Impedance Coil, one No. 4-A Terminal Block and one 20 ohm vibrating buzzer. Cords—No. R-2-G Receiver Cord 36 inches long. No. D-4-C Desk Stand Cord 6 ft. long. Mounting space of push button blocks each— $6\frac{1}{4} \times 3 \times 1\frac{1}{4}$ ins. Approximate shipping weight of complete telephone—7 $\frac{1}{2}$ lbs.	\$54.00



No. 1118-B Telephone



No. 965-B Telephone

Inter-Comm-Phone System No. 3 (Cont.)

Outlying Station Equipment—No. 965-B Telephone

This telephone is unrivaled as a substantially-built, neat-appearing wall instrument for Outlying Stations.

The box is of pressed steel construction with hinged door which provides convenient means for inspection.

High grade talking qualities are ensured by the Stromberg-Carlson standard solid back, carbon cup transmitter and the Stromberg-Carlson standard direct current receiver.

Code No.	Description	List Price
965-B	Includes—complete talking and signalling apparatus for one outlying station, in metal box finished in durable dull black enamel.	\$27.00

Cord—No. R-2-G Receiver Cord 36 inches long.

Mounting space— $9\frac{1}{4} \times 7\frac{3}{4} \times 6\frac{1}{4}$ ins.

Approximate shipping weight—9 lbs.



No. 10-PC Telephone

Outlying Station Equipment—No. 10-PC

A very convenient, single piece, outlying station equipment for either wall or desk use.

The hookswitch box, from which the telephone is suspended when not in use, contains the push button and the 20 ohm vibrating buzzer.

Both the transmitter and the receiver are of Stromberg-Carlson standard design.

Line connections are made to terminals which are on top of the hookswitch box.

Code No.	Description	List Price
10-PC	Includes—telephone instrument and hookswitch box with 20 ohm buzzer and push button.	\$42.00

Cord—No. C-2-B 4 ft. Telephone Cord.

Mounting space— $4\frac{1}{4} \times 1\frac{1}{4}$ ins.

Approximate shipping weight—4 lbs.

Inter-Comm-Phone System No. 4

Private Line Telephones—2 Station Capacity

This system provides a dependable means of communication between any two points not farther than 2000 feet apart. It is an ideal equipment for a private line between two offices, two departments in a factory, and for house to garage lines, etc. To call the distant station it is only necessary to push the ringing button at the calling telephone. Calls are answered in the usual manner by simply placing the receiver to the ear.

The telephones for this system are furnished in two types—a wall telephone, and a combination telephone. From 4 to 6 dry cells are required for operating the system. These batteries can be installed at either end of the line, or any other intermediate point. Three wires are required between stations. Complete instructions for setting up and installing the system are packed with each shipment.

Telephones for Inter-Comm-Phone System No. 4

No. 965-A Wall Telephone

A compact, substantially built, neat appearing wall telephone, admirably adapted to the requirements of private line service.

This telephone is provided with a pressed steel box, which has a hinged cover. The opening of this cover exposes all interior apparatus for quick inspection.

Both the transmitter and the receiver are the same as those used on Stromberg-Carlson Telephones regularly furnished for city telephone exchange service.

No. 965-A
Wall
Telephone

Code No.	Description	List Price
965-A	Includes—complete talking and signalling apparatus for one station in metal box, finished in durable dull black enamel.	\$27.00

Cord—No. R-2-G Receiver Cord 36 inches long.

Mounting space— $9\frac{1}{4} \times 7\frac{3}{4} \times 6\frac{1}{4}$ ins.

Approximate shipping weight—9 lbs.

Inter-Comm-Phone System No. 4 (Cont.)



No. 10-P
Combination Telephone

No. 10-P Combination Telephone

An instrument of this type is often desired as either an office or a residence telephone. Its popularity is due, no doubt, to the fact that it requires neither desk nor table space, but mounts handily on either the side of the desk or on the wall.

The hookswitch box, from which the telephone suspends, when not in use, contains the push button and the 20 ohm vibrating buzzer.

Both the transmitter and the receiver are of Stromberg-Carlson standard design.

Line connections are made to the terminals which are mounted on top of the hookswitch box.

Code No.	Description	List Price
10-P	Includes—telephone instrument and hookswitch box with 20 ohm buzzer and push button. Cord—No. C-2-B 4 ft. Telephone Cord. Mounting space— $4\frac{1}{4}$ x 14 ins. Approximate shipping weight—4 lbs.	\$42.00

Inter-Comm-Phone System No. 6

Private Exchange Switchboard—Capacity 10, 50 or 100 Stations

This system is designed to meet the requirements of factories, offices, schools, hospitals, clubs, hotels, etc., where the volume of traffic necessitates simultaneous conversations and where the services of an attendant are required. With this type of apparatus each telephone station may call and may converse with any telephone station in the system. This is accomplished by first calling the operator who completes the connection with the desired station and also takes down the connection after the conversation is completed.

Kinds of Service

Stromberg-Carlson Switchboards for System No. 6 are equipped for local service in private telephone exchanges where it is desired to effect economy by omitting all the apparatus which would be required for connecting with a city telephone exchange. However, the switchboards are provided with the space and the wiring so that trunking equipment may be installed at any future date. These trunk circuits are designed for connecting with Central Energy City Telephone Exchanges, Automatic City Telephone Exchanges or Magneto City Telephone Exchanges.

The omission of the trunk equipment has been found advisable, on account of the fact that most telephone operating companies rent their telephone apparatus to subscribers and connect with only the branch exchanges which they install and operate on this rental basis.

Operation

To establish a connection with another station, it is only necessary for the calling station to signal the attendant which is done automatically when the calling party removes the receiver from his telephone's hookswitch. The signal appears before the attendant who answers and completes the connection with a regular cord circuit and when the parties are through conversing, the attendant is automatically signalled as the receivers are replaced to their hooks. At that time, the attendant restores

the cord circuits to normal, so that either party may promptly initiate other calls.

Provided that trunk connections are desired with an automatic city exchange, the telephones for the stations, which are to be given the privilege of such city exchange connections, must be equipped with calling devices. These calling devices are used only when calls are made through the city exchange and are not utilized for calls in the local system.

Standard Equipment

Stromberg-Carlson station telephones which are used for Inter-Comm-Phone System No. 6 are the same reliable and substantially built instruments that are so well known throughout the world and used in large city exchanges for both local and long distance service.

The switchboards are made in three sizes as follows:

- The No. 104-CX Cordless Type 10 lines capacity.
- The No. 101 Cord Type 30 lines capacity.
- The No. 102 Cord Type 100 lines capacity.

The No. 104-CX Cordless Switchboard comes fully equipped with 10 lines and 5 connecting circuits, but the No. 101 and the No. 102 types of switchboards although wired to capacity in all instances may be purchased with as low as 10 lines and 4 connecting circuits equipped.

Cabling of System

The cabling of this system is of the full metallic circuit type between all stations. Two wires only are required for connecting each station with the switchboard. Stromberg-Carlson Standard Switchboard Cables are furnished in the proper capacities for containing all the wires essential to fulfill the requirements for any size of exchange. These cables are made up so that any pair of wires may be identified by their coloring which makes the installation and testing a comparatively simple task. Two types of cables are available, viz., the braided sheath type and the leaded type. The cable with painted and braided

Inter-Comm-Phone System No. 6 (Cont.)

everything is recommended for interior use where the cable will not be subject to dampness, acid fumes or mechanical injury. The leaded cable should be specified for all outdoor use or places which are subject to excessive moisture, or corrosive fumes. Provided that iron conduit is used for cable runs the leaded type cable should be installed because it is unaffected by the condensation which takes place in the pipes.

Battery

The batteries required to operate this system should be of the secondary type—this is due to the fact that primary batteries do not have sufficient capacity to handle the load caused by the introduction of lamp signals and relays in the circuits of the system.

The battery recommended for any installation of not over 100 stations consists of 11 cells of Electric

Storage Battery Companies, Type UT chloride accumulators.

The charging apparatus, which has been found most satisfactory, is a General Electric Company's Catalogue No. 244,708 Tungar Rectifier. This rectifier needs practically no attention after it is once connected with the battery. In fact, it is the usual practice to float the battery continuously across the rectifier and to connect the rectifier with the 60 cycle 110 volt lighting circuit, by means of an ordinary attachment plug, which may be fitted into either a lamp socket or a wall outlet.

The overall dimensions of the rectifier are $6\frac{1}{4} \times 9\frac{1}{2} \times 7\frac{1}{4}$ inches.

Provided that an alternating current source of power supply is not available, quotations will be made on battery charging apparatus suited to the facilities at hand.

Telephones for Inter-Comm-Phone System No. 6

No. 986 Desk Stand and No. 1156-BY Desk Set Box



No. 986 Desk Stand with
1156-BY Desk Set Box

The No. 986 Desk Stand when associated with the No. 1156-BY Desk Set Box provides a very neat and light weight type of station instrument.

This desk stand is equipped with the Stromberg-Carlson standard transmitter and the Stromberg-Carlson standard magnetic receiver.

The 1000 ohm ringer, the induction coil and the I. M. F. condenser are mounted in the No. 1156-BY Desk Set Box.

Code No.	Description	List Price
986 Desk Stand with 1156-BY Desk Set Box.	Includes—complete talking and signalling apparatus for one station. Consists of pedestal type desk stand and pressed metal desk set box; both finished in durable dull black enamel with nickel trim.	\$35.80

Cords—No. D-3-C, 6 ft. Desk Stand Cord and No. R-2-G, 36 inch Receiver Cord.
Mounting space of Desk Set Box— $9\frac{1}{4} \times 6\frac{1}{4} \times 3\frac{1}{2}$ ins.

Approximate shipping weight—10 lbs.

No. 1155-BY Wall Telephone



No. 1155-BY
Wall Telephone

Telephones of this type are recommended as adapted particularly for use in hotels, clubs, schools, etc.,—where desk apparatus is not essential.

The box is of pressed steel construction with a hinged door which provides convenient means for inspection.

High grade talking qualities are insured by the Stromberg-Carlson standard, solid back, carbon cup transmitter and the Stromberg-Carlson standard direct current receiver.

The signalling equipment consists of a 1000 ohm ringer and a I. M. F. condenser.

Code No.	Description	List Price
1155-BY	Includes—complete talking and signalling apparatus for one station in a pressed metal box finished in durable dull black enamel with nickel trim.	\$29.01

Cord—No. R-2-G, 36 inch Receiver Cord.
Mounting space— $9\frac{1}{4} \times 7\frac{1}{4} \times 6\frac{1}{4}$ ins.
Approximate shipping weight—10 lbs.

Telephones for Inter-Comm-Phone System No. 6 (Cont.)

No. 10-C Combination Telephone and No. 1158-B Desk Set Box

No. 10-C
Combination Telephone

This telephone is unequalled for convenience in an office,—it may be installed as either a wall or desk instrument.

When not in use, the telephone hangs from the hookswitch box. This hookswitch box includes the induction coil, the line terminals, and the terminals for connecting the telephone with the desk set box.

The 1000 ohm ringer and the 1 M. F. condenser are mounted in the No. 1158-B Desk Set Box.

Code No.	Description	List Price
10-C	Includes—complete talking and signalling apparatus for one station. Consists of a rugged combination telephone and a pressed metal desk set box both finished in dull black. The desk set box has nickel trim.	\$38.94
Combination Telephone with 1158-B Desk Set Box.	Cord—No. C-4-B 4 ft. Combination Telephone Cord. Mounting space of Desk Set Box—5½ x 8 x 3½ ins. Approximate shipping weight—15 lbs.	

Switchboards for Inter-Comm-Phone System No. 6 (22 Volt Types)

No. 104-CX Cordless Switchboard

Front Perspective No. 104-CX
Cordless P. X. Switchboard

This switchboard is recommended for private exchange systems where the ultimate requirements will be for not more than 10 local lines. It is particularly recommended for use where it is desired to make all connections by means of keys, entirely dispensing with the use of both plugs and cords.

The apparatus is contained in a neat cabinet finished in dull golden oak. Each station line terminates at the switchboard on a lamp signal, a high wound relay and a key. This key not only serves for disconnecting the signalling apparatus but also serves for switching the line to the connecting circuits. These connecting circuits are of the single lamp signal type associated with a tandem wound battery feed relay.

Each No. 104-CX Cordless Switchboard is also furnished with a desk stand type operator's set, a night alarm with controlling switch and a hand generator with switch and terminals for cutting in power ringing current when desired.

The overall dimensions of the switchboard are as follows:
Height 16 ins. Width 16 ins. Depth 13½ ins.

The No. 104-CX Cordless Switchboard not only is remarkably easy to install on account of its simplicity but is very convenient to operate because it is designed to fit on any desk or table close to an attendant who as a general rule has other duties to perform.

Rear Perspective No. 104-CX
Cordless P. X. Switchboard

Wired For	Code No.	Lines Equipped	Cords Equipped	Approximate Shipping Weight	List Price
10 Lines 5 Connecting Circuits 3 Trunks	104-CX	10	5	100 lbs.	\$600.00

Front Perspective No. 101
Type P. X. Switchboard

No. 101 Type Private Exchange Switchboard

One section of the No. 101 Private Exchange Switchboard meets the requirements for service where the ultimate capacity of the system will be 50 or under 50 stations. All apparatus is contained in a neat oak cabinet, finished in dull golden oak. The overall dimensions of this switchboard are as follows:

Height 42½ ins. Width 20½ ins. Depth 29½ ins.

A particular advantage of this switchboard is, that should the exchange requirements grow beyond the capacity of 50 lines, an additional section may be matched to the original section. Such a combination of sections would give an ultimate capacity of 100 stations.

The station lines terminate at the switchboard on lamp signals with associated line jacks and high wound relays.

Miscellaneous Inter-Comm-Phone Accessories (Cont.)



No. 531 Dry Battery



Blake Insulated Staple



Milonite Perfection Nail

Talking and Ringing Batteries

List No.	Description	List Price
531	A low current dry cell especially designed for Inter-Comm-Phone Systems. Furnished with,—round jackets, flush top carbon, and Fahnestock spring binding posts. Initial shipping amperage,—18 to 22 amperes. Dimensions of cell—2½ x 6 ins. Weight per barrel—300 lbs.	\$0.43

Blake Insulated Staples

List No.	Description	List Price Per 1000
1085	No. 1—for securing either single wire or twisted pair wire to hardwood.	\$3.50
1086	No. 3—for securing either single wire or twisted pair wire to softwood.	3.50
1087	No. 5—for securing either twisted triplet wire or twisted pair wire to hardwood.	4.00
2383	No. 6—for securing either twisted triplet wire or twisted pair wire to softwood.	4.00

Milonite Perfection Nails

List No.	Description	List Price Per 1000
1697	A nail with an insulated head and a shank covered with insulating paint, so as to adapt it for use installing twisted pair wire. Colored either dark green or dark brown as specified. Furnished in two lengths of shanks,—½ inch or ¾ inch. Unless otherwise specified, a ¾ inch shank and a dark brown color will be supplied.	\$3.50

Tools

For Switchboards, Telephones and Miscellaneous Uses



No. 2



No. 7



No. 10

Code No.	Description	Price Each
2	Socket Wrench fits the ¾ in. hexagonal mounting nut of all Stromberg-Carlson visual signals, impulse coils and relays (except the No. 100 type relay). Length overall—12 ins. Weight—8 oz.	\$.75
7	Spring Adjuster used for adjusting springs up to .03 in. thick, on Stromberg-Carlson relays, keys, jacks, etc. Length overall—7 ½ ins. Weight—1½ oz.	.60
10	Lamp Cap Extractor used for removing the No. 27 Supervisory Lamp Cap and the Nos. 29 and 30 Line Lamp Caps. Length overall—2½ ins. Weight—½ oz.	.35

Tools (Cont.)

	Code No.	Description	Price Each
	14	Flat Telephone Wrench fits the $\frac{7}{8}$ in. and the $\frac{3}{4}$ in. hexagonal nuts on straight line ringers of both central energy and magneto telephones. Length overall—2 $\frac{1}{4}$ ins. Weight—1 oz.	\$.02
No. 14			
	27	Socket Wrench used with $\frac{7}{8}$ in. hexagonal nuts for miscellaneous uses. Length overall—6 ins. Weight—2 oz.	1.00
No. 27			
	31	Lamp Extractor used for removing standard switchboard lamps from lamp sockets. Made of black fibre. Length overall—5 $\frac{3}{4}$ ins. Weight— $\frac{1}{2}$ oz.	.15
No. 31			
	36	Spring Adjuster used for adjusting springs on Nos. 150, 190 and 200 type Relays. Especially handy where relays are equipped with three sets of springs. Length overall—6 $\frac{1}{8}$ ins. Weight—1 oz.	1.50
No. 36			
	39	Flat Wrench used with $\frac{3}{4}$ and $\frac{1}{2}$ in. hexagonal nuts for adjusting the sleeve nuts on the No. 11 Drop. Length overall—2 $\frac{3}{5}$ ins. Weight— $\frac{1}{2}$ oz.	.15
No. 39			
	40	Receiver Shell Wrench used for removing the shell from the Nos. 27 and 28 Receivers. Length overall—4 $\frac{1}{4}$ ins. Weight— $\frac{3}{4}$ oz.	.03
No. 40			
	42	Screw Driver for removing both shell and terminal screws from standard Stromberg-Carlson Plugs. One end is pointed and fits in a hole drilled in top of screw, to facilitate starting of screw. Length overall—3 $\frac{3}{4}$ ins. Weight— $\frac{1}{2}$ oz.	.70
No. 42			
	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 overall—19 ins. Weight—14 oz.	2.50
No. 44			
	45	Socket Screw Driver used for removing the Nos. 200 and 300 Type Relays from the bridge plate. Length overall—9 ins. Weight—4 oz.	1.50
No. 45			
	47	Flat Wrench used for adjusting No. 47 Type Harmonic Ringers. Length overall—3 $\frac{3}{4}$ ins. Weight— $\frac{1}{2}$ oz.	.03
No. 47			
	48	Number Plate Extractor used for removing ring on the inside of Nos. 28, 29 and 30 Lamp Caps. Length overall—3 $\frac{3}{5}$ ins. Weight— $\frac{1}{4}$ oz.	1.50
No. 48			

Tools (Cont.)

	Code No.	Description	Price Each
	49	Crimping Pliers used for denting top of plunger rod so as to retain buttons on the No. 190 Type Order Wire Key. Length overall—4 $\frac{1}{4}$ ins. Weight—8 oz.	\$2.50
No. 49			
	50	Renner used for running out dents made by the No. 49 Crimping Tool. Essential when replacing buttons on the No. 190 Type Order Wire Key. Length overall—6 $\frac{1}{2}$ ins. Weight 2 oz.	1.00
No. 50			
	52	Screw Driver used for removing screw terminals on the No. 11 Drop. May also be used for any small screws. Length overall—6 $\frac{1}{8}$ ins. Weight—1 $\frac{1}{2}$ oz.	.40
No. 52			
	53	Spring Adjuster used for adjusting contact springs on the No. 300 Type Relays. Length overall—3 $\frac{1}{8}$ ins. Weight—1 $\frac{1}{2}$ oz.	1.50
No. 53			
	54	Spring Adjuster used for adjusting No. 24 Gauge springs on the No. 200 Type Relay. Length overall—7 $\frac{1}{8}$ ins. Weight—1 $\frac{1}{2}$ oz.	1.50
No. 54			
	55	Wrench used for holding the armature, while tightening yoke nut on the No. 47 Harmonic Ringer. Length overall—4 ins. Weight—1 $\frac{1}{2}$ oz.	.10
No. 55			
	56	Small Screw Driver used for miscellaneous small screws. Length overall—4 $\frac{1}{4}$ ins. Weight $\frac{1}{2}$ oz.	.10
No. 56			
	57	Assorted tools mounted on 8 $\frac{1}{2}$ x 11 in. card designed for use with the No. 103 Magneto Switchboard. The assortment consists of the No. 30 Wrench, No. 42 Plug Screw Driver, No. 56 Screw Driver, No. 52 Screw Driver, and No. 7 Relay Spring Adjuster. Total weight—6 ozs.	1.95
No. 58			
	58	Lamp Cap Extractor used for removing the No. 31 Lamp Cap. Similar to the No. 40 Tool excepting the prongs which are shorter. Length overall—2 $\frac{1}{4}$ ins. Weight— $\frac{1}{4}$ oz.	.35

Transmitters

The transmitters on Stromberg-Carlson telephones are recognized throughout the World as standards of the highest efficiency in service.

Some of the principal reasons why Stromberg-Carlson transmitters occupy this enviable position are as follows:

Low inertia of vibrating parts. The diaphragm vibrates without moving the entire weight of the carbon cups. A feature which prevents unnecessary distortion of speech.

Perfectly flat diaphragm with crimped edges. This design has been found the best for accurately responding to the pressure of the impressed voice waves.

Three distinctive types of carbon cups. One type for low voltage magneto service, a second type for low voltage heavy current central energy service such as is encountered with Bell circuits and a third type—the famous Split Electrode—for high voltage central energy systems where condenser type cord circuits are employed. This subdivision of carbon cups is supplemented by grading the size of the carbon granules. In other words the right size of carbon cup is combined with the right size of carbon granule to make the correct transmitter for a particular service requirement.



No. 1 Type Transmitter with
No. 2 Card Frame



Cross Section, No. 7-L Transmitter



No. 8-C Transmitter



No. 12-L Transmitter

Code No.	Description	Price Each
7-C	"Split Electrode Type." Built especially for the condenser type of cord circuits, which are used so successfully by independent operating companies. Has nickel-plated front and bakelite mouthpiece. This transmitter—unless otherwise specified on the order—comes complete with back for mounting on any of the following modern desk stands and modern wall telephones:—Stromberg-Carlson, Kelllogg, Garford, Deane, Monarch, Leach, American Electric, Sumter, Swedish-American Chicago, Vote-Berger, Century, North. Price less back \$1.85	\$2.00
7-CW	A central energy transmitter which is unequalled for service on either Desk Stands or Wall telephones that connect with low voltage high current circuits such as are employed by the Bell operating companies. Fits the same telephones as the above mentioned No. 7-C Transmitter. Has nickel-plated front and bakelite mouthpiece. Price less back \$1.85	\$2.00
7-L	A local battery transmitter for any magneto system. This transmitter is remarkable, not only from a talking efficiency point of view, but also from a battery economy point of view. It is a genuine "two dry cell" transmitter. Fits the same telephones as the above mentioned No. 7-C Transmitter. Has nickel-plated front and bakelite mouthpiece. Price less back \$1.85,	2.00
8-C	Suspended type switchboard transmitter, used on P. B. X. switchboards and on other central energy telephone switchboards where a suspended transmitter is desired. Has nickel-plated front and bakelite mouthpiece.	2.75
8-L	Suspended type switchboard transmitter, used on all Stromberg-Carlson Magneto Switchboards which are equipped with suspended transmitters. Has nickel-plated front and bakelite mouthpiece.	2.75
12-L	A local battery transmitter. Used on the No. 844 Magneto Test Set. Has a nickel-plated and perforated metal mouthpiece which is flush with the surface of the test set.	3.00

Transmitters (Cont.)



No. 18-C Operator's Transmitter



No. P-12192 Adapter Being Assembled to a Kelllogg Desk Stand



No. P-9073 Adapter



No. P-13073 Adapter



No. 15 Transmitter Arm



No. 19 Transmitter Arm



No. 20-B Transmitter Arm

Code No.	Description	Price Each
18-C	A Central Energy Switchboard Transmitter of the breast plate type. Used on the No. 2-C Operators Telephone Set. Has nickel-plated front and semi-vulcanized mouthpiece.	\$5.00
18-L	A breast plate switchboard transmitter for magneto service. Used on the No. 2-L Operator's Telephone Set. Has nickel-plated front and semi-vulcanized mouthpiece.	5.00

Transmitter Adapters

Stromberg-Carlson transmitters can be mounted on any of the well-known makes of telephones. This is easily accomplished in practically every instance because Stromberg-Carlson transmitters are slightly smaller in diameter than most transmitters. Therefore, by employing a very simple adapter the advantage of a Stromberg-Carlson transmitter is gained readily.

This adapter not only gives the opportunity of improving transmission by installing Stromberg-Carlson transmitters on telephones now in service but also gives the opportunity of reducing transmitter stock to where it is necessary to carry only Stromberg-Carlson transmitters for all maintenance requirements.

Stromberg-Carlson Transmitter Adapters are furnished in several types. Select from the following table the proper Transmitter Adapter.

Number	Description	Price Each
P-12192	Mounts the No. 7-C or the No. 7-L Transmitter—less back—on any of the following makes of telephones: Automatic (new design), Canadian Independent, Dean, Garford, Kelllogg, Western Electric, Vote-Berger and Monarch. This transmitter adapter is made of brass, nickel-plated.	\$.05
P-9073	Mounts the No. 7-C or the No. 7-L Transmitter—with back—on a "Sterling" transmitter arm. Made of brass nickel-plated. Includes—2 No. P-8526 Mounting Screws.	.15
P-9074	Similar to No. P-9073 but mounts the No. 7-C or the No. 7-L Transmitter—with back—on an "International" arm. Made of brass, nickel-plated. Includes 2 No. P-5136 Mounting Screws.	.15
P-13073	Mounts the Nos. 7-C and 7-L Transmitters—with back—to modern Western Electric desk stands and metal wall telephones. Made of brass, nickel-plated.	.40

Transmitter Arms

Code No.	Description	Price Each
15	Switchboard Transmitter Arm. Mounts on roof of switchboard. Standard equipment for the Nos. 101, 102 and 105 Switchboards. Adjusts to any desired position, swings horizontally, swings vertically and telescopes from a fully extended length of 23 ins. to a fully contracted length of 14 ins. Suspends the transmitter on flexible cords. Made of brass with nickel-plated finish.	\$7.50
19	Telephone Transmitter Arm. Used on No. 806 Magneto Telephones. Mounts on wood. Made of iron, finished in black enamel. Has vertical adjustment. Mounts Nos. 7-L, 7-C and 7-CW Transmitters.	.75
20-A	Telephone Transmitter Arm. Used on No. 1126 Wall Telephone. Mounts on wood. Made of brass and iron, finished in black enamel. Has vertical adjustment. Mounts Nos. 7-C and 7-CW Transmitters.	.60
20-B	Telephone Transmitter Arm. Used on Nos. 1130, 1155 and 1157 Wall Telephones. Mounts on metal. Made of brass and iron, finished in black enamel. Has vertical adjustment. Mounts Nos. 7-C and 7-CW Transmitters.	.60

Crossarms



The following tables show the standard specifications of telephone and electric light crossarms which are available in either Washington Fir or Mississippi Long-Leaf Yellow Pine.

Washington Fir Crossarms are stronger and outlast Yellow Pine Crossarms even when the latter are treated with preservative. The first cost of fir crossarms is greater than for yellow pine arms of new dimensions, but their long life makes them most economical in the long run.

"Telephone" (2½" x 3½") crossarms are recommended for local exchanges and for rural lines—but for long-distance lines and heavy rural loads the heavier "Electric Light" (3½" x 4½") crossarms are recommended.

All crossarms listed below are drilled for ½" center hole, ½" lower hole. The 2½" x 3½" crossarms are bored for 1½" pin, and the 3½" x 4½" crossarms are bored for 1½" pin as standard.

Cross-Arm Specification

McCormick Fir: Yellow Douglas Fir; straight grained; 75 per cent heart, free from shakes, rot, yellow or unsound knots.

Net Prices Per 100 on Long Leaf Mississippi Yellow Pine Cross Arms

List No.	Size and Length	Weight	Carlson Only F. O. B. Mill			Unpainted All Heart	
			Standard Grade	Unsound 75% Heart	Unsound 75% Heart	Unsound 75% Heart	Unsound 75% Heart
1 P	24 inches 2 pin	430	\$ 9.00	\$12.90			\$10.00
2 P	30 inches 2 pin	813	11.25	16.00			20.00
2323 P	36 inches 2 pin	1318	13.38	18.75			24.00
3 P	42 inches 4 pin	1134	10.75	12.40			18.00
4 P	62 inches 6 pin	1680	23.30	33.07			41.34
5 P	82 inches 8 pin	2220	30.75	43.75			54.62
6 P	102 inches 10 pin	2762	38.25	54.89			68.00
1307 P	3 feet 2 pin	1320	\$17.22	\$25.20			\$31.51
1308 P	4 feet 4 pin	1780	20.00	33.00			42.00
1309 P	5 feet 4 pin	2200	29.53	40.00			52.51
2334 P	6 feet 4 pin	2640	33.44	50.47			63.00
1310 P	6 feet 6 pin	2640	33.44	50.47			63.00
1311 P	8 feet 6 pin	3520	47.25	67.20			84.00
1312 P	8 feet 8 pin	3520	47.25	67.20			84.00
2335 P	8½ feet 10 pin	3740	52.16	73.69			90.52
1313 P	10 feet 8 pin	4400	59.06	83.92			105.00
1314 P	10 feet 10 pin	4400	59.06	83.92			105.00

Net Prices Per 100 on McCormick Fir Cross Arms

List No.	Size and Length	Weight	F. O. B. Chicago			F. O. B. Kansas City			F. O. B. Minnesota Tr.		
			Carlson Only	1000 Linear Feet	Over Linear Feet	Carlson Only	1000 Linear Feet	Over Linear Feet	Carlson Only	1000 Linear Feet	Over Linear Feet
1 P	24 inches 2 pin	500	\$11.10	\$21.80	\$20.27	\$22.20	\$19.73	\$22.20	\$19.73	\$22.20	\$19.73
2 P	30 inches 2 pin	625	13.87	28.50	25.83	27.75	21.87	27.75	21.87	27.75	21.87
2323 P	36 inches 2 pin	750	16.65	34.20	30.40	33.30	29.60	33.30	29.60	33.30	29.60
3 P	42 inches 4 pin	1075	19.42	39.90	35.47	38.45	31.52	38.45	31.52	38.45	31.52
4 P	62 inches 6 pin	1300	26.67	58.90	52.35	52.35	30.98	52.35	30.98	52.35	30.98
5 P	82 inches 8 pin	1700	37.92	77.90	68.24	75.85	47.42	75.85	47.42	75.85	47.42
6 P	102 inches 10 pin	2125	47.17	98.90	86.13	94.55	62.87	94.55	62.87	94.55	62.87
1307 P	3 feet 2 pin	1020	21.85	44.80	39.80	43.71	38.85	43.71	38.85	43.71	38.85
1308 P	4 feet 4 pin	1380	26.14	59.83	50.28	58.28	48.28	58.28	48.28	58.28	48.28
1309 P	5 feet 4 pin	1700	30.42	74.81	60.50	72.84	64.73	72.84	64.73	72.84	64.73
2334 P	6 feet 4 pin	2040	43.71	80.78	79.80	82.41	77.20	82.41	77.20	82.41	77.20
1310 P	6 feet 6 pin	2040	43.71	80.78	79.80	82.41	77.20	82.41	77.20	82.41	77.20
1311 P	8 feet 6 pin	2720	58.27	119.70	108.40	116.55	103.69	116.55	103.69	116.55	103.69
1312 P	8 feet 8 pin	2720	58.27	119.70	108.40	116.55	103.69	116.55	103.69	116.55	103.69
2335 P	8½ feet 10 pin	2980	63.56	134.66	119.70	131.12	116.55	131.12	116.55	131.12	116.55
1313 P	10 feet 8 pin	3400	72.84	149.63	133.00	143.69	129.50	143.69	129.50	143.69	129.50
1314 P	10 feet 10 pin	3400	72.84	149.63	133.00	143.69	129.50	143.69	129.50	143.69	129.50

On crossarms from the warehouse is 3½% less than 1000 Linear Feet price.

On shipments from warehouse add 20% to net prices above for painting two coats red paint or for insulating for fire.

Net Prices Per 100 On McCormick Fir Cross Arms

F. O. B. Rutherford, N. J.

List No.	Size and Weight	Less than 1000 Linear Feet	1000 to 3000 Linear Feet	Over 3000 Linear Feet
1307 P	3 feet 2 pin	\$ 11.08	\$ 45.43	\$ 42.57
1308 P	4 feet 4 pin	13.60	49.54	46.76
1309 P	5 feet 4 pin	17.00	65.14	70.96
2334 P	6 feet 4 pin	20.40	80.82	85.15
1310 P	6 feet 6 pin	20.40	80.82	85.15
1311 P	8 feet 6 pin	27.20	103.23	103.69
1312 P	8 feet 8 pin	27.20	103.23	103.69
2335 P	8½ feet 10 pin	30.00	121.69	121.69
1313 P	10 feet 8 pin	34.00	151.37	141.82
1314 P	10 feet 10 pin	34.00	151.37	141.82

Wood Pole Step



Owing to liability of injury to pedestrians it is customary to use wooden pole steps instead of iron steps for the lower three or four steps on stepped poles. Made of oak, painted and bored for two spikes. Standard package 100 per lot.

List No.	Per 1000	F. O. B.	
		R. & C.	K. C.
1924	1 1/2 inches x 2 inches x 7 inches		
	Less than 100.....	\$ 14.50	\$14.75
	100 to 1000.....	11.00	14.25
	1000 to 5000.....	13.50	13.75
	1000 to 5000.....	13.00	13.25

Weight 500 lbs. per 1000

Wood Pins



Standard Pin



Transposition Pin

Used for attaching glass insulators to crossarms. Lowest pins should be used in preference for oak—they last longer. Transposition pins are designed for use with transposition insulators but are gradually becoming obsolete, being replaced by galvanized deep brackets. 8 and pins packed 250 per lot.

F. O. B. Rochester, Chicago and Kansas City, Per 1000

List No.	Lbs.	Less than	250	1000	2500
7	1 1/2 x 8 in. oak	300	\$16.75	\$17.50	\$16.75
8	1 1/2 x 8 in. oak	325	21.00	20.00	18.25
790	1 1/2 x 8 in. locust	330	42.00	40.00	37.50
791	1 1/2 x 8 in. oak	400	35.00	33.25	30.00
791	1 1/2 x 8 in. locust	430	49.00	47.50	42.00

Wood Corner Pins



For use on corner poles of lines where pins of greater strength are required. Consists of a wood pin with 1/4 inch bolt through center and fastened on under side of crossarm with nut and washer.

With Galvanized Bolts, Per 100

List No.	Lbs.	Less than	250	1000	2500
88	1 1/2 x 8 in. oak	1000	\$11.50	\$10.25	\$ 9.75
2336	1 1/2 x 8 in. locust	625	12.75	12.00	10.80
89	1 1/2 x 8 in. oak	725	14.00	13.50	12.00
2337	1 1/2 x 8 in. locust	775	16.50	15.75	14.25

Western Union Patent Steel Pin



Made of steel with nut and washer. Patented wood top. F. O. B. Rochester and Chicago. Galvanized, Per 100

List No.	Lbs.	Less than	250	1000	2500
9	1 1/2 x 8 in.	720	\$10.55	\$ 9.75	\$ 9.25
11	1 1/2 x 8 in.	1100	15.75	14.75	13.25
9	1 1/2 x 8 in.	720	\$11.10	\$10.25	\$ 9.50
11	1 1/2 x 8 in.	1100	16.75	15.75	14.00

Paraffined Wood W. U. Cob Tops for Western Union Steel Pins

F. O. B. Rochester and Chicago, Per 100

List No.	Lbs.	Less than	250	1000
2334	For 1/4 inch pin	600	\$ 2.75	\$ 1.50
2335	For 1/2 inch pin	600	1.90	1.60
2334	For 1/4 inch pin	600	\$ 3.00	\$ 1.70
2335	For 1/2 inch pin	600	1.95	1.65

Wood Brackets—Single

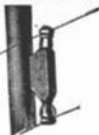


Used for supporting glass insulators on rural lines. It is always best to use the heavy List No. 790 Oak Bracket, as the lighter types are apt to split where subject to the combined strain of long spans, high winds and ice loading. Standard package 250 per lot.

F. O. B. Rochester, Chicago and Kansas City, Per 1000

List No.	Lbs.	Less than	250	1000
13	15 x 12	100	\$16.75	\$16.00
796	2 1/2 x 12	100	\$16.75	\$16.00
797	15 x 12	100	\$16.75	\$16.00
1563	15 x 12	100	\$16.75	\$16.00

Duplex Brackets—Wood



For use in connection with Duplex Pony and Duplex Deep Groove Insulators.

F. O. B. Rochester, Chicago and Kansas City, Per 1000

List No.	Lbs.	Less than	250	1000
91	15 x 12 x 16 inches	1000	\$36.00	\$32.50

Telephone House and Pole Brackets



This set illustrates the manner in which these brackets are usually assembled, although Brackets, Bolts and Washers are always shipped unmounted.

House Brackets are made from 1/2 x 1 1/2 inch steel with three holes 1/2 inch diameter provided for mounting to wall. A 1/2 x 2 inch machine or stove bolt is used for mounting one Double Groove Bracket or a 1/2 x 3/4 inch for mounting two Double Groove Brackets.

Telephone House and Pole Brackets (Cont.)

Pole Brackets are made from $\frac{1}{4}$ x 2 inch steel with two holes $\frac{1}{4}$ inch diameter provided for mounting to pole. A $\frac{1}{4}$ x 2 inch machine or stove bolt is used for mounting one Four Groove Knob or a $\frac{1}{4}$ x $\frac{1}{2}$ inch for mounting two Four Groove Knobs. Bolts and Brackets are always furnished hot galvanized. F. O. B. Rochester and Chicago. Per 1000.

List No.	Lbs. Wgt. Per 1000	Less than 100	100 to 500
2336	Δ 1 $\frac{1}{2}$ House Bracket.....	57	\$ 72.50 \$ 68.25
2339	Δ 2 Pole Bracket.....	100	118.00 110.50
2120	2 Groove Porcelain Knob.....	210	30.80 27.50
2343	4 Groove Porcelain Knob.....	365	51.30 46.25
2343	Δ x 2 Machine Bolt Galv. for use with one No. 2120 knob and one No. 2336 Bracket.....	70	13.00 14.00
2342	Δ x $\frac{1}{2}$ Machine Bolt Galv. for use with two No. 2120 knobs and one No. 2336 Bracket.....	100	19.75 18.50
2344	$\frac{1}{4}$ x 2 Machine Bolt Galv. for use with one No. 2341 Knob and one		

List No.	Lbs. Wgt. Per 1000	Less than 100	100 to 500
2345	No. 2339 Bracket.....	120	\$ 23.70 \$ 22.25
	$\frac{1}{4}$ x $\frac{1}{2}$ Machine Bolt Galv. for use with two No. 2341 Knobs and one No. 2339 Bracket.....	220	30.50 28.75
2829	No. 14 $\frac{1}{4}$ R. H. Galvanized Iron Wood Screw for mounting pole brackets.....		25.60 25.00
	Knobs and Bolts not included in price on brackets.		
	F. O. B. Kansas City. Per 1000		

List No.	Lbs. Wgt. Per 1000	Less than 100	100 to 500
2336	Δ x $\frac{1}{2}$ House Bracket.....	57	\$ 77.25 \$ 72.25
2339	Δ x 2 Pole Bracket.....	100	125.50 117.50
2120	2 Groove Porcelain Knob.....	210	31.30 27.50
2341	4 Groove Porcelain Knob.....	365	52.45 46.50
2343	Δ x 2 Machine Bolt Galv.	70	15.75 14.50
2342	Δ x $\frac{1}{2}$ Machine Bolt Galv.	100	20.75 19.25
2344	$\frac{1}{4}$ x 2 Machine Bolt Galv.	120	25.00 23.50
2345	$\frac{1}{4}$ x $\frac{1}{2}$ Machine Bolt Galv.	220	32.50 30.50
2829	No. 14 $\frac{1}{4}$ R. H. Galvanized Iron Wood Screw for mounting pole brackets.....		25.60 25.00

Galvanized All-Steel Cross Arm Brackets



Telephone House and Pole Brackets



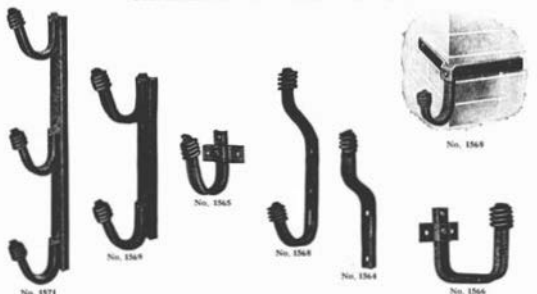
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Galvanized All-Steel Cross Arm Brackets—(Cont.)

List No.	Description	Lbs. Weight per 100	F. O. B. Factory				
			up to 24	25 to 99	100 to 499	500 to 999	1000 & over
1573	1-Point Trans. Bracket.....	54	\$26.57	\$ 24.39	\$ 23.30	\$ 22.21	\$ 21.79
1576	1-Point Trans. Bracket.....	123	30.73	28.23	26.97	25.71	25.23
1577	1-Point Trans. (long thread).....	106	45.12	42.34	40.43	38.56	37.81
1578	2-Point Trans. Bracket.....	201	44.89	41.21	39.27	37.53	36.90
1579	4-Point Trans. Bracket.....	432	102.24	95.05	90.81	86.56	84.87
1580	End Break Arm.....	130	44.28	40.63	38.81	37.00	36.28
1581	2-Point Service Bracket.....	241	63.33	58.97	57.29	54.62	53.55
1582	Underhang Bracket.....	228	62.01	56.92	54.28	51.84	50.83
1583	Cow Horn Break Arm.....	140	43.76	42.01	40.13	38.26	37.51
1584	Heavy Cow Horn Break Arm.....	200	54.52	50.65	47.81	45.58	44.69
1585	Terminal Bracket (small).....	46	14.00	12.93	12.35	11.76	11.55
1586	Terminal Bracket (large).....	96	17.29	15.47	15.16	14.45	14.17

Add 10% to all above when shipped from Kansas City stock.

Galvanized All-Steel House Brackets



Steel brackets are used principally for wiring about buildings and are furnished in many shapes and sizes to meet all construction needs. Made of galvanized steel channel sections and provided with spring threads which will not crack insulators due

to temperature changes or permit insulators to work loose in service. Standard thread fits all glass insulators that can be used on standard wood pins or brackets.

List No.	Description	Lbs. Weight Per 100	F. O. B. Factory				
			up to 24	25 to 99	100 to 499	500 to 999	1000 & over
1564	1-Point Special.....	26	\$11.93	\$10.97	\$10.16	\$ 9.99	\$ 9.80
1565	1-Point House Bracket.....	36	14.74	13.54	12.93	12.53	12.00
1566	Heavy 1-Point House.....	95	23.68	23.02	21.99	20.97	20.56
1567	1-Point Corner Bracket.....	74	19.19	17.81	16.34	16.04	15.72
1568	2-Point Window Bracket.....	90	23.10	21.04	22.02	20.99	20.54
1569	2-Point Vertical.....	145	33.63	32.71	31.25	29.79	29.21
1571	2-Point Vertical.....	210	54.02	49.50	47.37	45.16	44.58

Add 10% to all above when shipped from Kansas City stock.

Lag Screw Brackets



Used for supporting wires on poles, trees, houses, mine timbers, etc. Made of galvanized steel and spring threads for insulators.

List No.	Description	Per 100	Lbs. Weight			
			up to 24	25 to 99	100 to 499	500 to 999
2069	7/8 x 1/2 in.	650	\$13.83	\$12.23	\$11.60	\$11.60
2068	1/2 square x 6 1/2 long, threaded end 3" long.	3000	18.97	17.41	16.63	16.63

Glass Insulators

The No. 9 Pony Glass Insulator is recommended for long-span line construction. This insulator is very popular for such construction on account of its long, high resistance leakage path. Weight of each insulator—9 oz. Weight per standard barrel of 480 insulators 250 lbs.

The No. 12 Pony Glass Insulator is provided with two grooves for wires. The extra groove not only assists in preventing surface leakage, but also affords means for dead-ending

Glass Insulators (Cont.)



No. 12



No. 16

open wires, taking off drop wires, etc. Weight of each insulator—10½ oz. Weight per standard barrel of 400 insulators 200 lbs.

The No. 16 Regular Long-Distance Glass Insulator is much heavier than the Puny Insulators. In fact, it is designed especially for long-distance toll lines where the highest possible insulation must be maintained. Weight of each insulator—14 oz. Weight per standard barrel of 300 insulators 200 lbs.



No. 9



No. 50



No. 53

The No. 50 Two-Piece Transposition Glass Insulator is preferred by some users because breakage of either part will not affect the holding qualities of the other part. Each insulator consists of one top and one bottom piece. Weight of each insulator—25½ oz. Weight per standard barrel of 125 insulators 200 lbs.

The No. 53 One-Piece Transposition Glass Insulator replaces former No. 51 and No. 52 types of Hemingray Insulators. This insulator is used for making transpositions on open wire lines. Furthermore, on account of its being of heavy design, it is desirable for phantom circuit construction. Weight of each insulator 31½ oz. Weight per standard barrel of 100 insulators 250 lbs.

Glass Insulators, F. O. B. Rochester
Per 1000

List No.	Less than std. pkg.	Std. pkg.	Std. and less than 1000	1000 to 10,000
15 No. 9 Puny.....	\$7.46	\$17.36	\$45.90	
16 No. 12 Puny.....	77.36	59.08	48.79	
97 No. 16 Long distance.....	92.90	71.53	54.62	
19 No. 50 Two piece trans.....	214.64	195.34	152.04	
2793 No. 53 One piece trans.....	258.92	199.92	162.92	

Glass Insulators, F. O. B. Chicago
Per 1000

List No.	Less than std. pkg.	Std. pkg.	Std. and less than 1000	1000 to 10,000
15 No. 9 Puny.....	\$7.46	\$16.10	\$45.00	
16 No. 12 Puny.....	76.19	58.19	47.39	
97 No. 16 Long distance.....	91.19	69.72	56.82	
19 No. 50 Two piece trans.....	210.51	181.02	148.51	
2793 No. 53 One piece trans.....	253.69	181.69	157.69	

Glass Insulators, F. O. B. Kansas City
Per 1000

List No.	Less than std. pkg.	Std. pkg.	Std. and less than 1000	1000 to 10,000
15 No. 9 Puny.....	\$7.46	\$16.67	\$50.17	
16 No. 12 Puny.....	81.39	63.39	52.59	
97 No. 16 Long distance.....	97.60	79.43	63.52	
19 No. 50 Two piece trans.....	213.60	196.10	161.60	
2793 No. 53 One piece trans.....	268.43	208.43	172.43	

Glass Insulators, F. O. B. Factory
Per 1000

List No.	Less than std. pkg.	Std. pkg.	Std. and less than 5000	5000 and less than Crd.	Crd. and over
15 No. 9 Puny.....	\$70.00	\$11.15	\$20.00	\$36.95	
16 No. 12 Puny.....	72.00	42.30	40.15	38.00	
97 No. 16 Long dist.....	85.70	50.35	47.80	45.20	
19 No. 50 Two pc. trans.....	230.00	125.55	128.25	121.35	
2793 No. 53 One pc. trans.....	240.00	141.00	133.80	126.00	

Prices covering shipments made from factory are based on full barrels only. When a barrel is broken, there will be an additional charge of approximately \$1.00 for packing.

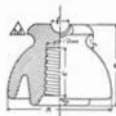
Porcelain Insulators



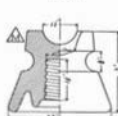
No. 109



No. 112



No. 253



No. 267

Porcelain insulators are superior to glass insulators both in strength and in insulating qualities. Insulators of this kind are less liable to breakage due to the impact of shotgun shells, bullets from target rifles, etc. In fact, porcelain insulators under all circumstances are far less liable to breakage than glass insulators. Furthermore, their insulating properties, especially during damp weather, are much superior to those of glass insulators.

Owing to their high insulating properties porcelain insulators are generally preferred not only for phantom line construction

Porcelain Insulators (Cont.)

tion but also for construction which parallels high-tension power circuits where leakage must be kept at an absolute minimum.

The No. 109 Pony Insulator is recommended for either city or rural work in preference to glass insulators. This insulator is made of tough white glazed porcelain. Weight of each insulator 10 ounces. Weight per barrel of 300 insulators 300 pounds.

The No. 112 Double Groove Pony Insulator is used in line construction where the 109 Pony Insulator is employed for regular work. This insulator, on account of its extra groove, is used for the dead-end line and for taking up drop wires. It is made of tough white glazed porcelain. Each insulator weighs 14 ounces. Weight per standard barrel of 300 insulators 360 pounds.

The No. 247 Electric Light and Power Porcelain Insulator is a first-quality product for lighting and power service. Its nominal rating is 6000 volts. Weight per barrel of 230 insulators 375 pounds.

The No. 253 Electric Light and Power Porcelain Insulator also is a first-quality product for light and power service. Its nominal potential rating is 6000 volts. Weight per standard barrel of 253 insulators 380 lbs.

Per 1000	
List No.	
1367	No. 109 Pony Insulator [300 per bbl.] \$ 90.00
1368	No. 112 Double Groove Pony Insul. [300 per bbl.] 90.00
2346	No. 247 Light and Power Insul. [230 per bbl.] 390.00
2347	No. 253 Light and Power Insul. [275 per bbl.] 200.00

Discounts

F. O. B. F. O. B. F. O. B.

Chicago & Macomb, Ill. K. C. Rochester

	Plus 35%	Plus 25%	Plus 32%
1-5 Bbl. and less			
Less than Bbl. and more			
Over 1-5 Bbl.	Plus 25%	Plus 15%	Plus 25%
1 cu. to 1 cu. yd.	Plus 15%	Plus 10%	Plus 15%
10 Bbl. to Carload	Special	Special	Special
Carload and over	Special	Special	Special

Only list Nos. 1367 and 1368 are carried in stock.

Glass Knobs



The No. 100 Glass Insulating Knob is preferred by some customers because it is not so conspicuous as a white porcelain knob, particularly when fastened to the sides of rubber-tire houses, etc. Weight of each insulator 3 oz. Height 1 1/2 in. Width 1 1/2 in. Groove 3/4 in. Hole 3/4 in. Weight per keg of 300 knobs 100 lbs.

The No. 101 Glass Insulating Knob is slightly heavier than the No. 100 Knob. It is used where greater strains are contemplated such as, the first knob on a building which takes the strain of the span of wire to the last pole. Weight of each insulator 3 1/2 oz. Height 1 1/2 in. Width 1 1/2 in. Groove 3/4 in. Hole 3/4 in. Weight per keg of 300 knobs 123 lbs.

The No. 102 Glass Insulating Knob is a heavy insulator that is used for supporting power cables, small trays of storage batteries, etc. Weight of each insulator 6 1/2 oz. Height 1 1/2 in. Width 2 in. Groove 3/4 in. Hole 3/4 in. Weight per keg of 300 knobs 225 lbs.

The No. 99 Glass Circuit Breaker is used for making an insulating joint in a light span, for making an insulating joint to guy wire and for dead-ending bracket construction. It is a very desirable insulator for these purposes, especially in rough-line construction. Weight of each insulator 12 oz. Weight per barrel of 300 insulators 370 lbs.

Glass Knobs F. O. B. Rochester

Per 1000

List No.	Less than std. pkg.	Std. pkg. and less than 1000	1000 to 18,000
117	No. 100 Glass knob	\$ 71.54	\$ 54.24
118	No. 101 Glass knob	81.36	61.44
122	No. 102 Glass knob	83.27	64.75
219	No. 90 Glass Insulator	281.18	212.18

Glass Knobs F. O. B. Chicago

Per 1000

List No.	Less than std. pkg.	Std. pkg. and less than 1000	1000 to 18,000
117	No. 100 Glass knob	71.48	53.88
118	No. 101 Glass knob	80.80	60.97
122	No. 102 Glass knob	84.20	63.87
249	No. 90 Glass Insulator	279.80	210.80

Glass Knobs F. O. B. Kansas City

Per 1000

List No.	Less than std. pkg.	Std. pkg. and less than 1000	1000 to 18,000
117	No. 100 Glass knob	72.82	55.22
118	No. 101 Glass knob	82.14	62.56
122	No. 102 Glass knob	87.47	66.10
249	No. 90 Glass Insulator	284.71	215.71

Glass Knobs F. O. B. Factory

Per 1000

List No.		Std.	10,000	18,000	Crd. and Over
		Less than std. pkg.				and less than 10,000	and less than 18,000
117	No. 100 Glass knob	\$71.54	\$41.36	\$39.05	\$37.15
118	No. 101 Glass knob	79.70	59.78	46.80	44.25
122	No. 102 Glass knob	82.10	61.56	48.25	45.55
249	No. 90 Glass knob	276.00	207.00	162.15	153.85

Glass Tree Insulator



Gives free motion of the line without straining the wire. Can be reversed or inverted so as to pull wire up or down to obtain best results. Can be used with bare wire thus cutting out the expense of insulated wire entirely.

Gives complete insulation at all times and under all conditions.

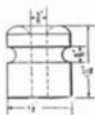
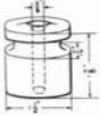
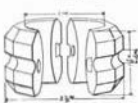
Standard Package contains 150

List No.		Per 1000			
		Wgt. per 1000 Lbs.	Less than 150	150 to 500	500 to 1000
1285	Tree Insulator, Std. size.....	\$230	\$217.50	\$237.50	\$227.50
1286	Tree Insulator, Elve, light size.....	1000	232.50	242.50	232.50
	1000 and over.....			Special	

Add

\$3.00 per M in list No. 1505 when shipped from Kansas City stock
\$4.00 per M in list No. 1206 when shipped from Kansas City stock

Porcelain Knobs

No. 4
List No. 20No. 4 1-2
List No. 799No. 5
List No. 21No. 22
List No. 801No. 61
List No. 21232 GR. TEL.
List No. 2120

The No. 4 Porcelain Knob is used for connecting drop wires to poles and to buildings. It is made of a tough white porcelain. Weight per barrel of 2000 knobs 400 pounds.

The No. 4 1/2 Porcelain Knob is slightly heavier and proportionately stronger than the No. 4 Porcelain Knob. Therefore, it is adapted to use not only with heavier wires but longer spans. This knob is made of tough white porcelain. Weight per barrel of 2000 knobs 400 pounds.

The No. 5 Porcelain Knob is a small type which is used on low voltage circuits. It is particularly useful in wiring circuits such as power generator and battery leads to electric boards. This insulator is made of tough white porcelain. Weight per barrel of 2000 knobs 475 pounds.

The No. 22 Split Porcelain Insulator is very useful for supporting telephone wires through trees from trolley open wires, etc. Any two pieces make a complete insulator. This insulator is made of tough white porcelain. Weight per barrel of 1200 insulators 300 pounds.

The No. 31 Split Porcelain Knob is generally used for insulating and for fastening twisted pair drop wires. Its construction eliminates the necessity of tie wires. Any two pieces make up a complete knob. The material is of tough white porcelain with corrugated wire groove construction. Protrusions also are furnished on the flat side so that the knob may be used either side up without the possibility of either loosening or turning. Height 1 1/4 inches. Diameter 1 1/4 inches. Weight per barrel of 3200 knobs 400 pounds.

The Special Telephone Knobs known as 2 GR., Tel., No. 4 2 GR., and No. 4 GR., Tel. are porcelain knobs which are used with distributing racks and sockets for distributing twisted pair drop wires in cable running systems. These insulators are made of tough white porcelain and are particularly adapted for their work on account of their high tensile strength.

The 2 GR., Tel. Knob (Stromberg-Carlson List No. 2120) has a height of 1 1/2 inches, a diameter of 1 1/2 inches, a 1/2 inch hole and two 1/4 inch grooves. Weight per barrel of 2000 knobs 420 pounds.

The No. 4 2 GR. Knob (Stromberg-Carlson List No. 2340) has a height of 1 1/4 inches, a diameter of 1 1/2 inches, a 1/2 inch hole and two 1/4 inch grooves. Weight per barrel of 2000 insulators 450 pounds.

The No. 4 GR., Tel. Knob (Stromberg-Carlson List No. 2341) has a height of 2 1/4 inches, a diameter of 1 1/2 inches, a 1/2 inch hole and four 1/4 inch grooves. Weight per barrel of 1000 knobs 260 pounds.

The No. 5 1/2 Bull Dog Split Porcelain Knob has a windowful grip on its major insulator. A feature of this knob is that a nail can be withdrawn to replace broken parts. It is adapted for use with a 10 penny wire nail. Height 1 1/2 inches. Diameter 1 1/4 inches. Weight per barrel of 2000 knobs 400 pounds.

Per 1000

F. O. B. Rochester and Chicago

List No.		Less than 100	100 to 500	500 to 1000	Full Bbl.
20	No. 4 Porcelain knobs	\$21.35	\$18.06	\$18.20	\$15.25
799	No. 4 1/2 Porcel. knobs	21.35	19.06	18.20	15.25
21	No. 5 Porcelain knobs	11.25	10.06	9.96	8.10
801	No. 22 Split Porc. knobs	53.20	47.50	43.60	41.12
2123	No. 61 Split Porc. knobs	19.95	17.81	17.10	14.63
2120	2 Groove Tel. knobs	30.80	27.50	26.40	23.44
2340	No. 4 2 Groove	33.24	29.75	19.92	17.94
2341	4 Groove Tel.	51.90	46.25	44.40	40.06
2349	Unassembled knobs	15.40	13.75	13.20	10.63
2349-A	Assembled knobs with nails	21.42	19.13	18.36	15.28

Per 1000

F. O. B. Kansas City

20	No. 4 Porcelain knobs	\$21.65	\$19.36	\$18.60	\$15.55
799	No. 4 1/2 Porcel. knobs	21.65	19.36	18.60	15.55
21	No. 5 Porcelain knobs	11.45	10.26	9.96	8.36
801	No. 22 Split Porc. knobs	53.25	47.65	43.65	41.47
2123	No. 61 Split Porc. knobs	20.45	18.31	17.60	15.13
2120	2 Groove Tel. knobs	31.80	27.90	26.80	23.84
2340	No. 4 2 Groove	34.04	21.55	20.72	18.74
2341	4 Groove Tel.	52.45	46.90	43.92	40.71
2349	Unassembled knobs	15.70	14.05	13.30	10.93
2349-A	Assembled knobs with nails	21.72	19.43	18.66	15.68

No. 4 2 GR.
List No. 23404 GR. TEL.
List No. 2341No. 5 1-2
List No. 2349-A

Porcelain Knobs—(Continued)

Per 1000		Standard 1-5 Bbl.	
F. O. B. Factory		Cartons	Full
List No.		100 Bbl.	100 Bbl.
200	No. 4 Porcelain knobs	\$13.33	\$14.49
200	No. 4 1/2 Porcelain knobs	13.33	14.49
211	No. 3 Porcelain knobs	8.71	7.64
201	No. 22 Split Porc. knobs	46.80	41.08
2123	No. 61 Split Porc. knobs	13.69	13.69
2123	2 Groove Tyl.	23.33	22.23
2140	No. 4-2 Grooves	17.00	16.12
2141	4 Groove Tyl.	15.07	18.33
2149	Unthreaded knobs	11.00	10.08
2149-A	Assort. knobs, with nails	15.42	14.50

No. 500 to 506 Porcelain Insulators—Strain



List No.	Height	Diameter	No. in Barrel	Lbs. Weight Per Barrel
2330	2 1/4 ins.	3 1/4 in. a	1700	430
2331	2 1/4 ins.	2 1/4 ins.	500	440
2332	4 1/4 ins.	2 1/4 ins.	270	510
2333	5 1/4 ins.	3 1/4 ins.	130	940

Per 1000		F. O. B. Rochester and Chicago	
List No.		Less	100 500
		When	Full
		100 Bbl.	100 Bbl.
2330	No. 500	\$ 98.00	\$ 97.50
2331	No. 502	100.00	100.00
2332	No. 504	200.40	222.20
2333	No. 506	445.20	397.75

No. 500 to 506 Porcelain Strain Insulators		Per 1000	
		F. O. B. Kansas City	
List No.		Less	100 500
		When	Full
		100 Bbl.	100 Bbl.
2330	No. 500	\$100.50	\$ 90.00
2331	No. 502	192.00	171.75
2332	No. 504	392.40	334.50
2333	No. 506	430.20	402.75

No. 500 and 506 Porcelain Strain Insulators		Per 1000	
		F. O. B. Factory	
List No.		Less	100 500
		When	Full
		100 Bbl.	100 Bbl.
2330	No. 500	\$100.50	\$ 90.00
2331	No. 502	192.00	171.75

Standard Unglazed Porcelain Tubes



Tube List Dimensions Conform with the Rules of the Underwriters' Board		Standard Package	
List No.	Inside Diameter	Outside Diameter	Length
1218	1/2 in.	3/4 in.	3 in.
1219	1/2 in.	3/4 in.	4 in.
1220	1/2 in.	3/4 in.	6 in.
1221	1/2 in.	3/4 in.	8 in.
1222	1/2 in.	3/4 in.	10 in.
1223	1/2 in.	3/4 in.	12 in.
1224	1/2 in.	3/4 in.	14 in.
1225	1/2 in.	3/4 in.	16 in.
1226	1/2 in.	3/4 in.	18 in.
1227	1/2 in.	3/4 in.	20 in.
1228	1/2 in.	3/4 in.	24 in.

Other sized tubes furnished on application.

Std. Unglazed Tubes (Cont.)

Per 1000		F. O. B. Rochester and Chicago	
List No.		Less	100 500
		When	Full
		100 Bbl.	100 Bbl.
1218	Stand. pig.	\$ 7.50	\$ 6.75
1219	"	9.25	8.19
1220	"	11.50	9.90
1221	"	14.00	12.50
1222	"	16.50	15.00
1223	"	19.00	17.50
1224	"	21.50	20.00
1225	"	24.00	22.50
1226	"	26.50	25.00
1227	"	29.00	27.50
1228	"	31.50	30.00
1229	"	34.00	32.50
1230	"	36.50	35.00

Porcelain Tubes, Unglazed		Per 100	
		F. O. B. Kansas City	
List No.		Less	100 500
		When	Full
		100 Bbl.	100 Bbl.
1218	Stand. pig.	\$ 7.61	\$ 6.80
1219	"	9.22	8.14
1220	"	11.34	10.00
1221	"	14.10	12.60
1222	"	16.30	14.50
1223	"	19.00	17.00
1224	"	21.50	19.50
1225	"	24.00	22.00
1226	"	26.50	24.50
1227	"	29.00	27.00
1228	"	31.50	29.50
1229	"	34.00	32.00
1230	"	36.50	34.50

Per 1000		F. O. B. Factory	
List No.		Paper	1-5 Bbl.
		Cartons	Full
		100 Bbl.	100 Bbl.
1218	Stand. pig.	\$ 5.43	\$ 4.55
1219	"	6.47	5.72
1220	"	8.40	7.28
1221	"	10.40	9.62
1222	"	12.33	11.17
1223	"	14.27	12.72
1224	"	16.20	14.27
1225	"	18.13	15.82
1226	"	20.07	17.37
1227	"	22.00	18.92
1228	"	23.93	20.47
1229	"	25.87	22.02
1230	"	27.80	23.57

Patent Iron Wood Screws



Additional varieties involved from this list at varying discounts: Flat, Round, Fillet and Oval Head screws, Dwell, Winged, Headless, Finched and Bang Head, Felloe, Screw, Bright, Blued, Nickel-Plated, Silver Plated, Branded, Branded, Coppered, Japanned, Lacquered, Tinned and Drive Screws.

List Prices Per Gross.		1/2 In.	
		1/2 In.	1/2 In.
		1/2 In.	1/2 In.
No. 1	1/2 in.	72	72
No. 2	3/4 in.	72	72
No. 3	1 in.	72	72
No. 4	1 1/4 in.	72	72
No. 5	1 1/2 in.	72	72
No. 6	1 3/4 in.	72	72
No. 7	2 in.	72	72
No. 8	2 1/4 in.	72	72
No. 9	2 1/2 in.	72	72
No. 10	2 3/4 in.	72	72
No. 11	3 in.	72	72
No. 12	3 1/4 in.	72	72
No. 13	3 1/2 in.	72	72
No. 14	3 3/4 in.	72	72
No. 15	4 in.	72	72
No. 16	4 1/4 in.	72	72

Patent Iron Wood Screws (Cont.)

	2 1/2 Ins.	2 1/2 Ins.	2 1/2 Ins.	2 1/2 Ins.	2 1/2 Ins.
No. 3...	\$1.43	\$1.55	\$1.80	\$2.00	\$2.20
No. 4...	1.50	1.60	2.00	2.40	2.80
No. 5...	1.55	1.65	2.10	2.50	2.90
No. 6...	1.60	1.75	2.20	2.70	3.05
No. 7...	1.65	1.85	2.30	2.80	3.15
No. 8...	1.75	1.95	2.40	2.90	3.25
No. 9...	1.85	2.05	2.50	3.00	3.35
No. 10...	2.00	2.20	2.60	3.10	3.50
No. 11...	2.10	2.35	2.70	3.20	3.60
No. 12...	2.45	2.65	2.90	3.30	3.50
No. 13...	2.75	3.10	3.20	3.60	3.80
No. 14...	3.10	3.40	3.50	3.80	4.20
No. 15...	3.70	3.85	4.20	4.50	4.80
No. 16...	4.20	4.55	4.70	5.00	5.50
No. 17...	4.80	5.20	5.40	5.70	6.20
No. 18...	5.30	5.70	6.00	6.30	6.70
No. 19...	6.40	6.80	7.00	7.30	7.70
No. 20...	...	...	...	...	10.50

	3 1/2 Ins.	3 1/2 Ins.	3 1/2 Ins.	3 1/2 Ins.	3 1/2 Ins.
No. 2...	74	...	...	...	...
No. 3...	78	...	...	...	...
No. 4...	82	...	...	...	...
No. 5...	85	...	...	...	...
No. 6...	90	...	...	...	...
No. 7...	94	...	...	...	...
No. 8...	100	...	...	...	...
No. 9...	105	...	...	...	...
No. 10...	110	...	...	...	...
No. 11...	115	...	...	...	...
No. 12...	120	...	...	...	...
No. 13...	125	...	...	...	...
No. 14...	130	...	...	...	...
No. 15...	135	...	...	...	...
No. 16...	140	...	...	...	...
No. 17...	145	...	...	...	...
No. 18...	150	...	...	...	...
No. 19...	155	...	...	...	...
No. 20...	160	...	...	...	...
No. 21...	165	...	...	...	...
No. 22...	170	...	...	...	...
No. 23...	175	...	...	...	...
No. 24...	180	...	...	...	...

	3 1/2 Ins.	4 Ins.	4 1/2 Ins.	5 Ins.	6 Ins.
No. 8...	\$3.90	\$4.90	...	...	...
No. 9...	4.00	5.10	...	...	...
No. 10...	4.10	5.20	...	...	...
No. 11...	4.20	5.30	...	...	...
No. 12...	4.30	5.40	7.00	8.10	10.90
No. 13...	4.40	5.50	7.20	8.30	10.50
No. 14...	4.50	5.60	7.40	8.50	11.00
No. 15...	4.65	5.75	7.65	8.75	11.50
No. 16...	4.85	6.00	8.15	9.70	12.40
No. 17...	5.20	7.00	8.60	10.10	13.00
No. 18...	6.15	7.00	9.15	11.00	14.50
No. 19...	7.20	8.00	9.85	11.50	16.00
No. 20...	8.70	9.70	11.20	13.00	18.00
No. 21...	10.20	11.20	13.50	15.00	20.00
No. 22...	12.00	14.00	16.00	18.00	23.00
No. 23...	...	...	...	...	27.00
No. 24...	...	18.50	21.50	24.00	30.50

	Round Head	Flat Hd
10 to 25 gross.....	Special	Special
25 gross and more.....	Special	Special

Galvanized Telephone Wire



* Galvanized wire for telephone purposes is furnished in three grades, viz. Steel, B. B. (Best Wire) and E. B. B. (Extra Best Wire).

Steel wire has greatest tensile strength but poor conducting qualities for line purposes. For this reason we recommend its use for gags and braves only.

B. B. wire is the grade generally used by telephone companies throughout the United States for rural or farm-line because of its high tensile strength and good conducting qualities. We recommend this wire for telephone lines in preference to either E. B. B. or Steel wire.

E. B. B. is made from materials of exceptional purity and has the best conducting qualities of any galvanized wire made. It is not favored by telephone companies because it is not as strong as other grades and is somewhat softer, which necessitates frequent "pulling up slack" in the lines during summer months. (It costs considerably more than either B. B. or Steel wire and does not show enough advantage to compensate for the additional cost.)

STEEL

List No.	Size B. W. G.	Diam. in. Inches	Approx. Wt. in lbs. per Mile	Approx. Tensile Strength in lbs.	Per lb.
353	6	.301	380	1770	.0054
354	8	.265	390	1170	.0078
355	9	.248	314	982	.0084
925	10	.234	258	774	.0086
926	12	.209	170	510	.0084
927	14	.183	99	297	.0084

B. B.

List No.	Size B. W. G.	Diam. in. Inches	Approx. Wt. in lbs. per Mile	Approx. Tensile Strength in lbs.	Per lb.
929	6	.301	380	1632	.0054
930	8	.265	390	1092	.0078
931	9	.248	314	878	.0084
932	10	.234	258	722	.0084
933	12	.209	170	476	.0084
934	14	.183	99	277	.0078

E. B. B.

List No.	Size B. W. G.	Diam. in. Inches	Approx. Wt. in lbs. per Mile	Approx. Tensile Strength in lbs.	Per lb.
935	6	.301	380	1475	.0054
936	8	.265	390	975	.0078
937	9	.248	314	785	.0084
938	10	.234	258	645	.0084
939	12	.209	170	425	.0084
940	14	.183	99	247	.0078

All Sizes Except No. 6, B. W. G. Put Up in 1/4 Mile Coils.
No. 6, B. W. G. Put Up in 1/2 Mile Coils.

Discounts

Less than carload.....
Extra Additions when shipping less than 1000 lbs.
Actual freight allowed, but in excess of 25%
when shipped in quantities of not less than 500 lbs. direct from factory.

Additions

1/2 cent per lb. to list when shipped from Kansas City stock.
Extra Additions when shipping less than 1000 lbs.
1 cent per lb. to list when less than 1000 lbs. is shipped from Chicago, Rochester or Kansas City.

Galvanized Steel Strand



Composed of Seven Wires Twisted Together

Used in telephone work for gaging poles and for supporting aerial telephone cables. This material can be furnished in four grades or strengths, viz. Regular, Medium-Martin, High Strength and Extra High Strength. The regular grade can be furnished with either single or double galvanizing only. Steel strands all consist of seven wires twisted together, the combined size and strength depending upon the size and strength of the individual wires.

Regular Galvanized Strand

The breaking weight of this strand is from fifteen to twenty times its weight per 1000 feet. The grade of strand is used for gaging poles, etc., where no great flexibility is required and where a strand of moderate strength will meet all requirements.

Continued on next page

Galvanized Steel Strand (Cont.)

Regular Galvanized Strand (Cont.)

List No.	Screen No. of No.	Diameter	Single or Double Galvanized		Per 100 ft.
			Single	Double	
920	8	3/8	30	52	7,400 lbs.
921	10	3/8	38	40	3,700 "
922	11	3/8	28	30	4,100 "
923	12	3/8	19 1/2	22	3,200 "
924	14	3/8	12 1/2	13	1,900 "

Unless otherwise specified, single galvanized strand will be furnished on all orders.

Discounts

Single Galvanized	F. O. B.	
	Roch. & Chicago	Kansas City
Less than 250 ft.	30%	25%
250 ft. to 1,000 ft.	35%	30-5%
1,000 to 2,500 ft.	40-5%	40%
2,500 to 5,000 ft.	40-10%	40-5%
5,000 ft. and over	Special	Special

Double Galvanized

Double Galvanized	F. O. B.	
	Roch. & Chicago	Kansas City
Less than 250 ft.	20-5%	20%
250 ft. to 1,000 ft.	25%	20%
1,000 to 2,500 ft.	30%	25-5%
2,500 to 5,000 ft.	35%	30%
5,000 ft. and over	Special	Special

Actual freight allowed, not to exceed 25 cents per 100 lbs. when shipped in quantities of not less than 200 lbs. direct from factory.

Put up in coils of 250 ft., 500 ft., and 1000 ft. Over 1000 ft. furnished on reels if specified.

Note—We will not cut coils. Full length coils must be taken.

Siemens-Martin Strand

High Grade Galvanized Wire Strand

This strand is composed of very soft pliable wire but of considerably higher strength than the regular grade. It is the grade that usually is employed for suspending aerial cables.

List No.	Diameter	Weight per 100 ft.	Ultimate Strength	Per 100 ft.
652	3/4 inch	80 lbs.	19,000 lbs.	\$8.25
653	7/8	92	11,000 "	5.25
654	1	100	5,000 "	4.20
655	1 1/8	130	8,000 "	3.25
656	1 1/2	170	4,500 "	2.50
657	1 3/4	220	4,200 "	2.05
658	2	280	3,000 "	1.70
659	2 1/2	350	2,000 "	1.35
660	3	450	900 "	.90

High Strength Strand

High Grade Galvanized Wire Strand

The breaking weight of this strand is over thirty times its weight per 1000 feet. It is used where a stronger strand than the Siemens-Martin grade is required. It is stiffer and more difficult to handle than either Siemens-Martin or regular grade but when in place is very efficient.

List No.	Diameter	Weight per 100 ft.	Ultimate Strength	Per 100 ft.
2280	3/4 inch	80 lbs.	25,000 lbs.	\$12.10
2281	7/8	92	18,000 "	7.25
2282	1	100	15,000 "	6.00
2283	1 1/8	130	11,000 "	4.80
2284	1 1/2	170	8,500 "	3.20
2285	1 3/4	220	7,200 "	2.80
2286	2	280	5,500 "	2.25
2287	2 1/2	350	3,800 "	1.80
2288	3	450	3,000 "	1.20

Extra High Strength Strand

High Grade Galvanized Wire Strand

The breaking weight of this strand is over fifty times its weight per 1000 feet. What has been said about High Strength Strand is true of this strand but in a more pronounced degree.

List No.	Diameter	Weight per 100 ft.	Ultimate Strength	Per 100 ft.
2289	3/4 inch	80 lbs.	42,000 lbs.	\$14.60
2290	7/8	92	27,000 "	8.80
2291	1	100	22,000 "	7.20
2292	1 1/8	130	17,250 "	5.25
2293	1 1/2	170	12,100 "	4.25
2294	1 3/4	220	10,900 "	3.50

Extra High Strength Strand (Cont.)

List No.	Diameter	Weight per 100 ft.	Ultimate Strength	Per 100 ft.
2295	3/4	13	7,600 lbs.	2.85
2296	7/8	7 1/2	4,900 "	2.60
2297	1	3 1/2	2,500 "	1.60

Discounts

Covering all High Grade Galvanized Steel Strand

Less than 250 ft.	F. O. B.	
	Roch. & Chicago	Kansas City
250 ft. to 1,000 ft.	17 1/2%	15%
1,000 to 2,500 ft.	20%	15-5%
2,500 to 5,000 ft.	20-4%	20%
5,000 to 10,000 ft.	25%	20-5%
10,000 ft. and over	Special	Special

Actual freight allowed, not to exceed 25 cents per 100 lbs. when shipped in quantities of not less than 200 lbs. direct from factory.

Put up in coils of 250 ft., 500 ft., and 1000 ft.

Over 1000 ft. furnished on reels if specified.

Note—We will not cut coils. Full length coils must be taken.

Hard Drawn Bare Copper Wire

Hard drawn copper wire is used for long distance lines in which high conductivity and transmission efficiency are most essential. It is also used for wire running over railroad right-of-way and in other localities where wires are subject to corrosion from smoke, gases and acid fumes. Copper wire resists such conditions better than other kinds of wire and will last indefinitely; furthermore, it has the highest scrap metal value when taken down.

List No.	R. & S. Gauge No.	Diameter Inches	Weight Per Mile	Resistance Per Mile
935	8	.128	264 lbs.	3.33 ohms
29	10	.101	166 "	3.27 "
30	12	.081	104 "	8.36 "
31	14	.064	65 "	13.3 "

4-0 and larger to 8 solid.

9-10 solid.

11-12

13-14

Prices on Application

Copper Tie Wires

List No.	R. & S. Gauge No.	Length 18 inches unless otherwise specified
834	10	" " " "
835	12	" " " "
836	14	" " " "
837	16	" " " "

Copper Tie Wire

Prices on Application

Weatherproof Hard Drawn

Copper Line Wires

Triple Braid



Weatherproof line wire is often called "tree wire" because it is generally used for sections of open wire lines, where branches interfere and make the use of bare wire impractical.

The wire is made up with these braids, all impregnated with moisture proofing and weather proofing compound. The outside braid is finished with a hard smooth surface.

All weatherproof wire listed below is put up in one-half mile coils, except Nos. 14 and No. 16.

List No.	R. & S. Gauge	Weight Per Mile	Per lb.
2479	8	380 lbs.	\$2.85
33	10	250 "	2.95
34	12	184 "	3.15
35	14	127 "	3.45
36	16	103 "	3.75
37	18	84 "	4.15

Weatherproof Duplex Wire— Copper Triple Braid



Composed of two copper conductors separately insulated with three braids impregnated with weather-proofing and insulated compound and related together.

List No.	R. & S. Gauge	Feet Per Pound	Per lb.
904	16	50	\$.28 1/2
42	14	60	.42 1/2

100 lbs. for 240 ft., 1/2 lb. for 200 ft. 404 1/2-1/2, extra sizes.....special

Add

30 cents per 100 lbs. when shipped from Kansas City Stock.

Weatherproof Insulated Iron Line Wire



A soft iron wire, with weatherproof insulation, two or three braid, for use where line runs through trees; prevents possibility of grounded wires.

Put up and sold only in half-mile coils.

List No.	R. W. G.	Weight Per Mile	Per lb.
26	10	300 lbs.	\$.19
27	12	225 "	.20 1/2
28	14	145 "	.27
1367	10	400 "	.29
1368	12	260 "	.25
1369	14	175 "	.26 1/2

Add

1/2 cent per lb. when shipped from Kansas City stock.
1 cent per lb. extra to above prices for Extra R. R.
50% to above prices for bareline coils.

Annunciator Wire



The wire is generally used in wiring buildings for electric bell, annunciator and burglar alarm circuits, etc. The conductor is made of pure copper wire, either tinned or plain and covered with an insulation consisting of two wrappings of waxed cotton, applied spirally and in opposite directions. It is furnished in standard spools containing from 7 to 8 pounds of wire and in standard one-pound coils.

Single Conductor, Plain Copper

Two Cotton Wraps

List No.	Size	Approx. ft. per lb.	Less than 25 lbs.	25 lbs. to 100 lbs.
30	18	105	\$.32 1/2 lb.	.32 1/2 lb.
31	18	135	.33 1/2 "	.33 1/2 "
32	20	230	.39 1/2 "	.39 "
33	22	340	.43 1/2 "	.43 "

Double Conductor, Twisted, Plain Copper

Two Cotton Wraps

List No.	Size	Approx. ft. per lb.	Less than 25 lbs.	25 lbs. to 100 lbs.
1430	18	70	\$.33 1/2 lb.	.33 1/2 lb.
1431	18	82	.36 "	.36 "
1432	20	110	.40 1/2 "	.40 "
35	22	167	.44 1/2 "	.44 "

Annunciator Wire—Cont.

Single Conductor, Tinned Copper Plain Copper

Two Cotton Wraps, Red and White

List No.	Size	Approx. ft. per lb.	Less than 25 lbs.	25 lbs. to 100 lbs.
1433	18	105	\$.34 1/2 lb.	.34 1/2 lb.
1434	18	165	.37 1/2 "	.37 "
1435	20	225	.43 1/2 "	.43 "
37	22	245	.45 1/2 "	.45 "

Double Conductor, Twisted, Tinned Copper

Two Cotton Wraps, Red and Red-White

List No.	Size	Approx. ft. per lb.	Less than 25 lbs.	25 lbs. to 100 lbs.
1436	18	54	\$.43 1/2 lb.	.43 1/2 lb.
1437	18	78	.48 1/2 "	.48 1/2 "
1438	20	110	.47 1/2 "	.47 "
38	22	160	.49 1/2 "	.49 "

100 lbs. and over, one size, special.

Add

30 cents per 100 lbs. when shipped from Kansas City stock.

Switchboard Wire

Made of pure copper conductors tinned, insulated with two silk and one cotton wrapping. Insulation thoroughly impregnated with lacquer. Used principally for making up hand formed switchboard cabinets and is therefore furnished in all standard color combinations. Standard spool contains from 8 to 10 pounds of wire, 18 ft. long.

Single Switchboard Wire—Tinned

Two Silk and One Cotton Insulation

List No.	R. & S. Gauge	Approx. ft. per lb.	Per lb.
2480	001	18	\$1.65 1/2
673	0122	22	1.65 1/2

Discounts

1-9 lbs.	.....	Net
10 to 24 lbs.	.....	5%
25 lbs. and over	.....	10%

Twisted Switchboard Wire—Tinned

List No.	R. & S. Gauge	Approx. ft. per lb.	Per lb.
2356	001	18	\$1.44 1/2
679	0122	22	1.44 1/2

Discounts

1-9 lbs.	.....	Net
10 to 24 lbs.	.....	5%
25 lbs. and over	.....	10%

Stromberg-Carlson "Duratex" Jumper Wire

Duratex Jumper Wire consists of No. 22 R. & S. Gauge copper conductors tinned to facilitate soldering and insulated with a non-chemical coating. The flameless solder flows freely to the non-chemical coating, thus preventing the exposure of bare tinned surfaces. The conductor also is insulated with two wrappings of silk which are applied in opposite directions. This insulation is impregnated with a waterproof insulating compound which remains plastic and preserves the high insulation over the conductors.

The outer covering of Duratex Jumper Wire is a closely woven cotton braid which is rendered impervious to the wires before braiding. The materials used in this process will not absorb moisture nor deteriorate with age. The finished wire is small in diameter and cannot be ignited by flame and maintains a high insulation throughout its life.

Single Conductor

List No.	Pc. No.	B. & S. Gauge	Color	Lbs. Weight Per 1000 ft.	Price Per 1000 ft.
2358	0479	22	White	3	\$10.00
2359	0481	22	Black	3	10.00
2360	0482	22	Blue	3	10.00
2361	0480	22	Red	3	10.00

Twisted Pair



List No.	Pc. No.	B. & S. Gauge	Color	Lbs. Weight Per 1000 ft.	Price Per 1000 ft.
1937	0483	20	Red and White	6	\$20.00

Triplex



List No.	Pc. No.	B. & S. Gauge	Color	Lbs. Weight Per 1000 ft.	Price Per 1000 ft.
1938	0484	22	Red, White and Blue	9	\$30.00

Quadruplex



List No.	Pc. No.	B. & S. Gauge	Color	Lbs. Weight Per 1000 ft.	Price Per 1000 ft.
1939	0485	22	Red, White, Blue and Black	12	\$40.00

Discounts

Less than 5000 ft.	10%
5000 ft. to 20,000 ft.	20%
20,000 ft. and over	25%
Weight Per 1000 ft.	Single conductor 3 lbs.
" " " " " "	Twisted pair 6 "
" " " " " "	Triplex 9 "
" " " " " "	Quadruplex 12 "

F. O. B. Rochester and Chicago

This wire is put up in 500 foot coils with an instruction tag on each coil which states the best method of attaching jumper wire to the terminals.

Flameproof Rubber Covered Jumper Wire

Insulated with a high grade rubber about .057 inches. Consists of copper conductor covered with a flameproof braid that does not fray out. The following colors are standard: single conductor, red, double conductor, red and white; triple conductor, red, white and black; quadruplex conductor, red, white, black and yellow. Put up in coils of approximately 200 ft.

Single Conductor

List No.	B. & S. Gauge	Lbs. Weight Per 1000 Ft.	Per 1000 ft.
1200	30	10	\$13.70
1201	22	5	13.70

Twisted Pair



List No.	B. & S. Gauge	Lbs. Weight Per 1000 Ft.	Per 1000 ft.
821	30	20	\$27.40
822	22	10	27.40

Flameproof Rubber Covered Jumper Wire—Cont.

Triplex

List No.	B. & S. Gauge	Lbs. Weight Per 1000 Ft.	Per 1000 ft.
824	30	30	\$36.60
825	22	24	36.60

Quadruplex

List No.	B. & S. Gauge	Lbs. Weight Per 1000 Ft.	Per 1000 ft.
827	30	40	\$48.50
828	22	32	48.50

Discounts

Less than 1,000 ft.	25%
1,000 to 5,000 ft.	33 1/3%
5,000 to 10,000 ft.	40%
10,000 to 20,000 ft.	45%
20,000 ft. and over	Special

All prices are f. o. b. Rochester, N. Y., or Chicago, Ill. The following net advances must be added to all rubber covered telephone wire shipped from Kansas City stock.

List No.	Per 1000 ft.
1200	\$13
1201	13
821	20
822	20
824	30
825	30
827	40
828	40

Rubber-Covered Telephone Wire—Copper Single Conductor Plain Rubber-Covered Wire

List No.	B. & S. Gauge	Insulation	Weight Per 1000 ft.	List Price per 1000 ft.
43	10	3-32	10 1/2 lbs.	\$11.50

Twisted Pair Plain Rubber-Covered Wire



List No.	B. & S. Gauge	Insulation	Weight Per 1000 ft.	List Price per 1000 ft.
45	10	3-32	22 1/2 lbs.	\$23.00

Single Conductor Rubber-Covered, Braided, Saturated



List No.	B. & S. Gauge	Insulation	Weight Per 1000 ft.	List Price per 1000 ft.
44	10	3-32	11 1/2 lbs.	\$ 8.70
406	18	7-64	5 1/2 "	9.70
1612	16	4-32	21 "	12.20
1609	14	3-32	21 "	16.50

Double Conductor Rubber-Covered Saturated Braid



Double conductor, both conductors black rubber with saturated black braid, and then twisted. One conductor has large third run in braid for distinguishing.

Rub'r Cov. Wire—Copper (Cont.)

Double Conductor
Rubber-Cov. Saturated Braid (Cont.)

List No.	R. & S. Gauge	Insulation	Weight Per 1000 ft.	List Price Per 1000 ft.
770	19	3-32	23 lbs.	\$17.40
764	18	2-64	26 lbs.	19.40
946	16	4-32	42 "	28.40
942	14	5-32	62 "	33.00

Interior Telephone Wire
Copper—Rubber-Covered Glazed Braid

For interior telephone wiring. Furnished in single, duplex and triplex twisted. Each conductor pure copper tinned and insulated with a thickness of rubber with outside glazed cotton braid. Colored tracer threads in braid facilitate identification and testing.

Single Conductor

List No.	R. & S. Gauge	Insulation	Weight Per 1000 ft.	Color	Per 1000 ft.
2492	19	3-32	11 lbs.	Oak Brown	\$10.25
2493	19	3-32	11 "	Olive Green	10.25

Double Conductor



Double conductor, both conductors are covered with glazed braid. One conductor being distinguished by a red thread running through braid.

Interior Telephone Wire (Cont.)

List No.	R. & S. Gauge	Insulation	Weight Per 1000 ft.	Color	Per 1000 ft.
471	19	3-32	23 lbs.	Oak Brown	\$20.50
2381	19	3-32	23 "	Olive Green	20.50

Triple Conductor



Triple conductor, glazed cotton braid; one conductor plain solid color; one conductor plain solid color with red tracer; one conductor plain solid color with green tracer; then all three conductors twisted together.

List No.	R. & S. Gauge	Insulation	Weight Per 1000 ft.	Color	Per 1000 ft.
1907	19	3-32	32 lbs.	Oak Brown	\$30.75
2362	19	3-32	32 "	Olive Green	30.75

Discounts on Rubber-Covered Copper Telephone Wire

Less than 1,000 ft.	25%
1,000 to 3,000 ft.	40%
3,000 to 10,000 ft.	45%
10,000 ft. and over	Special

All prices are f. o. b. Rochester, N. Y., or Chicago, Ill. When shipped from Kansas City stock the following net advances.

List No.	Per 1000 ft.
43	\$ 15
45	10
44	15
606	15
1611	20
1030	25
770	30
764	35
946	35
942	50

Lead-Covered, Rubber-Covered Wire



Used for telephone wiring buried in the earth or running through mines, subway, etc. Lead covering protects wire from

mechanical injury and excludes moisture.

Per 1000 Feet Net—Single Conductor

List No.	R. & S. Gauge	Rubber Wall Inches	Thickness Lead	Weight 1000 Feet	Less 100 Feet	100 to 250	250 to 500	500 to 1000	1000 ft. and over
2362	19	3-64	3-64	153	\$29.40	\$78.35	\$27.30	\$38.25	\$25.20
2364	18	3-64	3-64	183	37.80	58.45	35.10	48.75	32.50

Double Conductor

List No.	R. & S. Gauge	Rubber Wall Inches	Thickness Lead	Weight 1000 Feet	Less 100 Feet	100 to 500	500 to 1000	1000 ft. and over
2365	19	3-64	3-64	278	\$17.90	\$14.75	\$19.60	\$15.03
2366	18	3-64	3-64	280	73.75	69.80	62.65	58.18

Above prices for shipment from Chicago Stock.

Rubber-Covered Distributing or Drop Wire, Copper Clad



Composed of two copper clad steel conductors, separately insulated with 7/64-inch rubber insulation and a black saturated weatherproof braid, twisted together. This wire is used by many of the largest telephone companies and is recommended as it will not stretch and has the same non-oxidative properties as pure copper wire.

List No.	R. & S. Gauge	Insulation	No Raised Thread Tracer	Weight per 1000 ft.	Less than 1000 ft.	1000 to 5000	5000 to 25,000	25,000 to more	Add per 1000 feet. Kansas City
2348	17	7-64	100 Magneton Feet	96	\$14.75	\$14.25	\$12.75	\$10.00	\$3.35

The above prices are for Rubber Covered Copper Clad Wire when delivered to all points East of the Mississippi River. On

shipments West of the Mississippi River, actual freight to Mississippi River will be allowed.

Rubber-Covered, Special-Tinned Iron, Telephone, Drop Wire

Saturated Braid—Single Conductor

Compound of special alloy iron conductors insulated rubber, braided and saturated. The conductor is very tough and pliable and is tinned to facilitate soldering and to prevent corrosion. An economical and very satisfactory drop wire for all telephone purposes. Furnished in several gauges as follows:



List No.	B.W.G.	Equivalent to B. & S. Gauge	Thickness Insulation	Weight per 1000 ft	Less than 1000 feet	1000 to 5000	5000 to 10,000	10,000 to 25,000	25,000 and Over	Add per 1000 feet Kansas City
1902	No. 19	No. 18	7/64 Inch	14 lbs.	\$4.65	\$4.46	\$4.22	\$4.12	Special	\$.18
1903	No. 18	No. 16	5/32 "	19 "	6.00	5.80	5.52	5.40	Special	.26
1904	No. 16	No. 14	3/8 "	32 "	7.40	7.00	6.63	6.46	Special	.36
1905	No. 14	No. 12	11/64 "	40 "	8.74	8.24	7.81	7.61	Special	.45

Twisted Pair



List No.	B.W.G.	Equivalent to B. & S. Gauge	Thickness Insulation	Weight per 1000 feet	Less than 1000 feet	1000 to 5000	5000 to 10,000	10,000 to 25,000	25,000 and Over	Add per 1000 feet Kansas City
1902	No. 19	No. 18	7/64 Inch	27 lbs.	\$9.39	\$8.91	\$8.44	\$8.23	Special	\$.35
1903	No. 18	No. 16	5/32 "	39 "	11.18	10.60	10.04	9.79	Special	.50
1904	No. 16	No. 14	3/8 "	65 "	14.73	13.99	13.25	12.92	Special	.55
1905	No. 14	No. 12	11/64 "	80 "	17.34	16.47	15.61	15.22	Special	.60

Above prices F. O. B. Rochester or Chicago.

Cross Arm Braces

Galvanized



Made of stiff Bessemer steel, full size and weight. Furnished one inch from end to take one 1/2-inch and one 3/4-inch bolt. Standard bundles contain 20 braces each.

List No.	Size	Weight Per 100	Per 1000 F. O. B. Chicago & K. C.	Per 1000 F. O. B. Rochester
140	1 x 1/2 x 20 Galvanized*	100 lbs.	\$106.24	\$119.44
141	1 1/2 x 1/2 x 20 Galvanized*	167 "	149.96	172.00
142	1 x 3/4 x 22 Galvanized*	110 "	116.76	131.26
143	1 1/2 x 3/4 x 22 Galvanized*	196 "	140.02	160.62
144	1 1/2 x 1 x 24 Galvanized*	170 "	152.54	174.94

List No.	Size	Weight per 100	Per 1000 F. O. B. Chicago & K. C.	Per 1000 F. O. B. Rochester
842	1 1/2 x 1/2 x 24 Galvanized	292 lbs.	179.56	\$205.96
843	1 1/2 x 1/2 x 26 Galvanized	184 "	163.14	189.44
849	1 1/2 x 1/2 x 28 Galvanized	217 "	194.70	223.30
851	1 1/2 x 1/2 x 28 Galvanized	234 "	209.94	240.74
853	1 1/2 x 1/2 x 30 Galvanized*	250 "	223.08	258.08

Those sizes marked (*) are in stock.

Discounts	
Less than 500	25%
500 to 1000	25%
1000 to 2500	33 1/3%
2500 and over	Special

Assessment of steel allowed to make up quantity.

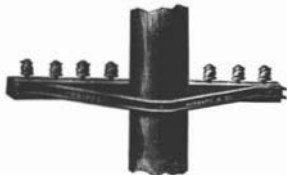
Channel Steel Back Brace

Galvanized

The Stiffest Brace for Its Weight

* For "back bracing" cross arms on corner and terminal poles. The ends and center of this brace are provided with grooves which project into the cross arms and poles, preventing any slipping at these points.

Made of 1 x 1/2-inch and 1 1/2 x 1/2-inch channel steel, heavily galvanized. Fits on the cross arm bolts at pole and is fastened to the cross arm with two carriage bolts.



List No.	Weight 100 lbs. to 250	Per 100 F. O. B. Factory Net	Weight 250 to 500	Per 100 F. O. B. Factory Net
1614	1" x 1/2" x 3"	\$1.77	\$1.25	\$4.82
1615	1" x 3/4" x 3"	\$2.79	\$2.23	\$6.43
1616	1 1/2" x 3/4" x 3"	\$3.72	\$3.13	\$8.58
1617	1 1/2" x 1" x 3"	\$4.67	\$3.92	\$8.64
1618	1 1/2" x 1 1/2" x 3"	\$5.60	\$4.80	\$10.40
1619	1 1/2" x 1 1/2" x 3" 2"	\$6.51	\$5.00	\$12.50

Angle Iron Alley Arm Braces

Galvanized



Used for bracing crossarms that are mounted with greater portion of arm on one side of pole than on the other as required in alleys or along streets to avoid branches of trees. Made of angle iron heavily galvanized. Punched with $\frac{3}{8}$ inch holes, one for attaching to crossarm and two for attaching to pole. Provided with forged ends and stop.

List No.	Length	Dimensions	Weight Per 100	F. O. B.		
				Rochester	Kansas City	Chicago
722	3 feet	1 1/2 x 1 1/4 x 1/4	7.30 lbs.	\$130.00	\$160.00	\$160.00
723	5 "	1 1/2 x 1 1/4 x 1/4	10.00 "	188.40	202.70	202.70
724	6 "	1 1/2 x 1 1/4 x 1/4	12.00 "	208.50	225.30	225.30
725	7 "	1 1/2 x 1 1/4 x 1/4	13.40 "	261.70	284.00	284.00
726	10 "	2 x 2 1/2 x 1/4	17.25 "	325.00	370.50	370.50
Discounts						
Less than 100				25%		
100 and over				30%		

Crossarm Back Braces

Galvanized



Used for bracing crossarms on curved lines and on terminal poles in addition to regular crossarm braces as an additional stiffening. Made of angle iron heavily galvanized. Has hole punched at center and $\frac{3}{8}$ inch holes at ends.

List No.	Length	Dimensions	Weight Per 100	F. O. B.		
				Rochester	Kansas City	Chicago
2227	3 feet	1 1/2 x 1 1/4 x 1/4	9.00 lbs.	\$123.94	\$125.18	\$125.18
2228	6 "	1 1/2 x 1 1/4 x 1/4	11.00 "	142.16	161.18	161.18
2267	8 "	1 1/2 x 1 1/4 x 1/4	11.50 "	161.62	186.28	186.28
Discounts						
Less than 100				25%		
100 and over				30%		

Machine Bolts

Galvanized



Length	List Prices Per 100		
	1/4-Inch	3/8-Inch	1/2-Inch
3 in.	\$2.58	-	-
3 1/4 "	3.04	-	-
4 "	3.20	\$3.50	-
4 1/4 "	3.36	3.16	-
5 "	3.52	3.42	-
6 "	3.68	3.54	-
7 "	-	6.46	-
8 "	-	6.98*	\$10.14*
9 "	-	7.50*	10.90*
10 "	-	8.02*	11.68*
11 "	-	8.54*	12.42*
12 "	-	9.06*	13.18*
13 "	-	9.58*	13.94*
14 "	-	10.10*	14.70*
15 "	-	10.62*	15.46*
16 "	-	11.14	16.22

Discounts

	F. O. B. Rochester & Chicago	F. O. B. Kansas City
Less than 500	Less 25%	Less 25%
500 to 1,000	Special	Special
1,000 and over	Special	Special

Lags, carriage bolts and machine bolts may be assorted to make quantity.

Carriage Bolts

Galvanized



Length	List Prices Per 100		
	1/4-Inch	3/8-Inch	1/2-Inch
3 in.	\$2.34	-	-

Carriage Bolts (Cont.)

Length	3/4-Inch	1-Inch
4 "	\$2.70	4.06
4 1/4 "	2.86	4.27
5 "	3.02	4.65
5 1/4 "	3.18	4.93
6 "	3.34	5.21

All sizes marked (*) carried in stock, galvanized.

Discounts

	F. O. B. Rochester & Chicago	F. O. B. Kansas City
Less than 500	25%	25%
500 to 1,000	30%	30%
1,000 and over	Special	Special

Lag Screws, Carriage Bolts and Machine Bolts may be assorted to make quantity.

Lag Screws

Galvanized

List Prices Per 100



Length	3/4-Inch	1-Inch
3 1/4 in.	\$2.50*	\$1.47
3 1/2 "	3.74	3.19
4 "	4.00*	3.55*
4 1/4 "	4.26	3.91*
5 "	4.52	6.27
6 "	-	6.99*
7 "	-	7.71*

All sizes marked (*) carried in stock, galvanized.

Discounts

	F. O. B. Rochester & Chicago	F. O. B. Kansas City
Less than 500	40%	40%
500 to 1,000	45%	45%
1,000 and over	Special	Special

Lag Screws, Carriage Bolts and Machine Bolts may be assorted to make quantity.

Double Arming Bolts

Galvanized



Furnished with 4 nuts, no washers.

List No.	Size	Per 100	
		F. O. B. Chicago & Rochester	F. O. B. Kansas City
130	$\frac{1}{2}$ x 12 in.	\$16.12	\$17.26
130	$\frac{3}{4}$ x 14 "	17.32	18.54
746	$\frac{1}{2}$ x 16 "	18.20	19.82
748	$\frac{3}{4}$ x 18 "	19.70	21.12
752	$\frac{1}{2}$ x 12 "	24.16	25.86
754	$\frac{3}{4}$ x 14 "	26.16	28.04
756	$\frac{1}{2}$ x 16 "	28.14	30.22
758	$\frac{3}{4}$ x 18 "	30.14	32.38

Washers extra not included in list prices above.

Bolts 12" to 14" have 6" threads. Bolts over 14" have threads 8" long.

Discounts

Less than 500, one delivery..... 30%
 500 to 1,000, one delivery..... 31 1/2%
 1,000 and over..... Special

Assortment of lag screws, carriage, machine and double arming bolts may be made to make up a quantity.

Square Washers



List No.	Size	Per 100	
		F. O. B. Chicago & Rochester	F. O. B. Kansas City
858	2 x 2 x 1/4-inch	13 lbs.	\$1.92
859	3 1/2 x 3 1/2 x 1/4-inch	23 "	3.20
860	4 x 4 x 1/4-inch	34 "	10.78

Discounts

Less than 100..... 25%
 100 to 500..... 30%
 500 to 1,000..... 31 1/2%
 1,000 and over..... Special

Round Washers For Lag Screws



List No.	Size	Per 100	
		F. O. B. Chicago & Rochester	F. O. B. Kansas City
152	1" diameter by No. 14 gauge, 1/4" hole	15 1/2 lbs.	\$ 4.60
154	1 1/2" diameter by No. 14 gauge, 1/2" hole	3 "	4.60
155	1 1/2" diameter by No. 12 gauge, 1/4" hole	4 "	8.80
156	1 1/2" diameter by No. 10 gauge, 1/2" hole	8 "	14.20

Less than 100..... 25%
 100 to 500..... 30%
 500 to 1,000..... 31 1/2%
 1,000 and over..... Special

Pole Steps

Galvanized—Cone Pointed



List No.	Size	Weight per 100	Per 100	
			F. O. B. Chicago & Rochester	F. O. B. Kansas City
250	$\frac{1}{2}$ x 9-inch	600 lbs.	\$55.00	\$56.00

Discounts

Less than 100..... 25%
 100 to 500..... 30%
 500 to 1,000..... 31 1/2%
 1,000 and over..... Special

Crosby Wire Rope Clip

Galvanized



Light and durable. Forged from best quality open-hearth steel. Has been a standard article for many years and is considered one of the most effective wire rope fasteners manufactured.

List No.	Size	Weight per 100	Per 100	
			F. O. B. Chicago & Rochester	F. O. B. Kansas City
169	For 1/2 inch rope	25 lbs.	\$11.50	\$12.14
170	" 3/4 "	35 "	11.50	12.14
171	" 1 "	37 "	10.00	10.70
172	" 1 1/2 "	73 "	40.50	41.98

Discounts

Less than 100..... 25%
 100 to 500..... 30%
 500 to 1,000..... 31 1/2%

Cincinnati Wire Rope Clip

Galvanized



A plate with spiral corrugations to fit between the strands of the rope and absolutely prevent slipping, and a U-bolt to pull the two ropes against each other and against the plate. The bolt is heavy enough for the heaviest strains required.

List No.	Size	Weight per 100	Per 100	
			F. O. B. Chicago & Rochester	F. O. B. Kansas City
173	For 1/2 inch rope	18 lbs.	\$5.50	\$5.75
174	" 3/4 "	17 "	5.50	5.75
175	" 1 "	27 "	7.25	7.50
176	" 1 1/2 "	45 "	19.50	19.75

Galvanized Guy Clamps

Rolled Steel



The standard clamp for aerial cable construction and guying heavy pole lines. Also used by some companies for cable suspension clamp by inserting center clamp bolt and substituting carriage bolt to go through pole. Heavily galvanized.

List No.	Per 100	Weight	F.O.B.	F.O.B.
		per 100	R.&C.	K.C.
204 Large Size with 3 bolts 6 in.		210 lbs.	\$27.50	\$29.00
205 Small Size with 2 bolts 3 in.		110 "	17.00	18.00

Steel Wire Rope Thimbles



Used for terminating standard wire rope on guy or anchor pole and around poles, etc. Galvanized.

List No.	Used with Rope	Circumference	Weight per 100	Per 100 F.O.B. R.&C. Chicago	F.O.B. Kansas City
186	7/8 "	1 "	10 "	5.35	5.40
187	7/8 "	1 1/4 "	18 "	6.85	6.95

Universal Guy Clamp

Galvanized



This clamp will take any size of wire rope commonly used from 1/4 to 1/2 inch which avoids carrying stocks of different sizes. Made of malleable iron and heavily galvanized.

List No.	No. of Bolts	Weight per 100	Each
1303	1	30 lbs.	\$1.15
1304	2	100 "	.23
1307	3	160 "	.33 1/2

Discounts

Less than 100	Net
100 or over	2%

U-Bolt Clip



(Continued on next column)

U-Bolt Clip (Cont.)

This clamp has great holding power and will not injure the wire rope in any way. Parts are heavily galvanized before being assembled into clips.

List No.	For Rope	Weight per 100	F.O.B. Rochester & Kansas Chicago	F.O.B. City
1308	1/2 "	10 lbs.	\$1.30	\$1.17
2229	3/4 "	17 "	.30	.21
2230	7/8 "	27 "	.31	.26
1626	1 "	40 "	.32	.29
1627	1 1/4 "	70 "	.32	.31

Discounts

Less than 100	Net
100 or over	2%

Guy Wire Hooks

Galvanized



Used to keep the guy wires from slipping out of place on poles. Drilled for two lag screws or bolts.

List No.	Size	Weight per 100	Per 100 F.O.B. R.&C. K.C.	F.O.B. Kansas City
701	1 1/4 x 7/8 x 6 in., 2 bolt	90 lbs.	\$10.00	\$10.75

Cable Suspension Clamp

Galvanized



For securing aerial cable messenger wires to poles. A low-priced and durable clamp.

List No.	Size	Weight per 100	Per 100 F.O.B. R.&C. K.C.	F.O.B. Kansas City
2214	2 1/4 x 2 1/2 in., 1 bolt	90 lbs.	\$10.50	\$11.25

Non-Breakable Messenger Hanger

Galvanized



Holds messenger wire away from pole and has ear, which facilitates stringing messenger before clamping permanently. Fastens to pole with a single through bolt. When ordering specify whether for 1/2 inch messenger wire and smaller or 3/4 inch strand and larger. Galvanized Malleable Iron.

List No.	For	Weight per 100	Per 100 F.O.B. R.&C. K.C.	F.O.B. Kansas City
2026	For 1/2" Strand	110 lbs.	\$36.00	\$38.00
2029	For 3/4" Strand	150 "	38.00	39.00

Post Hole Auger



Auger is made up of a steel tube stem. The sheet steel blades are riveted to a malleable iron combination wing nut with point into which the stem is screwed. The wood turning handle passes through a malleable iron T which is riveted to the stem.

List No.	Weight	Each
221 To bore 12 inch diameter, 5-foot stem.....	15 lbs.	\$3.75
222 To bore 14 inch diameter, 5-foot stem.....	15 "	6.30

A-durable wood handle for above \$1.50 extra

Iwan's Post Hole Auger



This auger will save you time and labor in your construction work. One man can bore from 30 to 60 five-foot holes in one day with a 12-inch auger.

List No.	Weight	Each
767 To bore 8 inch diameter, 4-foot overall.....	12 lbs.	\$1.75
769 To bore 10 inch diameter, 4-foot overall.....	14 "	2.15
771 To bore 12 inch diameter, 4-foot overall.....	16½ "	3.50

Long-Handled Spoons



List No.	Weight	Doz.
224 Spoon, 7 feet, 9 inch straps.....	9 lbs.	\$6.00
225 Spoon, 8 feet, 9 inch straps.....	10 "	6.00

Long-Handled Shovels



List No.	Weight	Per Doz.
226 Shovels, 7 feet, 22 inch straps.....	9½ lbs.	\$30.00
227 Shovels, 8 feet, 22 inch straps.....	10½ "	40.00

Shovel and Spoon Handles

List No.	Weight	Each
947 Shovel Handles, 8 feet Maple.....	5 lbs.	\$2.25
948 Shovel Handles, 7 feet ".....	4½ "	2.00
949 Spoon Handles, 8 feet ".....	5 "	2.25
950 Spoon Handles, 7 feet ".....	4½ "	2.00

Plain Pike Pole



List No.	Weight	Each
233 12 feet long—1½ inch handle.....	7½ lbs.	\$2.50
234 14 " " " " ".....	9 "	2.75
235 16 " " " " ".....	10½ "	3.00
236 18 " " " " ".....	11 "	4.00
237 20 " " " " ".....	17 "	4.50

Guarded Pike Pole or Raising Fork



Handles made of Washington fir and the fork of malleable iron.

List No.	Weight	Each
228 12 feet long—1½ inch handle.....	10 lbs.	\$3.00
229 14 " " " " ".....	12 "	3.25
230 16 " " " " ".....	13½ "	4.75
231 18 " " " " ".....	17½ "	5.00
232 20 " " " " ".....	19½ "	5.25

Pole Supports

Jenny Pattern



The construction of these pole supports is strong and rigid. The uprights are 2 x 4 dressed on all sides. The joint where the uprights cross is gusseted and the joint reinforced by iron plates bolted through the uprights. The bottom of each leg is provided with a spiked iron shoe to prevent slipping.

List No.	Weight	Each
238 Height 6 feet.....	10 lbs.	\$ 8.50
239 Height 7 feet.....	15 "	9.25
102N Height 8 feet.....	20 "	10.00

Crouse-Hinds Harpoon Guy Anchor

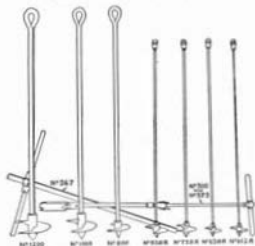


Requires no expert to install. The groundman drives the anchor while the lineman ties the guy wire to the pole. Therefore the installation costs nothing. Only ten to forty blows with sledge required. No digging or tools to get broken, as none are used. Can be driven in any kind of wet, dry or frozen soil.

Price each, F. O. B. Syracuse, N. Y.

	Less 100 or more
1130 Made of forged steel. Weight, 22 pounds. Dimensions overall: Rod, 5 feet by 1 inch square. Wings closed, 4 inches; wings spread, 11 inches. Black enameled finish.....	\$2.50 \$2.00
102N Made of forged steel. Weight, 22 pounds. Dimensions overall: Rod, 5 feet by 1 inch square. Wings closed, 4 inches; wings spread, 11 inches. Galvanized.....	2.50 2.35

Matthews Scrulix Anchors



A most convenient type of anchor for guy wires because it screws into solid ground without loosening the soil as when anchors are installed in dug holes. The manufacturers of the Scrulix Anchors guarantee the 6, 7 and 8 inch sizes to outlast all other anchors using galvanized steel rods of the same construction, and they guarantee the 8, 10 and 12 inch anchors with square rods to outlast all others with the same rod and section galvanized. Furnished in various sizes, as shown in the following table:

List No.	Galvanized Round Rods	Diam. of Anchor	Size of Rod	Weight per 100
248	Medium Strains	6 in.	1/2 in. x 6 ft.	720 lbs.
2369	Heavy	7 "	3/4 " x 6 "	1200 "
2371	Heavy	8 "	1 " x 6 "	1500 "

List No.	Galvanized Square Rods	Diam. of Anchor	Size of Rod	Weight per 100
2372	Heavy Strains	8 in.	1 1/4 in. x 6 ft.	3700 lbs.
2373	"	10 "	1 3/4 " x 6 "	5700 "
2374	"	12 "	1 7/8 " x 6 "	7900 "
1630	Wrench for above	(Must be used with round anchors)		

No Wrench needed on heavy anchors.

List No.	Per 100	Less than 50 and over 12	Less than 50 and over 12	50 or more
248		\$ 192.00	\$ 182.00	\$ 172.00
2369		283.00	273.00	263.00
2371		374.00	364.00	354.00
2372		825.00	825.00	825.00
2373		1630.00	1630.00	1630.00
2374		1600.00	1400.00	1400.00
1630		700.00	700.00	700.00

All Prices F. O. B. St. Louis

Everstick Anchors Without Rods

List No.	Description	Price Each
2342	No. 5, two-way. Holding surface 45 square ins. 5-inch circle, expands to 3 x 9 ins. Installed in 5-in. hole.	\$ 70
2343	No. 6, two-way. Holding surface 66 square ins. 6-inch circle, expands to 6 x 11 ins. Installed in 6-in. hole.	1.10
2344	No. 8, two-way. Holding surface 120 square ins. 8-inch circle, expands to 8 x 15 ins. Installed in 8-in. hole.	1.65
2345	No. 8, four-way. Holding surface 121 square ins. 8-inch circle, expands to 11 ins. Installed in 8-in. hole.	1.45
2346	No. 8, four-way. Holding surface 225 square ins. 8-inch circle, expands to 15 ins. Installed in 8-in. hole.	2.40
2347	No. 10, four-way. Holding surface 361 square ins. 10-inch circle, expands to 19 ins. Installed in 10-in. hole.	3.75

Rods—Galvanized

List No.	Description	Price Each
2348	6 feet, 1/2-inch	\$.40
2349	6 feet, 3/4-inch	.70
2350	6 feet, 1-inch	.85
2351	6 feet, 1 1/4-inch	1.15
2352	8 feet, 1-inch	.85
2353	8 feet, 1 1/4-inch	1.15
2354	8 feet, 1 1/2-inch	1.40
2355	10 feet, 1-inch	1.15
2356	10 feet, 1 1/4-inch	1.75

Discounts

100 Anchors or over	10%
100 Rods or over	10%
500 Rods or Anchors	Special

Note: Nos. 5 and 6 Two-Way Anchors will take 1/2 or smaller rods of any length. No. 6 Four-Way and No. 8 Two-Way, 1/2 or smaller. Nos. 8 and 10 Four-Way, 1 inch rod or smaller, any length.

Drive and Twist Anchors

Galvanized



The anchor is driven into the ground the desired depth with a sledge or mallet. The blades are set by twisting to the right three revolutions. The design of the blades, like those of a screw propeller, causes them to spread when the anchor is twisted. The pitch is such that they spread to an angle of 90 degrees with the rod in three revolutions. The pull is on a solid earth that has not been disturbed.

List No.	Mfrs. Shaft No.	Length, Ft.	Diam. of Shaft, In.	Span of Blades, In.	Weight Lbs.	Less 100 or over	Price Each
2379	1	4	5/8	8	8	\$1.00	\$1.53
2371	2	5	3/4	10	12	3.00	2.45
2372	3	6	1	12	15	3.40	3.33

Anchor or Guy Rods

Galvanized



Furnished with one square nut. Square washers extra.

List No.	Size	Weight Per 100	Per 100 F. O. B. Rochester & Kansas City	F. O. B. Chicago
900	1 1/2 in. x 6 ft.	500 lbs.	\$67.50	\$72.50
901	1 3/4 " x 6 "	750 "	75.00	82.50
902	1 7/8 " x 6 "	1000 "	80.00	90.00
903	2 " x 6 "	1250 "	103.50	113.50
904	2 1/4 " x 6 "	1500 "	113.50	123.50
905	2 3/4 " x 6 "	1750 "	123.50	133.50
906	3 " x 6 "	2000 "	143.50	153.50
907	3 1/2 " x 6 "	2250 "	153.50	163.50
908	3 3/4 " x 6 "	2500 "	163.50	173.50
909	4 " x 6 "	2750 "	173.50	183.50
910	4 1/2 " x 6 "	3000 "	183.50	193.50
911	5 " x 6 "	3250 "	193.50	203.50
912	5 1/2 " x 6 "	3500 "	203.50	213.50
913	6 " x 6 "	3750 "	213.50	223.50
914	1 " x 10 "	2000 "	223.50	233.50

Discounts

Less than 25	25%
25 to 50	30%
50 and over	Special

Ground Rods

Galvanized



Used for making ground connection for rural line telephones, lightning arresters and cable pole terminal box grounds. Made of iron with point at one end and drilled hole at other end. Furnished galvanized as follows:

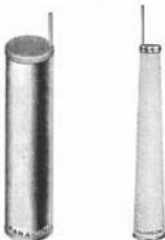
List No.	Diameter	Length	Approx. Wt. per 100	Per 100	
				F. O. B. Rochester & Kansas City	F. O. B. Chicago
1633	1/2 in.	5 ft.	176 lbs.	\$30.00	\$32.40
2258	3/4 in.	6 ft.	300 "	54.00	56.50
2451	1 in.	6 ft.	355 "	101.40	112.00

Ground rods of these types can also be furnished either with a 3/8-inch free end of No. 10 B. & S. copper wire soldered to connection end of rod or with a King Clamp.

Discounts

Less than 25	25%
25 to 50	30%
50 or over	Special

Paragon Grounds



The Paragon grounds are made of a perforated sheet of pure copper; the cone is filled with pea size charcoal or coke. The charcoal absorbs moisture by capillary attraction, keeping the earth around the cone always moist, insuring a perfect and permanent ground.

It is ideal for grounding lightning arresters of all kinds, pole cable terminals, distributing and protector frames and toll line arresters.

The cone is furnished complete with charcoal and with braided, hollow copper cable into which the ground wire may be soldered. The cable is securely soldered to the bottom of the cone.

The cylinders are not perforated and are furnished either filled with charcoal or open at both ends, with no charcoal filling as conditions may require.

List No.	Length	Shape	Gauge	Each
1634	1 foot	Cylinder	No. 22 Solid	\$5.00
1635	2 feet	Cylinder	No. 22 Solid	6.25
1636	1 foot	Cone	No. 22 Perforated	3.00
1637	2 feet	Cone	No. 22 Perforated	6.25

Discounts

Less than 10	40%
10 to 24	45%
25 to 49	50%
50 to 99	55%
100 to 499	60 and 5%
500 and over	Special

Folding Take-up Reel



Folding Take-up Reel, Open



Folding Take-up Reel, Closed

List No.	Makes Coil	Weight	Each
270	Folding, for 14 inch coil	45 lbs.	\$14.00
200	Folding, for 21 inch coil	45 lbs.	18.40

Pay-Out Reel



Substantially built of hard wood and reinforced with steel plates. A good easy running reel for use on repair wagons.

List No.	Weight	Each
201	With Pops	40 lbs. \$12.00

Lineman's Cart



A light hand cart for telephone and telegraph construction work. Provided with metal wheels and standards for anchoring and bracing the cart when taking up or paying out wire. Wagon box contains ample space for tools and miscellaneous construction materials. A splendid outfit for small exchanges.

List No.	Each
265	Complete with reel

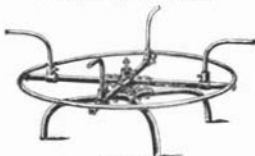
Pay-Out Reel on Barrow



Constructed of hard wood and reinforced with steel plates. The barrow is supported by strong steel legs coil-braced and bolted through the wood. The guard pins on the reel are all suitable for 12 inch, 18 inch, and 24 inch coils.

List No.	Weight	Each
262	80 lbs.	\$20.25

"Ready" Pay-Out Reels



List No. 264



List No. 263

"Ready" Band Tension Pay-Out reels are a combination of all reels, making an ideal reel for telephone companies especially for hand drawn copper. This reel we would recommend as being adapted for all classes of work.

List No.	Weight	Each
264 "Ready" Band Tension Pay-out reels . . . 41 lbs.		\$13.00
263 "Ready" No. 263 is the same as No. 264, made in barrow style . . . 44 lbs.		16.80

Improved Havens' Grip



Designed for handling plain or stranded wire from No. 6 gauge to 1/2-inch in diameter. The body and handle of this clamp are made of steel forgings and the eccentric of hardened steel.

List No.	Weight Each	Each
2199	2 1/2 lbs.	\$7.50

Havens' Grip



A popular grip for general line construction work. Body and handle are made of drop forged steel and the eccentric of hardened tool steel. Rivets are steel, machine turned, galvanized finish.

List No.	For Wire Sizes	Weight Each	Each
267	No. 8 and smaller	1 lb.	\$2.50
268	1/2 inch cable and smaller	2 1/2 lbs.	3.50

Buffalo Grips

Without Pulley



The Buffalo Grip is one of the most popular tools of its class ever placed on the market. It will instantaneously grip the wire and will not drop off. It will not slip under the severest tension and will not injure the twisted wire.

List No.		Price Each
278	No. 1—Extreme opening .22 inch, holding all wires from the smallest to No. 6	\$2.85
932	No. 2—Extreme opening .35 inch, holding all wires from the smallest to No. 0	4.15
933	No. 3—Extreme opening .48 inch, holding all wires from the smallest to No. 0000	6.65
2501	No. 4—For insulated wire; extreme opening .52 inch, holding weatherproof wire sizes No. 6 to No. 1 inclusive	4.15

Discounts

Same as Buffalo Grips with Pulley

Buffalo Grip with Pulleys



List No.		Price Each
934	No. 1—Extreme opening .22 inches, holding wire from smallest to No. 1, inclusive. Will accommodate rope 1/4 inch in diameter	\$3.80
935	No. 2—Extreme opening .35 inches, holding wire from smallest to No. 0, inclusive. Will accommodate rope 3/8 inch in diameter	6.00
279	No. 3—Extreme opening .48 inches, holding wire from smallest size to No. 0000. Will accommodate rope 7/8 inch in diameter	9.05
936	No. 4—Extreme opening .52 inches, holding weatherproof wire, sizes No. 0 to No. 1, inclusive. Will accommodate rope 1 inch in diameter	6.00

Discount on All Above Buffalo Grips

Less than 12	Not Special
12 or more	

Buffalo Lineman's Tool



Latest adaptation to needs of line construction men. Self-adjusting brake which holds securely under severest tension.

List No.		Price Each
280	No. 1—Extreme opening of .22 inch, holding wire from smallest size to No. 6, inclusive. Will accommodate rope 7/8 inch in diameter	\$8.00

Buffalo Lineman's Tool (Cont.)

2366	No. 2—Eastern opening of .35 inch, holding wire from smallest size to No. 5, inclusive. Will accommodate rope $\frac{1}{4}$ inch in diameter.	7.25
2370	No. 4—Eastern opening of .35 inch, holding 10 H. weatherproof wire, size No. 8 to No. 1, inclusive. Will accommodate rope $\frac{1}{4}$ inch in diameter.	7.25

Discount on Buffalo Lineman's Tool

Less than 12.....	Net
12 or more.....	Special

Chicago Grips—Plain

For Bare Wires



Once this grip seizes a wire it holds on—the harder the pull, the tighter the hold. It pulls straight without leaving kinks in the wire. The main body piece and lever are forged steel and draw parts are of wrought steel. The gripping jaws are machined smooth.

List No.	Size	Weight	Each
2363	For No. 6 wire and smaller.....	1½ lbs.	\$4.00

Above grip can also be furnished for use on insulated wire.

Malleable Iron Pulley Blocks

Galvanized



List No.	For	Weight	Each
2482 2½"	shell, single, two eyes (½" rope)	2.50	\$4.15
2483 2½"	shell, double, two eyes (½" rope)	2.50	2.50
961 2½"	shell, single with hook (½" rope)	4.50	4.50
962 2½"	shell, single with hook and eye (½" rope)	4.50	4.50
963 2½"	shell, double with hook (½" rope)	4.50	4.50
964 2½"	shell, double with hook and eye (½" rope)	4.50	4.50
1201 3"	shell, single with hook (½" rope)	5.00	5.00
1202 3"	shell, single with hook and eye (½" rope)	5.00	5.00
1203 3"	shell, double with hook (½" rope)	5.00	5.00
1204 3"	shell, double with hook and eye (½" rope)	5.00	5.00

Climber Straps



List No.	Weight per pair	Per Set
300 Set of Eastern climber straps with plain leather pads.....	1½ lbs.	\$3.25

Lineman's Climbers



Made by Mathias Klein & Pons and considered by linemen throughout the country as the standard of quality. Made of special spring steel and forged to proper dimensions for safety and lightness. Climbs in Eastern type climbers are made of steel steel started into check, white-hot, then ground, filed and tempered.

List No.	Type	Approx. Wt. per pair	Per Pair
255	Eastern without straps.....	3½ lbs.	\$4.10

Eastern climbers are made in lengths from 15 to 19 inches by ½ inch variations.

Lineman's Tool Belt



Made of oak tanned harness leather 2½ in. wide with loop layer 1 inch wide, forward into 4 hand loops. Belt is made in 38, 40, 42, 44 and 46 inch lengths. Be sure to specify length when ordering.

List No.	Weight	Each
302 With rings for safety strap.....	1½ lbs.	\$4.45

Belt and Safety Strap



This belt is the same as list No. 302 and is provided with a safety strap 1½ inches wide and 6 feet long, provided with a strong metal hook at both ends. Strap may be shortened or lengthened by adjusting buckle, or it may be detached entirely from the belt. Made 38, 40, 42, 44 and 46 inch lengths. Be sure to specify length when ordering.

List No.	Approx. Weight	Each
304 Belt and safety strap.....	4 lbs.	\$6.50
305 Safety strap only.....	2 "	4.45

Hatchets



List No.	Weight	Each
320 Cut 3½ inches.....		\$2.00
321 Cut 4½ inches.....		2.50

Broad Hatchets



List No.	Each
421 4 1/2 inch bit.....	\$3.25
422 5 inch bit.....	3.75
423 6 inch bit.....	4.00

Adz Eye Nail Hammer



Polished plain face and white hickory handle—a strictly high grade tool.

List No.	Weight Each	Dozen
347	13 Ounces	\$12.00
348	1 Pound	14.00
349	1 1/4 Pounds	16.00

Lineman's Axe



List No.	Each
356 With handle.....	\$4.25
357 Without handle.....	3.50

Champion Screw Driver

Machinist Style



List No.	Length	Dozen
363	2 1/4 inch.....	\$3.25
364	3 ".....	4.00
365	4 ".....	4.25
366	5 ".....	5.50
367	6 ".....	6.00
368	7 ".....	6.75
369	8 ".....	9.00
370	10 ".....	11.00
372	12 ".....	12.00

Champion Screw Driver

Cabinet Style



List No.	Length	Dozen
968	2 1/4 inch.....	\$3.25
969	3 ".....	4.00
970	4 ".....	4.25
971	5 ".....	4.75
972	6 1/4 ".....	6.75
973	8 ".....	9.00
974	10 1/2 ".....	11.00
975	12 1/2 ".....	13.00

Inspector's Harness Leather Tool Bag



This bag is a combination of all the good features of the various common leather bags. It is made of harness leather and will stand rough and hard usage and still always look well. It has a shoulder strap combined with a pad and hand strap, also a new and big buckle. The bottom is thoroughly and is studded with steel studs. Retaining straps pass over around the bag so that it may be locked to the front of its extremity and is securely held intact. All seams are sewed with hot waxed

Even thread, lock stitched. The leather too I does not absorb moisture.

List No.	Size	Weight Each	Each
2006	14 x 8 inches	3 lbs.	\$ 8.50
2007	18 x 8 " "	4 1/2 " "	10.40
2008	24 x 8 " "	7 1/2 " "	12.65

Metal Tool Kits



These Kits are made of galvanized steel throughout, but are no

heavier than other grips and tool kits, their average weight ranging from 5 to 11 pounds, depending on size.

They will stand the hard usage for they are made of 26 gauge steel, not tin. They are reinforced throughout by double forming and double seaming. Extra wiring and bracing, together with electric welding and solid riveting, give them the needed strength to withstand the wear and tear and rapid depreciation given the average tool kit.

They are finished in brown baked enamel that will not rub off or chip easily. Strong Yale or Corbin patented locks, genuine full sized outer rims and heavy side catches. They will not buckle nor change shape with the heaviest loads.

List No.	Style No.	Length	Width	Height	Weight	Each
2009	114	14	7	9	4½ lbs.	\$3.25
2010	116	16	9	11	5½	3.50
2011	118	18	10	13	6½	3.75
2012	120	20	11	13	7½	4.00
2013	122	22	11	13	10½	6.25

Discount
25%

Lineman's Tool Bag



List No.	Each
308 Canvas, 20 inch, with leather bottom.....	\$3.75
309 Canvas, 12 inch, with leather bottom.....	4.00

Electrician's or Lineman's Rubber Gloves

With gauntlet. Palms and fingers reinforced.



This pure gum rubber glove has been adapted as a "safety-first" glove by many of the large electrical companies. This is an ideal glove for electricians and line men working on voltages up to 1,000. Fits the hand snugly and protects the wrist.

List No.	Size	Weight Per Pair	Pair
2313	9½	1 lb.	\$4.50
2314	10	1 lb.	4.30
2315	11	1 lb.	4.20

Hack Saw Frame



An Adjustable, Substantial, Cast-steel Hack Saw Frame

List No.	Each
310 Saw frame to hold 9-inch blades.....	\$2.25
311 Saw frame to hold 12-inch blades.....	2.50

Hack Saw Blades

List No.	Per Dozen
312 9-inch blades, per dozen.....	\$1.25
313 12-inch blades, per dozen.....	1.00

Saws

Disston's Grain Blade, Etched Beech Handle, Polished Edge, Three Screws



List No.	Each
324 16-inch panel saw.....	\$1.00
325 18-inch " ".....	1.75
326 20-inch " ".....	1.90
327 22-inch " ".....	2.10
328 24-inch " ".....	2.30

Forged Cold Chisel



List No.	Each
315 1½-inch wide x 6 in.....	\$1.50
316 1½-inch wide x 7 ".....	.60
317 1½-inch wide x 7 ".....	.70

Socket Framing Chisel



List No.	Each
318 1 inch.....	\$1.50
319 1½ ".....	1.65
320 2 ".....	1.75

Draw Knives



List No.	Each
321 12-inch blades, each.....	\$3.25
322 14-inch blades, each.....	3.65

Ratchet Bit Brace



List No.	Each
327 8-inch sweep.....	\$1.50
328 10-inch sweep.....	3.75

Hand Drill



These hand drills are made of malleable iron, nickel plated with steel spindle and ratchet head and handle. The chuck will hold twist drills from 1/32 to 1/4 inch. The drill points are furnished with each hand drill.

List No.	Each
312 Single gear, hollow handle.....	\$3.00
313 Double gear, same chuck.....	3.50

Breast Drill



List No.	Each
314 Reinforced on both sides of controlling cog.....	\$7.50

Yankee Ratchet Screw Driver
No. 11

Right and Left Hand and Rigid



List No.	Each
372 2 inch.....	\$.50
373 3 ".....	.60
374 4 ".....	.65
375 5 ".....	.70
376 6 ".....	.85
377 8 ".....	.95

"Yankee" Special Ratchet
Screw Driver—No. 30

Right and Left Hand and Rigid

Three bits of different widths are included with each tool. The extreme length of tool with bit in chuck is 13 1/2 inches closed and 19 1/2 inches when extended.

Packed one only in a strong paper box.

The advantages of this over similar tools are in its greater simplicity, convenience, strength, durability, and that it can be used as a rigid screw driver in any part of its length, as well as to push or ratchet screws in or out.

List No.	Each
39 Size No. 2.....	\$2.50

Assemblers Screw Drivers



A Handy Tool for Telephone Inspectors and Assemblers

List No.	Each
1002 For Nos. 2 to 5 screws.....	\$1.00
1003 For Nos. 3 to 7 screws.....	1.50

Rimco Rubber Insulated
Screw Drivers

Tested and Passed for 3000 Volts

List No.	Each
2784 7 1/2 inch.....	\$1.00
2785 8 1/2 inch.....	1.25
2786 10 1/2 inch.....	1.50

"Yankee" Automatic Drill
No. 40

Bore holes in hard or soft woods without splitting. Pushing handle down revolves the drill point, and a spring pushes handle back to its place, while drill point extends out during the upward movement. In hard or tough woods this drill can be operated as a ratchet.

The "Yankee" embodies improvements over those now in the market in the Magazine for drills. This is found in the handle and reached by pushing catch toward top of tool, which causes interior of handle to move upward, showing all the drills in place safely, and so they can be readily removed.

To insert drill the sleeve of chuck is turned to left, the drill inserted and sleeve let go. If the sleeve does not return to its place, push on drill and turn in chuck until it does. The tool is made of brass nickel plated and finely finished.

Eight drills are furnished with each tool, one each, 1-16, 1-8, 1-4, 3-16, 1-2, 3-8, 1-2 and 1-4 inch.

List No.	Trade No.	Each
99	40	\$2.40

Bell Hanger's Drills



No.	12-In. per Doz.	18-In. per Doz.	24-In. per Doz.	30-In. per Doz.
6	\$ 7.50	\$10.00	\$12.50	\$15.00
8	8.00	10.50	13.00	15.50
10	8.75	11.00	13.50	16.00
12	9.50	12.00	14.50	17.00
14	10.50	13.00	15.50	18.00
16	12.00	14.50	17.00	19.50
18	13.50	16.00	18.50	21.00
20	15.25	17.75	20.25	22.75
22	17.00	19.50	22.00	24.50
24	19.00	21.50	24.00	26.50
26	21.00	23.50	26.00	28.50
28	23.00	25.50	28.00	30.50
30	25.00	27.50	30.00	32.50
32	27.50	30.00	32.50	35.00
34	30.00	32.50	35.00	37.50
36	32.00	35.00	37.50	40.00

The numbers indicate the sizes in thirty-second of an inch. Use numbers and lengths in ordering these drills.

Discounts	Net
Less than 6.....	10%
6 or more.....	10%

Yankee Chuck with Drill Points

For use with No. 30 "Yankee" Ratchet
Spiral Screw Driver

Eight drill points, as above, are furnished with each chuck. The chuck and eight drill points are put up in a small round wooden box. The outside of the chuck corresponds in size to the end of the screw driver. Fits used in No. 30 Spiral

(Continued on next page.)

Yankee Chuck (Cont.)



Ratchet Screw Driver, while the inner portion of the chuck is made to conform to the ends of the drill points used in No. 20 "Yankee" Automatic Drill. The drill point is first put in the chuck, as illustrated, and the two together put in chuck of No. 20 "Yankee" Ratchet Screw Driver in the same manner as bits are put in.

List No. 976 Yankee Chuck with eight drill points..... Each \$1.00

Pocket Screw Driver



This little Pocket Screw Driver is one of the most useful tools you ever saw. It has three screw driver blades and a ratchet that all close up inside of the handle. The blades will turn anything from the smallest to a good sized screw. The ratchet takes the hunk off holes. The whole tool is hand-screwed nickel plated and sells for a popular price. Everyone buys it.

List No. 2281 Trade No. 231 Each \$1.20

Bench Vises



This Vise will stand hard usage, it is not large but well constructed and nicely finished.

List No. 2382 Trade No. 180 1 inch Jaw \$1.50
2383 181 2 inch Jaw 2.40

Electrician's Pocket Tool Kit



This outfit is indispensable to the practical electrician. The case is made of the best quality russet leather, hand stitched. It is of convenient pocketbook style with firm metallic clasp, and measures 3 x 6 inches. It contains the following tools, viz.: 1 electrician's knife, 1 oil can, 1 pair 6-inch pliers, 1 file, 1 pair tweezers, 1 pair electrician's shears and 1 screw driver.

List No.	Complete Kit	Each
424	Case only	\$7.20
5027	Electrician's Knife	2.00
5029	Oil Can	1.25
5029	File	.20
5030	Pliers	2.00
5031	Tweezers	.25
5032	Screw Driver	.50
407	Shears	1.25

Pliers

Klein's "Diamond Special" Pliers

Side Cutting



List No.	Weight Per Dozen	Per Pair
2270	3 inch	\$2.60
977	6 "	2.90
978	7 "	3.35
979	8 "	3.75

Klein's "Diamond Special"

Side Cutting Pliers

With Sleeve Twister



7-inch size Twister fitted for No. 12 McAlister shears. D. & S. gauge.

8-inch and 9-inch size Twister fitted for No. 10 new McAlister shears. D. & S. gauge.

List No.	Weight Per Dozen	Per Pair
1666	7 inch	\$3.75
1667	8 "	4.45

Pliers (Cont.)

Genuine Swedish Oblique
Cutting Pliers

Polished



List No.	Weight Per Dozen	Per Pair
993	4 1/4 inch 2 3/4 lbs.	\$2.00
994	5 " 4 "	2.25
995	6 1/4 " 4 1/4 "	2.50

Extra Long Oval Nose
Side-Cutting Pliers

List No.	Weight Per Dozen	Per Pair
2373	5 With Side Cutter 2 3/4 lbs.	\$2.20
2376	6 " 3 "	2.40

Extra Long Nose Oval Point Pliers



List No.	Weight Per Dozen	Per Pair
401	5 inch 2 3/4 lbs.	\$1.85
1071	6 " 3 1/2 "	2.00

Rimco Rubber Insulated Pliers



List No.	Weight Per Dozen	Per Pair
2797	6 inch 2 3/4 lbs.	\$2.45
2798	7 " 3 "	2.55
2799	8 inch 4 lbs.	4.25
2800	9 " 5 1/2 "	5.30

Electrician's Scissors



List No.	Weight Each
402	3 1/4 inch long, Nickel-plated \$1.25

Combination Knife



A combination of knife and screw driver. The screw driver blade has an edge on one side for stripping wires, so that the knife blade need not be used for that purpose, but kept sharp for other uses. Screw driver blade when opened is locked and cannot close on hand.

List No.	Price Each
1005	\$1.00
1006	Double Blade 1.25

Wire Peeler



A Handy Tool for Wiremen and Bellhangers

List No.	Price Each
358	\$1.20

Solid Handle Wrench



List No.	Size	Weight	Price Each
1681	6 inch, opens 1 1/4 inch	1 1/2 lbs.	\$10.00
1682	8 " " 1 3/4 "	2 1/2 "	12.00
1683	10 " " 2 "	3 1/2 "	14.00
1684	12 " " 2 1/4 "	4 1/2 "	18.00
1685	14 " " 2 3/4 "	5 1/2 "	24.00
1686	18 " " 3 "	7 1/2 "	32.00
1687	21 " " 3 1/4 "	9 1/2 "	39.00

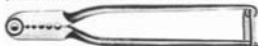
The entire bar of this wrench is one solid steel forging, making it the strongest wrench made.

Discounts

Less than 6	Net
6 or more	10%

Splicing Clamps

Splicing clamps are an absolute necessity in making dependable electrical and mechanical joints in wires. The splicing clamps listed herein are properly designed and proportioned for most efficient use and are tempered and hardened so as to preserve their gripping qualities. All splicing clamps are furnished with polished female and black handles. Packed one in carton.



List No.	Description	Weight Each
501	A handy vent pocket size adapted for telephone construction. Has five round holes, accommodating all sizes of copper wire from 8 to 16 B. & S. gauge, and all sizes of iron wire from 10 to 18 B. W. G. Length 8 inches.	1/2 lb. \$2.60

Splicing Clamps (Cont.)



List No.	Description	Weight Each	
400	Fitted with five round holes and one oval hole for Nos. 4, 6, 8, 10, 12 and 14 iron wire or Nos. 2, 4, 6, 8, 10 and 12 copperwires. Length 10 1/4 inches.	1 1/4 lbs.	\$3.35



List No.	Description	Weight Each	
1673	Fitted with five sets of chisels adapted for twisting double tube copper sleeve joints Nos. 6 to 17 B. & S. gauge and iron sleeve joints Nos. 8 to 19 B.W.G. Length 10 1/4 inches.	1 1/4 lbs.	\$3.35

Combination Wire and Sleeve Clamps

The following splicing clamps have been designed to meet the requirements of general telephone, telegraph, railway and electric light work. They apply bare copper and iron wires, and can be used for twisting double tube sleeve joints by simply reversing the handles of the clamp. Forged from a select grade of tool steel, properly hardened and tempered. The handles will not buckle when closed.



List No.	Size	Description	Weight Each	Each
413	5-inch	Standard telephone clamp for general line and trouble work. Has four round holes, accommodating all sizes of copper wire from 4 to 12 B. & S. gauge, and all sizes of iron wire Nos. 8 to 14 B. W. G. The reverse side has four sets of chisels adapted for twisting double tube copper sleeve joints Nos. 8 to 17 B. & S. gauge, and iron sleeve joints Nos. 10 to 19 B. W. G.	12 oz.	\$3.50



List No.	Size	Description	Weight Each	Each
2077	10 1/4-inch	This clamp is intended for general telephone and telegraph work where a large range of wires is used. It has five round holes and one oval hole, and will accommodate all sizes of iron wire from Nos. 6 to 14 B. W. G., and all sizes of copper wire from 4 to 12 B. & S. gauge. The reverse side has five sets of chisels adapted for twisting double tube copper sleeve joints, Nos. 8 to 17 B. & S. gauge, and iron sleeve joints Nos. 8 to 19 B. W. G.	1 1/4 lbs.	\$4.75

Klein's Combination Steel Lag Screw Wrench



These wrenches are forged from select bar steel. The slot is formed in a cross shape, and will fit machine bolts, nuts or lag screws from 1/4 inch to 1 1/2-inch. The small end of the wrench is arranged for 3/4 inch machine bolts or lag screws. The round hole allows the end of a bolt to run through as the nut is run on.

The jaw is wider at its upper portion and when this wrench is put on a nut or bolt the tendency is to draw the bolt-head or nut into the wrench and prevent slipping off.

List No.	Length	Weight per Dozen Each	Each
2087	13 1/4 inch	20 lbs.	\$1.50

Tree Trimmers



The head is constructed of malleable iron, and comprises the hook portion with which the knife operates and the socket into which the handle is inserted. This socket is perfectly straight, eliminating the necessity of tapering the end of the handle. The knife is forged from crucible steel and is integral with the lever and the cutting edge is carefully tempered and ground, making it very effective. This trimmer will sever a 1 1/4-inch branch. The knife is held open by a flat steel spring and is operated by a rope attached to the end of the lever.

Two threaded holes are provided for attaching a saw.

List No.	Size	Weight Each	Each
100	19-inch overall	3 1/4 lbs.	\$4.25

Combined Tree Trimmer and Saw



This tree trimmer is the same as No. 100 with saw attached as shown.

List No.	Size	Weight Each	Each
426	21-inch	4 lbs.	\$5.75
2052	Saw only	1 1/4 lbs.	1.50

Tree Trimmer Handles

List No.	Size	Description	Weight Each	Each
104	18 in.	Composed of two 9-inch handles joined with ferrule in center	9 1/4 "	4.50

Steel Measuring Tapes



This tape is $\frac{1}{2}$ -inch wide in hard leather case, with flush handle and push button on opposite side, a slight pressure of which will instantly release the handle. Trimmings nickel plated. Graduated in feet, inches and eighths of an inch.

List No.	Length	Each
2026	30 feet	\$ 5.75
2027	100 feet	10.25

Veeder Switchboard Counter

Style 8



Show rate of increase, so that exact calculations for the future may be made. They likewise show how better to divide the work on the board among the operators. Number of calls during each hour of the day can be shown. Interesting statistics are easily obtained by their use. Buckets fit in keyboard permanently. Counter can be inserted or removed at will.

List No.	Each
1147	\$2.50

Discounts

1 dozen and over	10%
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Iron Box Bells



List No.	Per 100
1230	
2 ohm resistance, 2 1/2 in. gong, less than 10	\$93.00
10 to 99	54.00
100 to 499	36.00
500 and over	Special

Iron Box Bells (Cont.)

List No.	Per 100
1240	
2 ohm resistance, 3 in. gong, less than 10	\$65.00
10 to 99	37.00
100 to 499	24.00
500 and over	Special
1241	
2 ohm resistance, 4 in. gong, less than 10	54.00
10 to 99	22.00
100 to 499	70.00
500 and over	Special
1745	
5 ohm resistance, 2 1/2 in. gong, less than 10	90.00
10 to 99	90.00
100 to 499	73.00
500 and over	Special
1747	
5 ohm resistance, 3 in. gong, less than 10	93.00
10 to 99	94.00
100 to 499	79.00
500 and over	Special
1748	
5 ohm resistance, 4 in. gong, less than 10	114.00
10 to 99	101.00
100 to 499	95.00
500 and over	Special
1749	
20 ohm resistance, 2 1/2 in. gong, less than 10	106.00
10 to 99	96.00
100 to 499	94.00
500 and over	Special
1750	
20 ohm resistance, 3 in. gong, less than 10	111.00
10 to 99	100.00
100 to 499	95.00
500 and over	Special
1751	
20 ohm resistance, 4 in. gong, less than 10	130.00
10 to 99	127.00
100 to 499	111.00
500 and over	Special

Iron Box Buzzers



List No.	Per 100
1141	
5 ohm resistance, less than 10	\$ 80.00
10 to 99	70.00
100 to 499	74.00
500 and over	Special
1142	
20 ohm resistance, less than 10	105.00
10 to 99	95.00
100 to 499	90.00
500 and over	Special

Milonite Perfection Nail

Size No. 18



Used for installing twisted pair wires. The head is of insulating material and the shank is covered with an insulating paint obtained in dark green and dark brown. Furnished in two lengths, $\frac{1}{2}$ -inch and $\frac{3}{4}$ -inch shank. Unless otherwise specified we will furnish $\frac{1}{2}$ -inch shank, dark brown.

List No.	Per 1000
1097	
Less than 10,000	\$1.25
10,000 to 20,000	Less 5%
20,000 and over	Less 10%

Galvanized and Enameled Bridle or Distributing Rings



Made of best quality of iron. Wires readily inserted or removed through opening. These rings are approved and being used by the largest and most progressive Telephone Companies. They are not found where there is trouble on the line.

Enameled

		Lbs.	F.O.B.	F.O.B.
wt.		100	Chicago	City
13	Style A, 1 1/4" eye, 1 1/4" shank	80	\$110.00	\$113.00
14	Style C, 1 1/4" eye, 1 1/4" shank	70	100.00	102.50
15	Style E, 3/4" eye, 3/4" shank	24	72.00	73.00

Galvanized

		Lbs.	F.O.B.	F.O.B.
wt.		100	Chicago	City
13	Style A, 1 1/4" eye, 1 1/4" shank	80	\$30.00	\$32.00
14	Style C, 1 1/4" eye, 1 1/4" shank	70	46.00	48.50
15	Style E, 3/4" eye, 3/4" shank	24	19.00	20.00

Discounts

over 100	25%
1 to 500	30%
5 and over	33 1/3%

Wire Connectors or Sleeves

Double Tube



wt.		Per 1000
12	For Iron Wire, size No. 14 B. W. G.	\$22.00
12	" " " " " " " "	23.50
12	" " " " " " " "	28.50
12	" " " " " " " "	40.50
12	" " " " " " " "	46.50
12	" " " " " " " "	51.00
12	" " " " " " " "	52.25
12	" " " " " " " "	57.25
12	" " " " " " " "	53.00
12	" " " " " " " "	63.00
12	" " " " " " " "	72.00

Discounts

over 5000	Net
10 and over	10%
10 Length Copper Joints 40% from the full length price.	
10 Length Steel Joints 20% from the full length price.	

Add

r combination and split connectors, add \$2.00 net per 1000
o the price of the larger size of the combination.
r tinned copper connectors add \$3.00 per 1000 to the regular
price.

Blake Insulated Staples

3/4-In. Staples, Exact Size



List No.		Per 1000
1083	No. 1—For hardwood, for single and twisted pair wire Single Pigs, 20c each 1000 to 5000.....	\$1.75
	5000 to 9999.....	1.70
	10,000 and over.....	1.60
1086	No. 3—For general use, for single and twisted pair wire Single Pigs, 20c each 1000 to 5000.....	1.75
	5000 to 9999.....	1.70
	10,000 and over.....	1.60
1087	No. 5—For hardwood, for twisted 3 wire and extra heavy pair wire Single Pigs, 25c each 1000 to 5000.....	2.00
	5000 to 9999.....	1.90
	10,000 and over.....	1.80
2504	No. 6—For general use, for twisted 3 wire and extra heavy pair wire Single Pigs, 25c each 1000 to 5000.....	2.00
	5000 to 9999.....	1.90
	10,000 and over.....	1.80

Sizes can be assorted to make quantity.

Blake Compressed Cleats

FOR USE ON



EXACT SIZE

PAT. JULY 1906.

For all interior low voltage wiring where insulated staples cannot be driven.

Standard Package Contains 100

List No.		Per pkg.	\$
1088	Single package of 100.....	Per pkg.	1.35
	Lots of 1000 to 5000.....	Per M.	2.75
	5000 to 10,000.....	Per M.	2.65
	10,000 and over.....	Per M.	2.50

Eureka Fibre Insulators and Insulated Nail



No. 1489



No. 1495

These insulators are used for twisted wire insulators and consist of hard fibre discs and best quality of rubber bushings. To install, open a loop in the twisted wire and place the insulator—then drive. A very rapid operation.

List No.	Fibre	Head	Length	Per 1000
1089	Grey	Brass	1/2 inch insulators	\$3.00
1093	Grey		1/2 inch nails	1.70

No. 32 Torch



Makes a perfect fire, whether employed indoors or out, in hard wind or extreme cold. A strong heat is generated by a powerful burner and the resulting blue flame is a joy to the user. A small amount of gasoline is required. This torch is strong, extensively well built and handsomely finished.

Has a hook and a support on the burner for holding soldering irons, and the mechanic who desires this type of torch will surely be pleased. The tank is made of heavy gauge brass, equipped with automatic brass pump.

List No.	Capacity	Shipping Weight	Each
1715	One Quart	4 1/4 lbs.	\$6.40

No. 130 Torch



No. 130 Type

The No. 130 Torch is made to meet the demand for a low-priced torch. It is good value for the money and while it is not as powerful as the better grade C. & S. torches it is guaranteed to give better results than any similar torch on the market. The burner is made of brass metal having tapered burner tube, and produces a steady, blue flame. It has solid, cast hook and support for holding a soldering copper.

List No.	Capacity	Shipping Weight	Each
2387	One Quart	4 1/4 lbs.	\$4.80

No. 208 Torch (Quart Size)

For Gasoline or Kerosene

The Greatest Utility Torch Made



The No. 208 is the most powerful Quart Torch ever produced. The tank is made of heavy gauge seamless drawn brass relin-

forced, with automatic brass pump and fitted with new Double Needle Burner, producing a steady pure blue flame of intense heat, using very little fuel. It is guaranteed to work perfectly in the Wind and in Weather far below zero. The No. 208 Torch is fully protected by patents and will give the user perfect satisfaction. It is impossible to enlarge the notice, a very great improvement. Sold everywhere under maker's guarantee.

List No.	Capacity	Shipping Weight	Each
2014	One Quart	5 1/4 lbs.	\$6.50

No. 1 Fire Pot



The No. 1 Fire Pot, which has been standard with the trade for over thirty years, has recently been improved by using the Patented Double Needle Burner. The upper needle cleans—the lower needle regulates—and the orifice cannot be forced larger, thus ruining the burner. Burns Gasoline or Kerosene and produces about 300 degrees more heat than any other burner. Other improved and patented features are heavy reinforced drawn steel tank, lined inside and out (Blat Proof) fitted with Patented Cushion Protection Band which prevents injury to base of tank. Patented Automatic Brass Pump. Large funnel fitted with Patented Dust Proof Cap. Burner is swivelled and can be turned up or down. Top section is removable and tank and burner make a splendid torch. Will heat a pair of twelve pound coppers and melt a pot of metal at the same time. A strictly high-grade fire pot for all indoor and outdoor work in the wind. The No. 1 gives universal satisfaction.

List No.	Capacity	Shipping Weight	Each
1700	Seven pints	11 lbs.	\$10.80

No. 221 Fire Pot



The No. 221 Kerosene Fire Pot is remarkable in heat producing qualities. The burner is made with a powerful generator that super-heats the kerosene gas before it is burned, securing perfect combustion of the fuel. All parts are easily accessible for cleaning. The tank is made of heavy gauge steel with bottom and fittings welded in.

List No.	Capacity	Shipping Weight	Each
2018	One Gallon	12 lbs.	\$12.44

"Staysalite" Lineman's Torch



Showing Torch Suspended on the Line Above



Torch and Shield Detached

The Staysalite Torch has these main features:

- It stays lit in a wind.
- It is light; it is small.
- It is lit and extinguished in a moment, as wanted.
- It burns alcohol without odor or noise.
- It has no adjusting parts, therefore it cannot get out of order.
- It is carried in the lineman's belt and dies away with the ground man.

It is hung directly on the wire under the joint to be soldered. It can be used as a small heater or soldering iron.

It is provided with a cup for holding soldering paste.

Its features: Small, Light, Ready to grasp. Quick to light and extinguish—just as one would a candle; and its effective flame makes it handy and always a ready source of heat for soldering or other purposes where heat is required. With the wind shield in place it STAYSALITE, and for the man on the pole having many joints to make, it is so readily applied to the work as the grip or splicing clamp and can be lighted and extinguished momentarily, as required.

List No.	Weight Each	List Price Each
2234	1 1/4 lbs.	\$1.75

"SELFLO" Alcohol Torch



Made of brass heavily nickel plated and highly polished.
Inexpensive and simple to operate. Produces a clean, intensive flame in thirty seconds.

No Pumping No Blowing
It Blows for Itself

List No.	Size Overall	Each
2801	2 1/4" x 3 1/4"	\$1.50

Regular Soldering Coppers



List No.		Each
432	1 1/2 pounds each.	\$.24
1717	1/4 " " "	.30
1718	1/2 " " "	.45
1719	3/4 " " "	.72
1720	1 " " "	.96

Weight given is that of each copper (not pair).

Electric Soldering Irons



List No. 2028—16 oz.



List No. 2029—20 oz.

These Electric Soldering Irons are slender, compact and light weight. They are thoroughly insulated and may be easily repaired because of their complete accessibility.

Tips made of hard copper, nichel and tinned, like those in illustrations are furnished unless special tips are ordered, for which an extra charge is automatically made. New tips can easily be replaced by any one.

List No.	Weight	Tip Diam.	Length	Watts	List Price Each
2028	16 oz.	1/2 in.	13 1/2 in.	85	\$7.50
2029	20 oz.	1/2 in.	18 in.	95	8.50
2030	27 oz.	3/4 in.	15 1/2 in.	170	9.50

All orders must state clearly the operating voltage range. Standards are 110 to 115 volts.

Jeweler's Soldering Copper



Allen Soldering Stick



(Put Up Regularly in Round Sticks 6 In. Long and 1 In. in Diameter, in Individual Wooden Boxes)

List No. 437 Price per stick Each \$.20

Discounts

12 and over Less 25%

Highland Soldering Paste



The Highland Soldering Paste is absolutely free from acid or any ingredient injurious to insulation. It is condensed to such a degree that one pound of it will do as much work as three gallons of ordinary soldering solution. It will save solder and make a better joint than any other soldering flux on the market. It is convenient and always ready for use, with nothing to break and nothing to spill.

List No. Per Can
434 2-ounce box, single \$.25
12 boxes, 2 ounce, one delivery \$1.25
435 1-pound can Each 1.00
436 5-pound can Each 3.75

Solder



(Strictly Half and Half)

List No. Per Lb.
1497 In regular bars
Less than 25 lbs \$.40
25 to 50 lbs .35
50 lbs. and over Special
1499 In wire, No. 10 gauge
Less than 25 lbs .42
25 to 50 lbs .40
50 lbs. and over Special

Flux Solder

(A Self-Fluxing Rosin Core Solder)



List No. Per Lb.
1500 Put up on ten-pound spools, less than 10 lbs. \$.25
10 to 25 lbs. .24
25 to 100 lbs. .24
100 lbs. and over Special

Stromberg-Carlson Friction Tape



Stromberg-Carlson Friction Tape is made of a strong closely-woven cotton fabric which is thoroughly saturated with an adhesive insulating compound that retains its sticking qualities through all seasons.

It may cost you a few cents a pound more than other kinds but—did you ever measure the number of yards of tape you get in the rolls you now use? We guarantee 150 feet of tape per pound. Figured on this basis it's cheaper for you to use our tape.

It lasts longest—we guarantee to replace any tape that dries out in the package in less than a year.

When you buy this tape you get a real telephone tape that is manufactured especially for telephone work—not an automobile or bicycle tire tape.

1/2-inch Black. Put up in 1/2-pound rolls.

List No. Per Lb.
1501 Less than 10 lbs. \$.45
10 to 25 lbs. .42
25 to 45 lbs. .41
45 to 90 lbs. .40
100 lbs. and over Special

S-C Rubber Tape

List No. Per Lb.
463 1/2 inch rubber, less than 10 lbs. \$.75
10 to 25 lbs. .65
25 lbs. and over Special

Manson Tape

(Put up in Tin Boxes Containing 1/2 Pound.)

List No. Per Lb. F. O. B. F. O. B.
Roch. & Kansas
Chicago City
1509 1/2 inch, less than 10 lbs. \$.90 \$.95
10 lbs. to 100 lbs. .85 .90
100 lbs. and over Special Special

Okonite Tape

(Put up in 1/2-Pound Rolls)

List No. Per Lb. F. O. B. F. O. B.
Roch. & Kansas
Chicago City
1500 1/2 inch, less than 10 lbs. \$1.25 \$1.30
10 to 100 lbs. 1.15 1.20
100 lbs. and over Special Special

Universal Test Clip

10 Ampere



Made of copper, natural finish. Shows connection. Speed of jaws 1/4 inch.
Suggested for use with test sets, with voltmeters by telephone

newels. Type RH cells can be converted into Type RH cells by securing Type RH newels with Type RH cover and nuts.

List No.	Each
2102 Type M-600 Cell complete	\$4.00
2103 Complete renewal consists of assembled element, one can caustic soda and one bottle of special battery oil	2.00
2104 Glass Jar	2.00
2105 Porcelain Cover	.60
2106 Terminal nuts and washers per set	.20
2107 Zinc Oxide elements assembled	1.50
2108 Can of Caustic Soda	.30
2109 Bottle Special Battery oil	.05

Discounts

Less than \$5.00	Net
\$5.00 and less than \$100.00	Less 10%

Type S-502

Capacity 500 Amp-Hrs.



This type of cell is especially adapted for telephone work generally and is now the standard with many companies. Its distinct features are constancy of voltage, low internal resistance, freedom from local action or waste of energy when standing idle, low cost of material per unit of energy produced, ease of renewal, and minimum labor costs.

Complete cell consists of a rectangular heat-resisting glass jar, zinc oxide assembled element, one copper oxide plate assembled with two zinc plates, one can caustic soda, one bottle special battery oil, porcelain cover, and terminal nuts and washers.

List No.	Each
2110 Type S-502 Cell complete	\$4.80
2111 Complete renewal consists of assembled element, one can caustic soda and one bottle of special battery oil	2.15
2112 Glass Jar	2.10
2113 Porcelain cover	.20
2114 Terminal nuts and washers per set	.60
2115 Zinc oxide assembled	1.90
2116 Can caustic soda	.42
2117 Bottle special battery oil	.05

Discounts

Less than \$5.00	Net
\$5.00 and less than \$100.00	Less 10%

Crowfoot Gravity Battery



Crowfoot Gravity Battery (Cont.)



This is the standard type of battery for all closed circuit work, includes the best quality of glass jars with heavy zinc and coppers.

List No.	Small 5 x 7	Price
302 Cell, complete, less blue vitriol, less than 30	30	\$.35
30 to 100	100	Special
303 Zincs, less than 12	12	.42
12 to 30	30	.80
30 to 100	100	.38
100 and over		Special
304 Coppers, less than 30	30	.11
30 to 100	100	.10
100 and over		Special
305 Glass Jars, less than 24	24	.30
24 to 72	72	.45
72 and over		Special
1126 Cell, complete, less blue vitriol, less than 30	30	.35
30 to 100	100	.33
100 and over		Special
1127 Zincs, less than 12	12	.42
12 to 30	30	.80
30 to 100	100	.44
100 and over		Special
1128 Coppers, less than 30	30	.11
30 to 100	100	.11
100 and over		Special
1129 Glass Jars, less than 24	24	.30
24 to 72	72	.45
72 and over		Special
1268 Blue Vitriol, less than 25 lbs.	25	Per Lb. \$.36
25 to 100 lbs.	100	.33
100 lbs. to barrel lots		.13
Barrel lots and over		Special

Battery Supplies



List No.	Each
308 Zinc, less than 12	\$.10
12 to 30	.08
30 to 100	.08
100 and over	Special
512 Gal Ammoniac, less than 50 packages	.10
Lots of 50 packages and over	Special
513 Gal Ammoniac, lots of 10 lbs.	Per Lb. \$.12
10 to 25 lbs.	.10
25 lbs. and over	Special

Regular Columbia Dry Cell

A low current telephone dry cell made only in No. 6 size (2 1/2" x 6"). Furnished with round jackets and with flange top cap as desired. Fishhook spring binding posts furnished without extra charge. Initial shipping charge—\$3 to \$5 average. This cell is designed especially for telephone or other light drain intermittent service.

(Continued on next page)

Regular Col. Dry Cell (Cont.)

Gray Label



List No.	Dimensions	No. in bbl.	Wt. Each	Wt. per bbl.
531	2 1/2" x 6"	125	2 lbs.	250 lbs.
		f. o. b. Cleveland	f. o. b. Roch.	f. o. b. Chicago
		per 100	per 100	per 100
Less than 12.....		\$40.00	\$40.00	\$40.00
12 or less than 30..		34.00	35.15	35.37
Box lots of 30.....		29.00	30.15	30.37
Bbl. lots of 125 or multiples.....		29.00	30.15	30.37

Special Prices on contracts

Red Label Columbia Dry Cell



Red Label is the general utility cell, made in Nos. 6 and 9 sizes, round jackets. Furnished with either screw or Faxon-stock binding posts.

List No.	Dimensions	No. in bbl.	Wt. Each	Wt. per bbl.
5307	2 1/2" x 6"	125	2 lbs.	250 lbs.
		f. o. b. Cleveland	f. o. b. Roch.	f. o. b. Chicago
		per 100	per 100	per 100
Less than 12.....		\$40.00	\$40.00	\$40.00
12 or less than 30..		34.00	35.15	35.37
Box lots of 30.....		29.00	30.15	30.37
Bbl. lots of 125 or multiples.....		29.00	30.15	30.37

Special Prices on contracts

Columbia Ignitor Dry Cell



A heavy duty dry cell designed especially for gas engine ignition service, telephone pole changers, train signaling telephones, operation of miniature lamps and street car signals.

Furnished in round jackets and with either screw or Faxon-stock binding posts, in two sizes as follows:

List No.	Dimensions	No. in bbl.	Wt. per bbl.
2041	2 1/2" x 6"	125	300 lbs.
		f. o. b. Cleveland	f. o. b. Roch.
		per 100	per 100
Less than 12.....		\$40.00	\$40.00
12 or less than 30..		34.00	35.15
30 or less than 125.		29.00	30.15
Bbl. lots of 125 or multiples.....		29.00	30.15

Special Prices on contracts

List No.	Dimensions	No. in bbl.	Wt. per bbl.
2043	3 1/2" x 8"	30	315 lbs.
		f. o. b. Cleveland	f. o. b. Roch.
		per 100	per 100
Less than 6.....		\$103.00	\$108.25
6 or less than 12..		100.00	103.25
12 or less than 25..		97.00	101.25
25 or less than 30..		94.00	97.25
Bbl. lots of 30 or multiples.....		91.00	94.25

Special Prices on contracts

Ever-Ready Flashlight Battery

Especially desirable for testing and all light work

List No.	Each
700	\$.25

Paragon Battery Box



Made of sheet steel, finished in black japan, and is lined throughout with heavy insulating fiber, which protects the sides of the box and the signs of the holes. Has holes at top and bottom for leading in wires. The cover is attached to the box by a nickel-plated chain. Can be removed to replace batteries without taking out the screws. Made in two sizes: No. 2 will take two No. 6 dry cells and No. 3 will take three No. 6 dry cells.

List No.	Trade No.	Type	Each
2394	2	2 cell	\$.35
2395	3	3 cell	.55

Eclipse Battery Ammeter

(0 to 30 Amperes)



Indicates in any position and either direction of current. Connecting cord is very flexible and can be detached if broken and a new one connected. Every instrument is calibrated to an accurate standard. The readings are controlled by a fine plunger bronze spring, which is very constant, therefore insuring the continued accuracy of the instrument. Scale 0-30 amperes.

List No. Each
1742 With case..... \$2.00

Eldridge Battery Voltmeter



A most convenient and practical instrument for all users of batteries, either primary or storage, dry or wet. Made in shape and about the size of an ordinary watch and is intended to carry in the vest pocket. The case is neat and heavily nickel-plated. It is simple in construction and not liable to injury with ordinary use. The range will cover two cells of primary or one cell of storage battery. Non-removable nuts on strong contact posts able to its convenience in handling. Scale 0-3 volts.

List No. Each
105 Each..... \$6.50

Advance Pocket Volt Ammeter

(0 to 8 Volts and 0 to 30 Amperes)



A strictly high grade instrument, is jeweled, insuring greater accuracy and wearing qualities. It indicates in either direction of current; you thus obtain reading instantly regardless of the polarity of the battery terminals. The scales are calibrated individually by hand to standard instruments.

List No. Each
1743 Jeweled, with case..... \$9.00
Special price in dozen lots

Baby Knife Switches

Porcelain Base

25 Amperes



List No. 538



List No. 540



List No. 542



List No. 544

List No.	Style	Dimensions	Standard Package	List Price Each
538	S.P.S.T.	3 1/4 x 1 1/4 inches	100	\$.20
540	S.P.D.T.	4 1/4 x 1 1/4 inches	100	.32
542	D.P.S.T.	3 1/4 x 2 inches	100	.35
544	D.P.D.T.	5 x 2 1/4 inches	50	.50
Less than standard package.....				Net
Standard package and over.....				Less 10%

Hard Rubber Switches

(A Handsomely Finished Switch)



List No.	Each
553 1 point.....	\$.35
556 1/2 ".....	.40
557 3/4 ".....	.45

Cast Bronze Screw Cap Push Buttons


List
No.

1269

Diameter 2 1/4 inches, light bronze or copper finish

\$.90


List Price
Each

1270

Diameter 2 1/4 inches, wood push button

\$.12

Midget Push Button



This push button is exceedingly well constructed and of a small and pleasing design, especially adapted for mounting in groups on a plate, individually on desk, or in places where economy of space is a factor.

The shell is finished in polished nickel or brush brass with white or black celluloid button as desired, and the circuit closing springs are worked silver with spring contacts. Fits in 1/4-inch hole and is held securely in place by springs on the sides.

List No.	1 to 99	100 to 500	& over
1272	White Celluloid Centers	Each \$.46	\$.41 \$.42
1273	Black Celluloid Centers	Each .45	.41 .42

Telephone Protective Devices

All Telephone Protective Devices are Furnished Less Fuses.
Fuses are extra.

Single Line Protectors


List
No.

568

S. P. W. U. Fuse Block

Standard
Pkg.

Each

100

\$.20


List
No.

569

S. P. Postal style Fuse Block

Standard
Pkg.

Each

100

\$.20

Telephone Protective Devices (Cont.)


List
No.

560

S. P. W. U. Fuse and Carbon Lightning

Standard
Pkg.

Each

100

\$.25

Use No. 506 Fuse.


List
No.

561

S. P. W. U. Fuse Block and Carbon

Standard
Pkg.

Each

100

\$.25

Use No. 506 Fuse.


List
No.

563

S. P. Postal Fuse and Carbon Lightning

Standard
Pkg.

Each

100

\$.25

Use No. 507 Fuse.


List
No.

565

D. P. Postal style Fuse Block

Standard
Pkg.

Each

100

\$.27

Use No. 571 Fuse.


List
No.

562

D. P. W. U. Fuse Block

Standard
Pkg.

Each

100

\$.27

Use No. 570 Fuse.

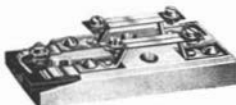
Telephone Protective Devices— (Cont.)



List No.	Standard Pkg.	Each
564 D. P. W. U. Fuse and Carbon Lightning Arrester.....	100	\$.35
Use No. 566 Fuse.		



List No.	Standard Pkg.	Each
1028 D. P. W. U. Fuse and Carbon Lightning Arrester (Same as No. 564, except carbon blocks are horizontal).....	100	\$.35
Use No. 566 Fuse.		



List No.	Standard Pkg.	Each
1732 D. P. Postal style Fuse and Carbon Lightning Arrester.....	100	\$.35
Use No. 567 Fuse.		



List No.	Standard Pkg.	Each
1281 Fuse Block and Lightning Arrester, for outside work.....	100	\$.70

Telephone Protective Devices (Cont.)



No. 641



No. 1279

Where only lightning arrester is desired, without fuse protection, the Nos. 641 and 1279 are most generally used.

List No.	Standard Pkg.	Each
641 Earh.....	100	\$.21
1279 Earh.....	100	\$.25

Discounts on all the above listed Telephone Protective Devices

Less than Standard Package.....Net standard Package and over.....10%.

Note—Above prices on telephone protective devices do not include the fuses. Fuses must be ordered extra.

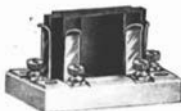


This is an in-door arrester, designed particularly for toll line service. Carbons are treated by a special process to make them practically self-cleaning. The carbons are encased with a glass insulated cap, which keeps them free from dust and dirt and prevents danger from discharges.

List No.	Each
2101 Lightning arrester.....	\$.30

Discounts

Less than 25.....	Net
25 and over.....	5%



This arrester is highly recommended for use on toll lines and building circuits. The arrester is designed to afford a broad carbon surface and not increase the size of the arrester. It occupies very small space, is strongly built and sells at a reasonable price.

List No.	Each
642 Toll line arrester.....	\$.41

Discounts

Less than 100.....	Net
100 and over.....	10%

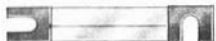
Telephone Fuses

Enclosed Type

Fuses for telephone work are ordinarily of $\frac{1}{4}$ or $\frac{1}{2}$ ampere capacity. There are two styles of fuses, Western Union or Postal. The terminal of the Western Union is plain and on the Postal style, it is notched for placing under binding screws. These fuses are made with copper terminals. As different protectors require different fuses, it is advisable to give List Number when ordering.



List No. 566



List No. 567



List No. 568



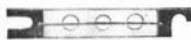
List No. 569



List No. 570



List No. 571



List No. 105



List No. 2400

List No.	Per 100
566 Copper Terminal	\$2.40
567 Copper Terminal	2.40
568 Copper Terminal	2.40
569 Copper Terminal	2.40
570 Copper Terminal	2.40
571 Copper Terminal	2.40
105 Special P. & S. Copper Terminal	2.40
2400 Special P. & S. Copper Terminal	2.50

Discounts

All Telephone Fuses subject to a discount of 10% in lots of 1,000

Sub-Station Protectors

Type B-7



A most popular type of sub-station protector. Equipped with 3 ampere tubular fuses (List No. 1504) and carbon block arrester. All parts neatly assembled on a strong white porcelain base with hexagonal lock nut terminals. Carbon block arrester is set in a depression in the base and covered with ventilated dust-proof brass cap. Dimensions $6\frac{1}{2} \times 3 \times 2\frac{1}{2}$ inches.

List No. 1701

Net Weight
1 $\frac{1}{4}$ lbs.Each
\$.95

Type B-13



This protector is designed to carry either long or short fuses (List Nos. 1504 and 17701). Consists of two pieces of porcelain, one carrying line clip for the line end and the other with fuse-clip for instrument end and also the carbon block arrester. Unless otherwise specified this protector will be furnished with 3 ampere fuses (List No. 1504). Dimensions $7 \times 2 \times 2\frac{1}{2}$ inches.

List No.

2104 Protector complete

Net Weight

1 $\frac{1}{4}$ lbs.

Each

\$.90

2105. Minus for line end

1 $\frac{1}{4}$ lbs.

.25

2106. Instrument end

1 $\frac{1}{4}$ lbs.

.50

2107. Substation tool

.35

Type B-20



In this protector the tubular fuse protection is supplemented by a six-tooth air-gap high potential discharge instead of carbon blocks. Base is made of porcelain with parts protected by a white enamel drawn steel cover. Furnished with 3 ampere tubular fuses (List No. 1505). Dimensions $6 \times 2\frac{1}{2} \times 3$ inches.

List No.

2158. With Cover

Net Weight

1 $\frac{1}{4}$ lbs.

Each

\$1.25

2500. Without cover

1 $\frac{1}{4}$ lbs.

1.00

Type B-9



A compact weather-gal and fire-proof protector for outside use in exposed locations. All parts enclosed within a heavy porcelain base which is provided with gasketed ground steel cover held in place by a wing nut. Equipped with 3 ampere tubular fuses (List No. 1504) and carbon block arrester. All construction is made with hexagonal lock nut binding posts. Dimensions $7\frac{1}{2} \times 3 \times 4\frac{1}{2}$ inches.

List No.

1736

Net Weight

3 $\frac{1}{2}$ lbs.

Each

\$1.50

Discounts on all of the above mentioned Substation's Protectors

Less than 100.....Net
100 and over.....95%

Individual Station Protector

No. 997-A



Listed and Approved by the National Board of Fire Underwriters

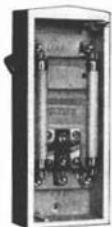
A perfectly waterproof large carbon air gap protector for outdoor mounting, to be used for protection against lightning and surges with electric circuits. It is mounted in a vitrified porcelain box with the top shaped in shed water away from the cover and with protected vents under the cover to insure ventilation and prevent sweating. A smooth cast-iron cover, red enameled, is fitted with a pure rubber gasket and locked in place by means of two wing nuts.

Consists of two No. 3 Blue-rite tubular wood fuses—3 ampere, 4 1/2 inches shoulder to shoulder, held in place by ground screw with phosphor bronze tension springs, and four large carbon blocks with two "U" shaped mica dielectrics.

List No.	Weight	Length	Width	Depth	List Price Each
2085	3 1/2 pounds	8 1/2"	4 1/4"	2 1/2"	\$1.35

Discounts
Less than 100 Not
100 and over 10%

No. 997-B



Listed and Approved by the National Board of Fire Underwriters.

This is a self-cleaning saw-tooth air gap lightning arrester mounted in a perfectly waterproof housing as shown above.

Consists of two No. 3 Blue-rite tubular wood fuses, 3 ampere, 4 1/2 inches shoulder to shoulder, held in place by nickel-plated phosphor bronze contact springs with four projections, which

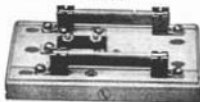
bite into the fuse-tips, and two adjustable saw-tooth metal discharge plates placed .003 inch from the carbon ground.

List No.	Weight	Dimensions	List Price Each
2090	3 1/4 pounds	Length 8 1/2" Width 4 1/4" Depth 2 1/2"	\$1.35

Discounts
Less than 100 Not
100 and over 10%



No. 2408



No. 2409



List No. 2408 or 2409 with "all over" cover

Listed and Approved by the National Board of Fire Underwriters

A self-cleaning, saw-tooth air gap protector to be used for protection against lightning and surges with electric circuits. Can be supplied with or without "all over" metal cover which encloses the fuses as well as the lightning arrester.

No. 2408 consists of two No. 2410 Blue-rite fuses—3 ampere, 4 1/2 inches tip to tip, held in place by nickel-plated phosphor bronze contact springs which grip the flat tips of the fuses; and two adjustable, saw-tooth metal discharge plates normally placed .003 inch from the carbon ground.

No. 2409 is the same protector equipped with No. 2411 Blue-rite flat wood fuses.

The wires enter through sloping holes from the top and bottom ends of the porcelain.

List No.	Each
2408 Protector less cover	\$.85
2408 Protector with cover	1.10
2409 Protector less cover	.95
2409 Protector with cover	1.10

Discounts
Less than 100 Not
100 and over 10%

Individual Station Protector



A self-cleaning, saw-tooth air gap protector to be used for protection against lightning, particularly at rural and other isolated stations where it is desirable to be free from the annoy-

area of closing carbon, and where streams with electric circuits are not likely to occur.

Consists of two adjustable non-touch metal discharge plates normally placed .010 inch from the carbon ground. Can be supplied with or without "all over" metal cover.

List No.	Each
2490 With cover	\$.20
2491 Without cover	.55

Discount	Net
Less than 100	10%
100 and over	10%

Cross Arm Lightning Arrester



A self-cleaning, non-touch air gap lightning arrester with capacity for ten wires, to be used out-of-doors and for draining lines of lightning at the cross arm without grounding the line. All five pairs of lightning arresters can be connected to one pair of wires if desired. The lightning arresters are mounted in a rust-free case to protect them from the weather and from sharp conductors and rock throwers. The arresters should be mounted on the arm out of the line man's way.

Consists of ten non-touch metal discharge plates normally placed .010 inch from the carbon ground. Screws to keep arrester parts and wires clean from working loose.

List No.	List Price
2493	\$2.10

Discount	Net
Less than 25	10%
25 and over	10%

Combined Switch and Arrester



Combined Protector and Switch cut-out mounted on wood or porcelain base as ordered.

List No.	Each
74 R. P. Combined Switch and Arrester	\$.62
Use No. 368 Fuse.	



List No.	Each
73 D. P. Combination Switch and Arrester	\$1.00
Use No. 368 Fuse.	

Discount	Net
Less than 30	10%
30 and over	10%

Keystone Radio Lightning Arrester

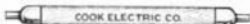


Reliable and efficient (inductor vacuum type) arrester with brown Bakelite shell with brass terminals. Approved by National Board of Fire Underwriters.

List No.	Price
2841 1 Single Carton (of 12)	\$1.50
2 or 3 Cartons (24-36)	1.50
1 or 2 Standard Packages (48 or 96)	1.50
3 or more Standard Packages (144 and over)	1.50

Discount	%
1 Carton	20
2 or 3 Cartons	25 1/2
1 or 2 Standard Packages	23 1/2
3 or more Standard Packages	40

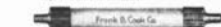
Tubular Fuses



List No.	Type A-7	Each
1767	Woodline, with copper tips. For use with protective strips or pole cable terminals. 4 1/2" shoulder to shoulder.	\$.30



List No.	Type A-9	Each
1354	Composition Fuse, for use with type B-4, B-7, B-8 and B-9. Subscriber's Station Protectors, or with Pole Cable Terminals. Does not give a flash and does not continue the arc when blown. 4 1/2" shoulder to shoulder.	\$.12



List No.	Type A-12	Each
1770	Composition Fuse. For use with Types B-3 and B-6 Pole Station Protectors. 3" shoulder to shoulder.	\$.12



List No.	Type A-45	Each
2483	Short Composition Fuse, with copper tips. For use in H-36 central office protector. This fuse is of smaller diameter than A-12. 3 1/4" shoulder to shoulder.	\$.32



List No.	Type A-46	Each
2484	Short Wood Fuse, with copper tips. Used in H-36 central office protector. Diameter, 1/8 inch. 3 1/4" shoulder to shoulder.	\$.30



Type No. 38 Fibre Fuse for use on List No. 2771 Protectors	Each
2496	\$.25

Discount	Net
Less than 500	10%
500 and over	10%

Blow-Rite Fuses

Blow and types for every kind of telephone protection. When ordering fuses specify the code number of the protector to insure selection of correct fuse. Blow-Rite fuse wire has great tensile strength and accurate fusing characteristics, so that you are sure to receive perfect fuses when Blow-Rite is specified.



List Flat Wood Fuse. Wire lies in Open Slot
No. 41 3 1/2" over all. Each \$.30



List Round Fibre with Flat Tip. Made in two lengths as follows: Each
No. 49 5" over all \$.13
No. 52 3 1/2" over all \$.13



List Round Fibre with Notched Ends. Made in two lengths as follows: Each
No. 53 2 5/8" shoulder to shoulder \$.13
No. 55 4" shoulder to shoulder \$.13



List Round Fibre 1/2" Hexagon Nut, 1/2" threaded tip
No. 56 4 1/2" shoulder to shoulder \$.13



List 1/2" Fibre Telegraph Fuse. Made in lengths as follows: Each
No. 76 4 1/2" overall, 8/10 ampere \$.12
No. 79 5 1/2" overall, 8/10 ampere \$.12
No. 80 4 1/2" overall, 1 to 10 ampere \$.12
No. 81 5 1/2" overall, 1 to 10 ampere \$.12

Less than 500 Net
500 and over 10%

Discharge Block



A self-cleaning carbide discharge block designed to replace the low carbon and mica separator of existing and new lightning arresters.

The cut shows the self-cleaning discharge block, with carbon ground block ready for insertion in a lightning arrester. Carbon ground blocks of various shapes and thicknesses adapt the discharge block to fit any lightning arrester which uses 7/8" x 1 1/4" ground carbon or copper blocks.

Order carbon as a separate item, giving size of block required or type of arrester.

List No. Each
2000 \$.08

Discounts
Less than 1,000 Net
1,000 and over 10%

Blow-Rite Fuse Wire



Reliable Blow-Rite Fuse Wire is a copper alloy made especially for lining telephone fuses. It has great tensile strength and can be soldered without fear of burning the wire. It is rated at its exact blowing point and does not corrode or crystallize on ordinary fuse wire cores.

Blow-Rite fuse wire is put up on 300-foot spools for use in relining telephone fuses.

Made in 1, 2, 3, 4, 5, 6, 7 and 10 ampere blowing point.

List Per
No. Spool
2052 300-foot spools \$1.25

Regular Adjustable Brackets



Regular Adjustable Telephone Brackets are of substantial construction, instantly adjustable to different lengths, with no friction or wear. The telephone screws on the front rail, the bracket revolves on the base. Easily mounted on desk, wall or in other convenient place. Nickel plated finish with black enamel trim; all black finish can be furnished if desired. Made up in four lengths, 26, 30, 34 and 38 inches.

Lengths given are from the center of the mounting to the mouthpiece.

Standard Lengths, with No. 83, 84, No. 85, 85X, 88 or 94 Mounting and Any Style Clamp.

List No.	When Extended With Clamp		Weight Packed	Price
	Single Brackets	Double Brackets		
1943	26 in.	"	3 lbs.	\$ 4.50
1944	30 in.	"	6 lbs.	5.00
1945	34 in.	"	7 lbs.	5.50
1946	38 in.	"	8 lbs.	6.00
1947	26 in.	"	10 lbs.	8.15
1948	30 in.	"	12 lbs.	9.15
1949	34 in.	"	14 lbs.	10.15
1950	38 in.	"	16 lbs.	11.15

Add 5% to above prices if No. 86 mounting is wanted

Flare Pedestal \$ 4.00

Discounts
Less than 12 Net
12 or more 10%

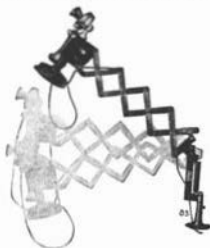
Hi-Lo Adjustable Brackets

Keeps the telephone out of the way, yet within easy reach. Adjustable to different lengths and heights. With the up-and-down adjustment it is possible to lower the bracket below the horizontal plane as well as raise above. Acts in self-balancing and permits use of telephone from standing or sitting position. Nickel plated finish with black enamel trim; all black finish can be furnished if desired. Furnished in three lengths, 28, 32 and 36 inches.

Standard Lengths, with No. 83, 84, No. 85, 85X, 88 or 94 Mounting and Any Style Clamp.

(Continued on next page)

Hi-Lo Adjustable Brackets (Cont.)



List No.	When Extended With Clamp		Weight Packed	Price
2021	28 in.	Single Brackets	7 lbs.	\$6.50
2022	32 in.	" "	8 lbs.	7.00
2023	36 in.	" "	9 lbs.	7.50
2024	28 in.	Double Brackets	14 lbs.	12.15
2025	32 in.	" "	16 lbs.	13.15
2026	36 in.	" "	18 lbs.	14.15

Note—If the No. 86 mounting is furnished an additional charge of 50c is to be made in the above price. One No. 107 Receiver Fork furnished with each single and two with each double bracket.

Add 20c to list price when Rear Rod longer than standard is furnished for making triple arm. When furnished separately, price 35c.

Arm only, Regular Type (26 inches) less clamp, mounting, and fork, \$1.40. 30c for each added 4-inch extension.

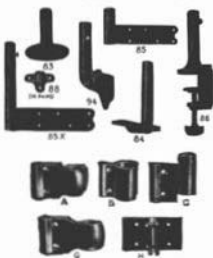
Arm only, Hi-Lo Type (28 inches) less clamp, mounting, and fork, \$1.40.

Extra cycles for rod, per dozen, 35c.

Discounts

Less than 12	Net
12 or more	10%

Adjustable Telephone Bracket Mountings and Clamps



Mountings and Clamps (Cont.)

Prices On Parts Only

List No.	Style No.	Clamp	Each
1901	A	"	\$.35
2005	B	"	.35
2006	C	"	.35
2007	G	"	.35
2008	H	"	.35
1902	83	Mounting	.75
2009	84	"	.75
2010	85	"	.75
2011	85X	"	.75
2012	86	"	.75
2013	87	"	.75
2014	88	"	.75
1903	107	Arm only (no clamp or mounting)	3.40
1904	107	Receiver hook for Regular Brackets	.10
2007	108	Receiver hook for Hi-Lo Brackets	.10

Discounts

Less than 12	Net
12 or more	10%

Equipoise Arm



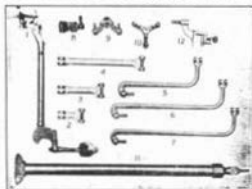
Unbreakable. Made entirely of solid steel; perfectly self balancing in any position, operated by touch of a finger.

List No.	Each
1796 24" length hard rubber finish	\$7.00

Discounts

Less than 8	Net
8 to 12	10%
12 or more	20%

Attachments for Equipoise Arm



(Continued on next page)

Attachments for Equipoise Arm (Cont.)

List No.	Each
1769 No. 2 6 inch extension link.....	\$2.00
1771 No. 4 12 inch extension link.....	2.50
1782 No. 5 10 inch drop extension.....	2.00
1793 No. 6 15 inch drop extension.....	2.50
1794 No. 7 17 inch drop extension.....	2.50
1795 No. 9 Double yoke for two arms.....	1.25
1793 No. 10 Triple yoke for three arms.....	2.00
1764 No. 11 Floor stand.....	5.00

Porcelain Mouthpieces



There has been an insistent demand for a long time for a transmitter mouthpiece which, while lasting in use, would also be sanitary and attractive in appearance. After a great deal of experimenting we are now able to give our trade a porcelain mouthpiece which will stand more than ordinary harsh treatment. It can be dropped on the floor without breaking. This mouthpiece is sanitary, in that dirt will show on it immediately and can be removed by wiping with a damp cloth. Finished in clear white. Furnished to fit the following make of telephones:

List No.	Each
2065 American Electric, Cruesett-Leitch, B. R. International Monarch and Stromberg-Carlson telephones.....	\$.40
2066 Bell and Williams-Abbott telephones.....	.40
2067 Kellong, Garford and Swedish-American telephones.....	.40
Discounts	
Less than 12.....	Net
12 and over.....	10%

Warner Pole Changer

Cabinet Style Dry Battery Outfit

This outfit consists of sixty best quality dry batteries, one Type "601" Edison Leclanche battery, one special condenser and one Warner Pole Changer, all contained in a handsome paneled Oak Cabinet, having glass cover as shown. The cabinet occupies a space of about 18 x 20 inches, and is about 40 inches high overall. When crated for shipment, it weighs about 200 pounds.

Thirty batteries will meet most requirements, leaving a reserve of thirty.

This outfit is tested ready for immediate use, so that all there

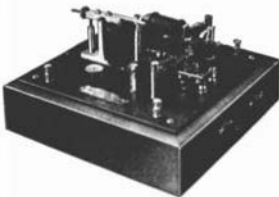
Warner Pole Changer (Cont.)



is to do to install it is to carefully remove the crate from around the outfit and change the shaded battery according to directions.

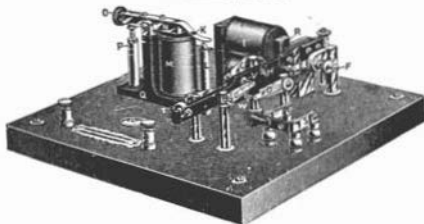
List No.	Each
600 Cabinet style complete with dry batteries, F. O. B. Muncie, Ind.....	\$74.50

Warner Standard Pole Changer



List No.	Each
601 Pole Changer without stand or batteries, F. O. B. Muncie, Ind.....	\$35.00

Pole Changer Parts



F. O. B. Muncie, Ind.

List No.	Each	List No.	Each
2230 Brushes, each, A, B, C, D, E.....	\$.40	2254 Vibrator tongue H for six brush machine equipped with weight T; Pins V and W; Pins X and Y; Seven hole vibrator spring; Armature B; Pin E; four hole blank; Vibrator supporting post and wire.....	5.75
2236 Brushes, each G and J (six brush type).....	.40	2255 High Tension Post for connecting wire from vibrator.....	.45
2237 Pins, V and W, each.....	.30	2256 Binding post with attaching screw and washer for switchboard connections.....	.35
2238 Pins, X and Y, each, (six brush type).....	.40	2257 Supporting post for Magnet I Coil.....	.45
2239 Spring K.....	.12	2258 Vibrator Supporting Post.....	.35
2241 Seven hole Vibrator Spring.....	.30	2259 Screw F with Lock nut.....	.20
2242 Armature N only.....	.75	2260 Brush Post A.....	.40
2243 Armature N equipped complete with Spring K; weight G.....	1.00	2261 Brush Post B.....	.45
2244 Armature H only.....	.45	2262 Brush Post C.....	.45
2245 Armature H equipped with pin E.....	.30	2263 Brush Post D.....	.40
2246 Weight T.....	.45	2264 Brush Post E.....	.40
2247 Weight G.....	.55	2265 Brush Post F.....	.45
2248 Vibrator Tongue H only.....	.75	2266 Post I.....	.60
2249 Vibrator Tongue H for four brush machine equipped with weight T; Pins V and W; and wire.....	2.00	2267 Post P with adjusting screw and lock nut.....	.45
2250 Vibrator tongue H for four brush machine equipped with weight T; Pins V and W; Seven hole vibrator spring; Armature B; Pin E; and wire.....	4.00	2268 Frame G.....	2.25
2251 Vibrator tongue H for four brush machine; equipped with weight T; Pins V and W; Seven hole vibrator spring; Armature B; Pin E; Four hole blank; Vibrator supporting post, and wire.....	4.75	2269 Switch B complete with attaching screws and washers.....	1.25
2252 Vibrator tongue H for six brush machine equipped with pins V and W; Pins N and Y; weight T and wire.....	3.75	2270 Magnet M coil.....	1.75
2253 Vibrator tongue H, for six brush machine equipped with weight T; Pins V and W; Pins X and Y; Seven hole vibrator spring; Armature B; Pin E and wire.....	4.65	2271 Magnet I Coil, each.....	1.00
		2272 2 Magnet I Coils assembled on Magnet I supporting post.....	2.75
		2273 2 Magnet I Coils, 24 volt.....	3.75
		2274 Base.....	2.50
		2275 Wood Base.....	2.00
		2276 Special Condenser.....	2.50
		2277 Glass Cover.....	2.00

(Not responsible for breakage on glass covers in transit)

20% when above parts shipped from stock

Operator's Chairs

The accompanying illustrations show the highest grade of operator's chair that we furnish. It can be had with cane or leather seat. Standard chairs are Golden Oak unless otherwise specified; but we can, upon special order, furnish chairs finished to match the fixtures.

All these chairs regardless of the height of the base are of the following dimensions:

Seat 16 inches; Height of top of back from seat, 15 inches; width of back at top, 13 1/4 inches; outside measurement of base on floor, 19 inches.

List No.	Height of Seat When Down	Seat Adjustment	Foot rest	2 1/4" High	Each
1242	16"	4"	+	+	\$ 9.50
1243	20"	4"	+	+	10.50
1244	24"	4"	+	+	10.50
1245	28"	4"	+	+	11 1/2

Standard finish light golden oak, rubbed dull; imitation mahogany finish 50 cents per chair extra.

Rubber screw tips extra.....	\$2.50 doz.
Rubber tips and metal caps extra.....	7.50 doz.
Casters extra.....	3.75 doz.
Flat leather seats over cane.....	2.25 chair add.
Perforated leather seat over cane.....	2.25 chair add.

All chairs F. O. B. factory

Please specify if you desire operator's chairs to be crated. If the chairs are crated, the following additional charges will be made:

For crate holding 1 chair.....	Per Crate \$ 7.50
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(Continued on next page)

Operator's Chairs (Cont.)

F. O. B. Muncie, Ind.



No. 1242



No. 1243



No. 1244



P. B. X. Style 18

This chair is especially designed by us for use with low type switchboards, such as our Nos. 191, 192 and 193 switchboards.

In designing this chair, the comfort of the operator who has to remain seated at the switchboard all day, was a prime consideration.

The chair has a large, roomy cane seat; the position of the back can be regulated forward and back, up and down, and it has a spring tension. The legs are equipped with glides, and have a foot rest or rail 24 1/2 inches from the floor. This foot rest also acts as a reinforcement for the chair legs, thus making it a most sturdy chair. The seat has an adjustment of from 18 to 22 inches from the floor. It can be furnished in Oak or imitation Mahogany finish. Oak furnished, unless otherwise specified.

List No.		Each
2497	F. O. B. Rochester and Chicago	\$11.25

Add 50 cents each for Kansas City shipment.

Standard finish, oak, rubbed dull, imitation mahogany finish 50 cents per chair extra.

Please specify if you desire operators' chairs to be crated. If the chairs are crated, the following additional charges will be made:

	For
Crates holding 1 chair.....	\$.75

Independent Pay Station Telephone Signs



They are unlike the lithographed steel signs. The enamel is fused into the steel (18 gauge) with a blast furnace in 1,500

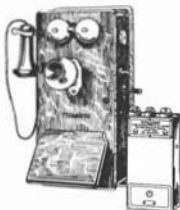


degrees heat. They are guaranteed never to fade or tarnish from effects of the weather. They will last a business lifetime.

List No.	Trade No.	Size	Colors	Each
1161	1	17 x 19"	Red, White and Blue	\$3.00
1162	2	8 x 18"	Red, White and Blue	1.50

Pay Station Coin Collectors

No. 1247 Three Slot Wall Type



List No. 1247

List No. 1247 Pay Station is designed to attach to any wall telephone by means of a metallic mounting plate. Has slots for 5, 10 and 25 cent coins. Furnished with duplicate keys—no two locks alike. Dimensions 9 x 4½ x 3 inches.

The telephone is not included.

F. O. B. Hartford, Conn.

List No.	Each
1247 Price Pay Station only, with mounting plate...	\$10.50
Additions	
Add 4½% Government Tax.....	.47
Add 10% for shipment from stock.	

No. 1248 Three Slot Desk Type



The pay stations illustrated on this page are entirely automatic in their operation. The user is only required to drop the coin in the proper slot when told to do so by the operator. No levers to push or pull—no buttons to operate. Coins placed in wrong slot by mistake are automatically returned to the patron through the register slot.

Desk stand is not included.

F. O. B. Hartford, Conn.

List No.	Each
1248.....	\$14.50
Additions	
Add 4½% Government Tax.....	.65
Add 10% for shipment from stock.	

No. 1245 Single Slot Wall Type



Filled for reception of a single coin only. Fastens to any wall telephone by means of a metal mounting plate. Dimensions 7 x 3½ x 3¼ inches.

F. O. B. Hartford, Conn.

List No.	Each
1245 For nickel only.....	\$5.20
Add 4½% Government Tax.....	.25
1816 For dime only.....	7.25
Add 4½% Government Tax.....	.33
Prices of paystations do not include the telephones.	
Add 10% for shipment from stock.	

Type H-14 Protector Strip



This strip is designed for mounting in cable pole houses. Is regularly furnished with 5 ampere tubular fuses (List No. 1787) and grounded carbons which ground upon a copper strip. Fuse clips are made of nickel silver set in hard rubber blocks. Bulder connections are provided on line side and both solder and screw connections on jumper side. Height per pair 1¼ inches; Depth 6 inches; Width 3 inches.

List No.	Net Weight per 100 pairs	List Price per pair
1849	40 lbs.	\$.65

Discounts

Less than 100 pairs.....	Net
100 pairs and over.....	5%

Note: Extra charge of \$0.075 per pair for unequipped spaces on partially equipped protector mounting strips.

Type H-19 Protector Strip



This protector strip is similar in all respects to the Type H-14, except that the jumper side is equipped with lock rod connections located outside of the fuses. Height per pair 1¼ inches; Depth 6 inches; Width 3 inches.

List No.	Weight per 100 pairs	List Price per pair
1850	40 lbs.	\$.65

Discounts

Less than 100 pairs.....	Net
100 pairs and over.....	5%

Note: Extra charge of \$0.075 per pair for unequipped spaces on partially equipped protector mounting strips.

Pole Cable Terminals

The Cook pole cable terminals listed on the following pages contain a number of exclusive design and construction features. All are of the metal box type, and are fitted with a spring catch which holds the cover firmly when in either open or closed position.

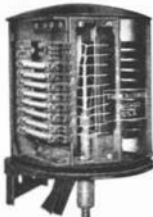
All protected type terminals are fitted with carbon block and fuse type protection. The fuses are secured in place under tension by phosphor bronze tips so as to give a permanent good contact. Mounting brackets are made of heavy malleable iron thoroughly galvanized. The dimensions of all terminals permit installation on either the pole or crossarm and they can be placed between wires if necessary.

All terminals (except Type T-29-D) and all junction boxes are equipped with self-aligning sockets which eliminate the use of pothead splices.

When so ordered, we will furnish all terminals wired with cable studs or other connections. Unless otherwise specified we use No. 22 B. & S. gauge cable cut to extend six feet below terminal. We will furnish copper bonds for any terminal when desired.

Type S-6 Pole Cable Terminal

No Pothead Necessary



An all-metal terminal with complete tubular fuse and carbon block protection. Cable wires are terminated in hollow rivet terminals each provided with solder so that a touch of a hot soldering copper makes the connection instantly. Drop wire side of terminal is fitted with a fibre binding strip and connections can be soldered or screwed under nuts and washers as preferred. This terminal is regularly furnished with Type A-7 fuses 5 ampere capacity.

Equipped with self-aligning socket.

F. O. B. Chicago, Ill.

List No.	Capacity	Height	Diameter	Weight	Each
1817	10 Pairs	14 in.	9 in.	12 lbs.	\$14.00
1818	16 "	17 1/4 "	9 "	13 "	16.00
1820	20 "	20 1/4 "	9 "	20 "	20.00
1822	31 "	30 1/4 "	9 "	33 "	46.00

Prices on other sizes upon application.

Discounts

Lots of less than 5.....	Net
5 and over.....	5%

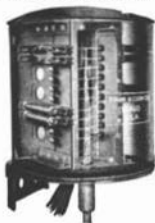
Type S-16-D Pole Cable Terminal

No Pothead Necessary

This terminal is practically the same as Type S-6 except that the protector units are assembled in pairs so that the terminal may be installed with only the equipment that is actually required for immediate use. Additional pairs of protectors may be installed at any future time.

Protector units for this terminal (Type H-29-D) are fitted with carbon blocks and Type A-7 tubular fuses of 5 ampere capacity.

Type S-16-D Pole Cable Term'l (Cont.)



F. O. B. Chicago, Ill.

List No.	Capacity	Height	Diameter	Weight	Each
2189	10 Pairs	14 in.	9 in.	11 lbs.	\$10.00
2190	16 "	17 1/4 "	9 "	13 "	12.00
2191	20 "	20 1/4 "	9 "	16 "	15.00
2192	31 "	30 1/4 "	9 "	27 "	36.00

Prices on other sizes upon application.

Above terminals are furnished with protector units which are additional per pair as follows.

Discounts

Lots of less than 5.....	Net
5 and over.....	5%

M-20 Unprotected Terminals



(Continued on next page)

M-20 Unprotected Terminals (Cont.)

The M-20 Terminal is designed to eliminate dirty face plates, low insulation and surface leakage in terminal construction. The terminal box and cover are made of cast iron and are machined and fitted before being hot-dip galvanized. The cover automatically locks itself into place when up or down. The hinge stud is of brass so it cannot stick or rust. The face plate is of glazed white porcelain, well protected from the elements. Terminal studs are of solid brass. Drop wires enter the terminal through individual holes in the bottom of the box. These holes are filled with a plastic composition that keeps them sealed until actually needed.

A six-foot length of No. 22 B & S extra heavy sheath cable stud is attached to the terminal nipple by a wired joint. The terminal core box is filled with waterproof compound.

List No.	Capacity	Description Length Width Depth	Price Each Less Stud With Stud
2030	11 pr.	10 1/2 6 3 1/4	\$ 5.50 \$ 7.00
2044	16 "	11 7 3/4 3 1/4	6.75 8.75
2055	24 "	14 8 3/4 3 1/4	9.75 12.50

M-21

The M-21 is similar to the M-20 except that it is equipped with a cork gasket inside the cover.

This terminal is designed to make the box as near air tight as possible. The cork gasket fits tight on all edges of the box and is held securely in place by the self-locking cover.

List No.	Capacity	Description Length Width Depth	Price Each Less Stud With Stud
2031	11 pr.	10 1/2 6 3 1/4	\$ 6.25 \$ 7.75
2032	16 "	11 7 3/4 3 1/4	7.50 9.50
2053	24 "	14 8 3/4 3 1/4	11.00 13.75

M-9-Unprotected Porcelain Terminal

No Pothead Required



We recommend this design of unprotected terminal. It is made of duplicate pieces of heavy porcelain, mounted on strong galvanized steel bracket, and protected with a galvanized steel cover.

Hollow brass connecting posts are provided for the cable wires. The wires are soldered on the outside. The posts have hexagonal heads, which fit into similar shaped recesses in the porcelain, to prevent turning. Split brass lock nuts are provided for fastening the jumper wires.

Opposite studs are used for connecting each cable pair, and the jumper wires pass down between the studs through side openings in the base.

A soft gasket is used between the porcelain which are held together with galvanized bolts. The porcelain can be easily removed from the base for making cable connections. The cable sheath is soldered to the inside with black-nick. It can also be sealed with compound used. The terminal should be filled to the top with compound. We will furnish copper covers when specified and will ship with cable studs attached when so ordered.

F. O. B. Chicago, Ill.

List No.	Capacity	Height	Diameter	Weight	List Price Each
2176	11 Pairs	7 in.	4 1/2 in.	4 lbs.	\$3.25
2177	16 "	3 1/2 "	5 "	6 "	5.00
2178	21 "	5 "	5 "	8 "	5.50
2179	26 "	6 "	5 1/2 "	9 "	6.00

Discounts

Lists of less than 5.....	Net
5 and over.....	5%

M-10-1 Pole Cable Terminal

No Pothead Required



This is an unprotected terminal, consisting of a strong cast iron box, carrying a porcelain connection panel forming a core box designed to be filled with compound.

The brass connection posts for the cable wire are hollow, with outside end supplied with solder. The posts have hexagonal heads firmly set in hexagonal pockets in the back of porcelain, to prevent turning. Split brass lock nuts are provided for jumper wire connections. The porcelain is easily removed being held by four brass bolts.

On each side of the porcelain, fanning strips of high insulation are provided for the jumper leads, which pass down and out each side of the box. The inside of the cast iron cover is provided with a start for latching all the connections.

The cable is brought directly into the self-sidinging inside at the bottom of the terminal, and the application of a blow torch seals the joint.

The terminal is then filled with cable compound through the hole in the top. A pipe plug is furnished to close this hole.

The terminal will be provided with nipple to permit connecting cable through the top, when desired.

All parts of iron box are well covered with two coats of best grade black asphaltum paint.

We will furnish these terminals with cable studs attached when so ordered.

F. O. B. Chicago, Ill.

List No.	Capacity	Description	Height	Width	Depth	Net Wt.	Each
2127	11 Pys.	M-10-1	8"	6 1/2"	3"	11	\$7.00
2128	16 "	"	11"	6 1/2"	3 1/4"	13	9.00
2129	21 "	"	13"	7 1/2"	3 1/4"	17	11.00
2130	26 "	"	14"	7 1/2"	3 1/4"	19	13.00
2131	Socket wrench for use on lock nuts						.90

Discounts

Lists of less than 5.....	Net
5 and more.....	5%

Unit Protector Mounting

H-29-D



List No.	F. O. B. Chicago, Ill.	Pair
1980	H-29-D Individual Protector Mountings, per pair	\$ 70

Discounts

Lists of less than 30.....	Net
30 and over.....	5%

Junction Box for Cable



Junction Box furnishes a most economical and simple means of installing and splicing main leads of cable and extending branches of smaller cable to other distributing points. It makes cable testing a very simple matter, as the box can be opened more easily than any cable joint. It is absolutely moisture-proof, and has a sliding galvanized sheet metal hood which furnishes sealed protection. The Junction Box is equipped with self-soldering nozzles, and is made of pressed sheet steel thoroughly galvanized. A rubber gasket between the body of the box and the cover renders the joint moisture-proof.

The Junction Box can be furnished separate or combined with either the type S-6, S-10, S-15 or S-M-1 terminal. If desired, the Junction Box may be installed and the terminal added at any future time. This is a new original feature of the Cook box.

To get price of Combination Terminal and Junction Box add price of Junction Box for attaching to terminal and price of self-soldering nozzles to price of size and style of terminal wanted.

F. O. B. Chicago, Ill.

List No.	Description	Height In.	Di- am.	Net Weight	Each
1404	Junction Box only, for use without terminal	18	10	27	\$12.00
1405	Junction Box, for use with terminal	18	10	27	13.00

Discounts

Lot of less than 5.....	Net
5 and over.....	10%

Self-Soldering Nozzles

F. O. B. Chicago, Ill.

List No.	Size	Nozzle Inches	Opening Inches	List Price
2419	10 pair	1 1/4	1/8	\$1.00
2420	15 or 20 pair	1 1/4	1/8	1.00
2421	25 pair	1 1/4	1/8	1.25
2422	30 to 40 pair	1 1/4	1/8	1.25
2423	40 to 75 pair	1 1/4	1/8	1.50
2424	Over 75 to 100 pair	2	1 1/4	1.50
2425	100 pair	2 1/4	1 1/4	1.75
2426	200 pair	2 1/4	1 1/4	1.75

Type AG Pole Cable Terminal

No Pothead Required



A protected cable terminal to be used without pothead for open wire distribution from lead covered aerial or underground cable. Arranged for mounting on pole and provided with galvanized iron cover 6 1/4 inches in diameter.

The treated single protector mounting panels open wide to facilitate soldering and the cable compartment requires only a small amount of compound. When specified, these terminals are equipped with a No. 22 B. & S. gauge 8-foot cable stain. An extra charge is made for the cable.

Each pair of protectors consists of two renewable wood faces, lined with 5-bangers fine wire, four carbon blades and two U-shaped mica diaphragms. The four faces and carbon springs are heavy nicked phosphor bronze. The screw binding posts for terminating drop wires have spring lock washers to prevent loosening of wires.

Less Cable Bulk Type A. G.

F. O. B. Chicago, Ill.

List No.	Capacity	Height	Diameter	Weight	Each
2180	11 pair	14 in.	6 1/4 in.	15 lbs.	\$12.00
2181	16 "	17 "	6 1/4 "	17 "	17.00
2182	26 "	23 1/4 "	6 1/4 "	20 "	24.00
2183	36 "	28 1/4 "	6 1/4 "	26 1/4 "	41.00

Discounts

Lot of less than 10.....	Net
10 and over.....	10%

Method of Arranging for
100-Pair Terminal

Where it is necessary to distribute a 100-pair cable through a protected terminal, we recommend two 50-pair terminals mounted on a junction box, as a single terminal of 100-pair height is not practical.

The junction box is made of heavy sheet steel, thoroughly galvanized, and is equipped with a single 100-pair self-soldering nozzle. The cable is fattened to the nozzle of junction box, in the same manner as described under our S-6 terminal. The sheath of the cable is removed inside the junction box, and the wires divided one-half to each 50-pair terminal, one of which is numbered 1 to 50, and the other 51 to 100.

The front of the junction box is easily removed, and when in place, is made tight with a rubber gasket and machine screws. After cable is installed, the junction box, as well as the terminals, may be filled with compound.

(Continued on next page)

Method of Arranging for 100-Pair Terminal (Cont.)



This junction box will be furnished with any of our R type terminals. Exact type of terminal desired should be specified when placing order.

100 pair
F. O. B. Chicago, Ill.

List No.	Capacity	Height Inches	Width Inches	Net Weight	Price Each
2432	100-pa. (2-51-pa.) R-6 complete	44	20	73 lbs.	\$100.00
2433	100-pa. (2-51-pa.) R-6-D without mounts	44	20	64 lbs.	22.00

Discounts

Lots of less than 5.....	Net
5 and over.....	5%

Type R Pole Cable Terminal

An unprotected porcelain cable terminal to be used without postboard for multiple tap distribution from lead covered cable. Arranged for mounting on pole and provided with galvanized iron cover.

The cable is brought into the terminal through a lead nipple and soldered to hollow lock nut binding posts which are embedded in the porcelain panels to prevent twisting and breaking of cable wires. When specified, these terminals are equipped

Type R Pole Cable Terminal (Cont.)



with a No. 22 B. & S. gauge 6-foot cable stud. An extra charge is made for the cable.

Less Cable Stud
F. O. B. Chicago, Ill.

List No.	Capacity	Height	Diameter	Weight	Each
2184	5 pair	7 1/4 in.	6 1/4 in.	4 lbs.	\$1.80
2185	11 "	7 1/4 "	6 1/4 "	4 1/4 "	2.30
2186	18 "	9 1/4 "	6 1/4 "	6 "	3.25
2187	21 "	9 1/4 "	6 1/4 "	6 1/4 "	6.00
2188	26 "	10 1/4 "	6 1/4 "	8 "	6.30

Discounts

Lots of less than 10.....	Net
10 and over.....	10%

Type GG-4 Connecting and Distributing Strip

F. O. B. Chicago, Ill.



This connecting strip is made up in pairs with a screw and washer connection on one side and a soldered connection on the other side. The clips are made of nickel silver and are securely mounted in hard rubber blocks. Made up in any required number of pairs. (Discounts per pair: Height 1 1/4 inches; Width 1 1/4 inches; Depth 2 1/4 inches. Net weight per 100 pairs - 8 pounds.

List No.	Each
2161	\$.15

Discounts

Less than 100 pairs.....	Net
100 pairs and over.....	5%

Type GG Connecting and Distributing Strip

F. O. B. Chicago, Ill.



For use in pole houses and buildings. Consists of a single row of nickel silver clips imbedded in hard rubber block which is mounted on a single strip. Furnished in three standard sizes as follows:

List No.	No. pairs	Weight per 100 pairs	Each
T22	10	6 lbs.	\$1.00
T23	20	6 "	2.00
T24	30	6 "	3.00

Discounts

Less than 300 pair Not
300 pair and over 2%

Connecting Blocks



Pe. 14037—5 pair Composition Terminal Block 60 each
Pe. 14038—7 pair Composition Terminal Block 84 each

Cables—Switchboard

These cables are used for connecting apparatus within a telephone exchange building. The wires in these cables are tinned copper with double silk and single cotton insulation, color coded. The core is saturated with beeswax compound to facilitate installation work and to protect the cable from moisture.

The overall covering of the cable may be either a painted cotton braid indicated by the letter "B" or a pure lead sheath indicated by the letter "L"—affixed to the code number of the cable.

No. 22 B. & S. Gauge Cables—Pairs

Code No.	No. of Pairs	Shape	Approximate Diameter	Thickness Lead Sheath	Price per 100 ft.
71-B	10	"	3/8 in.	"	\$ 14.00
71-L	10	"	27/84 "	2/84 in.	19.00
83-B	15	"	13/32 "	"	18.00
83-L	15	"	31/84 "	1/16 "	27.00
86-B	20	"	15/32 "	"	22.00
86-L	20	"	35/84 "	1/16 "	33.00
84-B	25	"	9/16 "	"	28.00
84-L	25	"	43/84 "	5/84 "	40.00
90-B	50	"	5/8 "	"	52.00
90-L	50	"	47/84 "	3/84 "	63.00
91-B	100	"	1 "	"	110.00
91-L	100	"	1 9/84 "	3/32 "	137.00

Above cables from 10 to 50 pairs inclusive have one spare pair. The 100 pair cable has two spare pairs.

Note: Quantity discount on Cables will be quoted upon request.

No. 22 B. & S. Gauge Cables—Triplets



No. 22-B, Switchboard Cable
Showing double silk and single cotton insulation

Code No.	No. of Triplets	Shape	Approximate Diameter	Price per 100 ft.
65-B	20	Round	1/2 in.	\$ 32.00
67-B	100	Oval	1 1/4 x 1 1/2 "	180.00
72-B	10	Round	1/2 "	18.00
76-B	20	Oval	1 1/4 x 1 1/2 "	32.00

Above 10 and 20 triplets cables have one spare triplet. The 100 triplet cable has two spare triplets.

No. 22 B. & S. Gauge Cables

Singles and Triplets

Code No.	No. of Singles	No. of Triplets	Shape	Approximate Diameter	Price per 100 ft.
68-B	20	20	Round	1/2 in.	\$42.00
69-B	20	20	Oval	7/8 x 1 1/2 "	42.00

Above cables have one spare triplet and one spare single conductor.

No. 19 B. & S. Gauge Cables—Pairs

Code No.	No. of Pairs	Shape	Approximate Diameter	Price per 100 ft.
80-B	10	Round	1/2 in.	\$14.00
85-B	20	"	1 1/4 "	36.00

Above cables have one spare pair.

No. 16 B. & S. Gauge Cables—Pairs

Code No.	No. of Pairs	Shape	Approximate Diameter	Price per 100 ft.
75-B	10	Round	1/2 in.	\$60.00

Cables—Generator Four Party Harmonic Ringing



No. 87-B, Generator Cable

(Continued on next page)

Cables—Generator (Cont.)

Four Party Harmonic Ringing

Code No. 87-B is designed especially for carrying ringing current through the vestibular positions. The cable is made up of six single conductors, No. 22 B. & S. Gauge, with double silk and single cotton insulation, and has a moisture-proof brown cotton braid over all.

Code No.	No. of Conductors	Approximate Diameter in.	Price per 100 ft.
87-B	6	$\frac{1}{8}$	\$7.00



No. 88—Rubber Covered
Generator Cable

Code No. 88 Cable is used to carry generator current through partitions or other places where a thoroughly moisture-proof cable is desired without the expense of lead sheathing. Consists of six single conductors, No. 18 B. & S. Gauge rubber covered and braided (no outside overall covering).

Code No.	No. of Conductors	Approximate Diameter in.	Price per 100 ft.
88	6	$\frac{1}{8}$	\$6.75

Inter-Communicating Cables



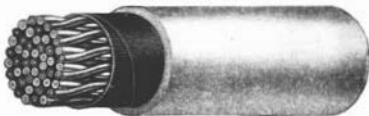
In each cable all wires are No. 22 B. & S. Gauge except the two pairs used for talking and signaling battery which are No. 18 B. & S. Gauge.

All wires are lined copper with single silk and single cotton insulation. The cable core is saturated with brown wax compound. Covering overall—either painted cotton braid indicated by letter "B" or paper lead sheath indicated by the letter "L"—affixed to the code number of each cable.

Code No.	Thick- ness of lead sheath	Outside diam.	Weight per 1000 ft.	Price per 100 ft.
70-B	$\frac{1}{8}$	$\frac{1}{8}$ in.	85 lbs.	\$ 8.50
70-L	$\frac{1}{8}$	$\frac{1}{8}$ in.	300 "	12.00
60-B	$\frac{1}{4}$	$\frac{1}{4}$ "	130 "	13.00
60-L	$\frac{1}{4}$	$\frac{1}{4}$ "	335 "	20.00
61-B	$\frac{1}{4}$	$\frac{1}{4}$ "	195 "	20.00
61-L	$\frac{1}{4}$	$\frac{1}{4}$ "	685 "	30.00
62-B	$\frac{1}{4}$	$\frac{1}{4}$ "	255 "	32.00
62-L	$\frac{1}{4}$	$\frac{1}{4}$ "	950 "	42.50

In each cable all single conductors are No. 22 B. & S. Gauge and the two pairs used for common talking and common return ringing circuits are No. 18 B. & S. Gauge.

Code No.	Thick- ness of lead sheath	Outside diam.	Weight per 1000 ft.	Price per 100 ft.
77-B	$\frac{1}{8}$	$\frac{1}{8}$ in.	85 lbs.	\$ 7.20
77-L	$\frac{1}{8}$	$\frac{1}{8}$ in.	270 "	10.50
78-B	$\frac{1}{4}$	$\frac{1}{4}$ "	85 "	8.00
78-L	$\frac{1}{4}$	$\frac{1}{4}$ "	320 "	13.25
79-B	$\frac{1}{4}$	$\frac{1}{4}$ "	80 "	11.25
79-L	$\frac{1}{4}$	$\frac{1}{4}$ "	345 "	14.40
80-B	$\frac{1}{4}$	$\frac{1}{4}$ "	112 "	13.60
80-L	$\frac{1}{4}$	$\frac{1}{4}$ "	325 "	21.00

Telephone Cables
Rubber and Lead Type

The constructive features and specifications of these cables are practically the same as those of the Rubber and Braided type described above, with the exception that the outside braid is omitted and the cable covered with lead sheath. Thickness of lead sheath $\frac{1}{8}$ inch.

List No.	No. of pairs	Approx. Outside Diameter	Weight per 1000 ft.	Price quoted on request
109	5	19-32	1000 lbs.	
110	10	25-32	1500 "	
111	15	30-32	1800 "	
112	25	36-32	2300 "	

Rubber and Braided Type



In these cables each wire is of No. 19 B. & S. gauge covered with a $\frac{1}{8}$ inch rubber insulation. To facilitate identification of the individual wires of a pair, one wire is covered with red rubber and the other with black rubber. The pairs of wires are then twisted together and covered with a tape and weather-proof braid.

List No.	No. of Pairs	Approx. Outside Diameter	Price quoted on request
1308	5	15-32 inch	
643	10	21-32 "	
644	15	26-32 "	
645	25	32-32 "	

Telephone Cables—Cont. Paper Insulated, Lead Encased Telephone Cables



Conductors No. 22 B. & S. Gauge, Double Paper Insulation, Covering on Pairs Colored Red and White.

The electro-static capacity specified always by us is the regular or natural electro-static capacity obtained by testing one wire against the remaining wires of the cable, the sheath grounded. This is a most efficient test. The electro-static

capacities used for telephone purposes is .12 micro-farads per mile.

Following prices are per one thousand feet. No. 22 B. & S. D. W. P., 12 P.S.C. Cable with Standard Lead Sheath.

List No.	Pairs	Sheath	Approx. Weight	Under 100 ft.	100 to 250 ft.	250 to 500 ft.	500 to 1000 ft.	1000 or more
2447	5	1/4 inch	200	\$ 91.96	\$ 87.05	\$ 82.15	\$ 77.25	\$ 72.35
2448	10	1/4 inch	415	122.37	115.90	109.37	102.87	96.63
2449	15	1/4 inch	710	184.50	174.70	164.90	155.10	145.30
2450	25	1/4 inch	890	229.20	217.00	204.80	192.60	180.50
2451	50	1/4 inch	1450	392.40	343.10	323.28	304.50	285.20
2452	75	1/4 inch	2040	552.20	503.90	475.40	447.00	418.60
2453	100	1/4 inch	2490	640.00	608.40	572.20	538.00	503.80
2454	150	1/4 inch	3510	936.00	868.00	826.00	786.00	736.00
2455	200	1/4 inch	4565	1182.55	1100.35	1038.15	975.95	913.75

must be prepaid on empty reels returned, and Bill of Lading should be sent to us.

An additional charge will be made for Cable reels and lagging. Full credit will be given for reels only, provided they are in good condition on their return, either to manufacturers whose names is on the reel, or to us at Chicago, Ill. Freight charges

Prices subject to change without notice.

Above cable carried in Chicago stock. Prices F. O. B. Chicago, Ill.

Prices on cable for direct shipment from factory on application.

Cable Clamp



List No.	Diame. of Lead Cov'd Cable	Size of Cable and Number of Pairs and Gauge of Wire	Size of Wood Screw	Size of Anchors	List Price per 100
2469	5/8"	Smaller than 10 pairs Switchboard	No. 5 x 1"	1/4" x 1/4"	\$1.75
2470	3/4"	10 and 15 pr. Switchboard	No. 10 x 1"	1/2" x 1/2"	2.00
2471	3/4"	15 pr. Switchboard	No. 10 x 1"	1/2" x 1/2"	2.35
2472	2 1/8"	20, 25, 30 pr. Switchboard	No. 10 x 1"	1/2" x 1/2"	2.25
2473	1 1/8"	—10 pr. 19 Gauge—15, 20, 25 pr. 22 Gauge—40 pr. Switchboard	No. 14 x 1 1/4"	1/4" x 1"	3.75
2474	1 1/4"	15 and 20 pr. 19 Gauge—25, 30, 40 pr. 22 Gauge—30 and 60 pr. Switchboard	No. 14 x 1 1/4"	1/4" x 1"	4.00
2475	3A	—25 and 30 pr. 19 Gauge—50 and 60 pr. 22 Gauge—75 pr. Switchboard	No. 14 x 1 1/4"	1/4" x 1"	4.75
2476	2 1/4"	—40 and 50 pr. 19 Gauge—75 and 100 pr. 22 Gauge—100 and 120 pr. Switchboard	No. 14 x 1 1/4"	1/4" x 1"	5.00
2477	3A	40 pr. 19 Gauge—100 pr. 22 Gauge—60, 75, 100 pr. 19 Gauge—125, 150 pr. 22 Gauge	No. 14 x 1 1/4"	1/4" x 1 1/4"	5.75
2478	3 1/4"	150, 200 pr. Switchboard	No. 14 x 1 1/4"	1/4" x 1 1/4"	6.00

Kling Klamp

For Ground Rods



Cheaper and more satisfactory in every way than the troublesome soldered rod. Adapted for copper or iron wire connections. All parts are heavily galvanized.

"The tip of the bolt makes clean contact even on a rusty rod."

List No.	Description	Price Each
2811	3/8" Clamp	\$.35
2812	1/2" Clamp	.38

Discounts

Less than 100	.....	Net
100 to 999	.....	Less 10%
1000 and over	.....	Less 20%

S-C Insulating Cable Compound



List No.		Per Gal.
1001	1 to 3 Gallons, 5 lbs. to gal.	\$1.00
	3 Gallons to 5 Gallons	Special
	5 gallons and over	Special

Lead Sleeves

List No.	Inside Diameter	F. O. B. F. O. B. E. A. C. K. C. Per lb. Per lb.
1265	1/4 inch	
1266	1/2 inch	
1267	3/4 inch	
1268	1 inch	
1269	1 1/4 inch	
1270	1 1/2 inch	
		.17 17 1/2

Paper Insulators for Cables

Paper tubes are used almost universally as insulators in the splicing of cables. The tubes, while cheap and simple, must be good and well made. They are constructed of strong, tough paper tightly rolled. Made up in three diameters, 1/4-inch for No. 22 gauge, 1/2-inch for Nos. 19 and 20 gauge, and 3/4-inch for No. 18 gauge.

Unless otherwise specified we furnish 1/4-inch. One hundred and ten are packed in a neat pasteboard box, that number being what is ordinarily required for the splicing of a 20-pair cable. The insulators when packed present an appearance like this:



Paper Sleeves in Box

List No.		Per M
4000	1/4 inch long	\$.90
1501	1/2 inch long	1.35
1502	3/4 inch long	2.70
401	1 1/2 inch long	4.00
	10,000 and over	Special

Paraffine



List No.		Per lb.
404	Guaranteed 140° test	\$.15
	100 lbs. and over	Special

Tinner's Snips



List No.		Per Pair
1553	No. 9	\$2.50

"A" No. 1 Yellow Wax



List No.		Per lb.
1060	.....	\$ .25

Clipping Knife

For Trimming Lead Sleeves



List No.		Each
1096	No. L-996, 5 inch	\$2.75

Boxwood Turn Pin



For Expanding Ends of Lead Sleeves

List No.		Each
1069	No. L-996	\$.75

Iron Melting Pots



List No.		Each
1046	3 inch diam.	\$1.00
1047	6 inch diam.	1.25
1048	8 inch diam.	1.75

Iron Soldering Ladles



List No.		Each
492	3 inch diameter of bowl	\$.60
1011	4 inch diameter of bowl	.75
1015	5 inch diameter of bowl	1.00

Wiping Solder



List No.	F. O. B. R. & C.	F. O. B. K. C.	Per Lb.	Per lb.
1062			\$.32	\$.30

Shave Hook



List No.		Each
1067	No. L-506	\$.10

Paraffine Pan

List No.		Each
493	12 inch Pan	\$.50

Boxwood Dresser



List No.		Each
1068	No. L-594	\$1.25

Cableman's Saw



List No.		Each
2076	14 inch blade	\$1.75

Marline



Six Cord—Put up in One and Five-Pound Balls

List No.	F. O. B. R. & C.	F. O. B. K. C.	Per Lb.	Per lb.
879			\$.52	\$.50
	Less than 10 lbs.			
	10 to 25 lbs.			
	25 lbs. and over			Special

Lacing Twine—Not Waxed

Used for lacing wire into cables or lacing "Fanned out" ends.
Six Cord—Put up in One-Pound Balls—Not waxed.

List No.		Per Lb.
1070	10 lbs. and more	\$1.00 Special

Lacing Twine or Lock Stitch Waxed

Used for Lacing Cable Put Up in One-Pound Balls—Waxed

List No.		Per Lb.
871	11 Cord	\$3.00 Special
	10 lbs. and more	

No. 3 Marline Hanger



Our No. 3 grade is the best and most durable cable hanger being sold today. It is made according to the A. T. & T. Co's specifications and every hanger is guaranteed to comply with these specifications. All wires are made three strand Hotchill. The hangers of No. 3 spring steel wire, galvanized after being formed, these hangers being practically rustless. The hangers are guaranteed to stand a strain of 100 pounds without showing any signs of opening.

		Per 1000			
		F. O. B. Rochester, N. Y. & Chicago, Ill.			
List No.		Less than 1000	1000 or over	1000	5000
1010	25 Pair House-line No. 3	\$14.20	\$12.87	\$11.68	
1010	30 " " " "	15.75	14.51	13.00	
1021	75 " " " "	16.50	15.00	13.75	
1022	100 " " " "	18.12	16.50	15.00	
1023	150 " " " "	19.00	17.25	15.86	
1024	200 " " " "	19.62	17.87	16.25	

F. O. B. Kansas City, Mo.

List No.		Less than 1000	1000 or over	1000	5000
1019	25 Pair House-line No. 3	\$14.55	\$13.22	\$12.03	
1020	30 " " " "	16.12	14.88	13.37	
1021	75 " " " "	16.88	15.38	14.13	
1022	100 " " " "	18.52	16.90	15.40	
1023	150 " " " "	19.42	17.67	16.09	
1024	200 " " " "	20.07	18.32	16.70	

Boston Cable Hanger



A three-piece hanger, consisting of steel wire and strap of sheet metal. The absence of bolts, buttons or rivets makes it an extremely easy clip to use and makes it possible to use many times over. It is simple and strong and can be adjusted to any size cable. It is adjusted entirely without the use of tools of any kind, and will hold more heavily than other clips that are fitted with pins. Straps 6 1/2 inches long.

List No.		Per 100
794	Boston Cable Hanger	\$3.50
	Less than 100	2.50
	100 to 500	3.25
	500 and over	Special

Aerial Cable Rings



Made of steel heavily and smoothly galvanized after forming. They are placed on the strand by a lineman, seated in a cable car or boatman's chair.

A tool called a crimping plier is used to fasten them to the strand and the cable is then pulled into the suspended rings.

The inside diameter of ring should be from $\frac{1}{4}$ to $\frac{1}{2}$ inch greater than the outside diameter of cable to be installed.

Per 1000

List No.		F. O. B. Rochester and Chicago		
		Less than Standard Package	Standard Package	Standard Package contains
1907	1 1/4 in. Type A.....	\$ 8.64	\$ 7.20	1000
1909	1 1/4 in. Type B.....	9.36	7.50	1000
1909	1 1/4 in. Type C.....	10.44	9.15	1000
2438	1 1/4 in. Type D.....	10.44	9.15	1000
1910	2 in. Type C.....	11.16	9.24	1000
2439	2 in. Type D.....	11.16	9.24	1000
1912	2 1/2 in. Type C.....	12.96	11.20	500
2440	2 1/2 in. Type D.....	12.96	11.20	500
1914	Flare for attaching Cannon Hangers ex.....			\$3.25

Per 1000

List No.		F. O. B. Kansas City		
		Less than Standard Package	Standard Package	Standard Package contains
1907	1 1/4 in. Type A.....	\$ 9.24	\$ 5.10	1000
1909	1 1/4 in. Type B.....	9.96	8.22	1000
1909	1 1/4 in. Type C.....	11.17	9.60	1000
2438	1 1/4 in. Type D.....	11.17	9.60	1000
1910	2 in. Type C.....	11.98	10.64	1000
2439	2 in. Type D.....	11.98	10.64	1000
1912	2 1/2 in. Type C.....	13.66	12.40	500
2440	2 1/2 in. Type D.....	13.66	12.40	500
1914	Flare for attaching Cannon Hangers ex.....			\$3.25

Bonita Aerial Cable Rings



Bonita rings are made of a high carbon semi-spring steel w/te of special cross section, but dip galvanized after forming. They are much stronger than the older types of flat wire aerial rings, and due to their peculiar formation Bonita rings are attachable to the supporting messenger by hand. This feature is of great value as it enables these rings to be attached to the strand with ease and rapidly, and in addition the zinc coating is not injured in the slightest by attaching them.

F. O. B. Everett, Mass.

List No.		List Price	
		Sol. Price	Pkg. Per 1000
2441	1 1/4 inch No. 11 Round Wire.....	2000	\$ 9.00
2442	2 inch 1/4 x 1/4 Flat Wire.....	1000	17.85
2443	2 1/2 inch 1/4 x 1/4 " " " ".....	500	21.20
2444	3 inch 1/4 x 1/4 " " " ".....	500	24.15
2445	3 1/2 inch 1/4 x 1/4 " " " ".....	500	27.40

Add 10% in less than standard package.

The size is determined by the dimension of the inside circular opening of the rings, when on the strand. In ordering specify size of strand on which to be used. Allow at least 1/4 inch greater diameter of ring than outside diameter of cable to be installed.

Blackburn's Neverslip Cable Hangers



Net Prices—F. O. B. St. Louis

List No.		Lbs. per 1000		Price to Each	Price Per M
		No.	Size		
2126	No. 1 1/4	1 1/4	inch Hanger	130	500
2127	No. 2	2	" " "	300	250
2128	No. 2 1/2	2 1/2	" " "	225	250
2129	No. 3	3	" " "	150	250
2130	No. 3 1/2	3 1/2	" " "	275	300

Add 10% to Price for lots less than original packages.

The "Stewart" Test Set

Made in Two Sizes



The "Stewart" Test Set tells which way and how far trouble is from the tester, without opening the line.

When locating trouble, the important things to know are what is the trouble and where it is. The "Stewart" is the only Test Set that will tell this. Any lineman that can slide a pole can tell what the trouble is and where it is if he has a "Stewart" while the best lineman in the world can only guess at it without cutting the line, if he is not equipped with the "Stewart." It takes time and material (in other words, it costs money) to open a line for test.

List No.		Each	
		Weight	Price
2436	Weight 7 lbs. for Light Service.....		\$11.00
2437	Weight 10 lbs. for Heavy Duty.....		31.00

Stromberg-Carlson Test Sets



Get your lineman this compact, light weight magnet Test Set. Durable and serviceable. Equipped with hand or shoulder strap. Rapidly assembled and built to withstand hard use out doors. Weighs only thirteen pounds with batteries, packed for shipment approximately sixteen pounds.

Test Set uses No. 750 (2 cell unit) Eveready Tangleless battery.

Code	Type	Generator		Ringer Resistance
		1 Bar	2 Bar	
944-E	Relaying	1 Bar	2 Bar	1000 ohms

Type "L" Stewart Cable Tester



The principles used in this instrument are the only methods that will locate all kinds of cable trouble except upon circuits. This Cable Tester has patented features which make it the only one that will actually locate cases of water trouble.

Our Exploring Coil is so constructed that it will only pick up the tone that is carried on the pair in trouble, and in this way you can know all the trouble that will give false locations with any other coil.

Water trouble is the hardest of all cable trouble to locate. The following explains why:

When water gets in a cable it crosses all the pairs that are wet, with each other, and with the armor of the cable. When tone is put out over a pair it passes to all the pairs that are wet, and to the armor, and from the armor to the messenger, either thru a cross or metal clips. When the tone gets to the armor and messenger it runs both ways and it can be readily seen that a common Exploring Coil will pick up the tone going ahead on the armor or messenger and give a false test, but the "Stewart" Exploring Coil by eliminating the tone on the armor and messenger will not pick up any tone beyond the fault.

An indicating lamp is contained in the set for picking out bad pairs and for indicating quickly if the trouble is still on the pair after the armor has been disconnected. The lamp will test all metallic trouble.

List No.	Each
2494 Complete with Exploring Coil.....	\$27.00
2495 Exploring Coil and Receiver only.....	15.00

Pyrene Fire Extinguisher



(Continued on next column)

Pyrene Fire Extinguisher (Cont.)

The Pyrene Fire Extinguisher is a manually operated brass pump enclosed in a brass shell. The pump is double acting with the piston operating directly on the liquid without intervening air pressure. A stroke of the piston in either direction throws the liquid approximately twenty-five feet. Because the pump acts directly on the liquid it can be supplied with great force. This breaks the liquid up when hitting a burning substance, forming a spray that volatilizes readily. There are no valves to turn of look for when in a hurry. The extinguisher is three inches in diameter, fourteen inches long and weighs when filled six pounds.

List No.	Each
2446 Pyrene 1-gal. Extinguisher.....	\$10.00
2465 Liquid per quart.....	1.50

Calculagraphs

Furnished in case, Style A, B or C, as specified



Style A



Style B



Style C

Model No. 6

Description

Calculates and prints elapsed time in minutes and quarter minutes, has visible dial and records the time of day.

Pedestal for radiograph for use with style A case, height adjustable from 26 to 40 inches from floor to table plate.

List No.	Each
2498 Style-A Calculagraph.....	\$100.00
2499 Pedestal only.....	20.00
2467 Style-B Calculagraph.....	100.00
2468 Style-C Calculagraph.....	100.00
2494 Ribbon for radiograph. Unless otherwise ordered blue is shipped. Other colors made to order.....	25

Discounts

Calculagraphs.....	Less 15%
Pedestal and Ribbon.....	Not

Simplex Pole Jack

Especially designed for pulling and straightening of telephone, trolley and lighting poles. No digging is necessary—two men with this jack can do the work of five in one-quarter the time. For straightening poles only one man is required.

Construction: Malleable standard and base. All other parts

steel drop forgings. Equipment includes 8 feet of steel chain, steel lever bar and steel I beam base support.

List No.	Capacity	Height	Lift	Weight	Price
2048	15 tons	30 in.	34 in.	189 lbs.	\$70.00
Discount					

Loss 20%



New Easy Bolt Cutters



List No.	Trade No.	Weight	Length	To cut bolts inches	Each
2044	0	2 lbs.	18 inches	1/2	\$4.00
2045	1	2 1/2 "	24 "	5/8	5.50
2046	2	3 "	30 "	3/4	7.50
2047	3	3 1/2 "	36 "	7/8	9.75

Non. 0 and 1 have open handle grips. Non. 2 and 3 have solid grips. Adjusted by set screw. No special wrench or shims required.

Universal Cable Grip



SINGLE EYE
(Patents Pending)

This Grip is used for pulling in all kinds of underground or aerial cable.

By its use a saving can be effected in wire, cable, time and labor.

The cost of this Grip can be saved in cable alone in less than a day's time. Every inch of cable is saved.

Prices F. O. B. Syracuse, N. Y.

List No.	24 Inches Long	Each
1296	1 inch.....	\$5.00
1297	1 1/2 ".....	3.25
1298	2 ".....	3.50
1299	2 1/2 ".....	3.75
1300	3 ".....	4.00
36 Inches Long		
1302	1 inch.....	\$4.00
1301	1 1/2 ".....	4.25
1300	2 ".....	4.50
1319	2 1/2 ".....	4.75
1318	3 ".....	5.00



DOUBLE EYE
(Patents Pending)

This Grip is an indispensable article in pulling slack or pulling out cable.

By its use, cable of any length can be pulled out or slack pulled in same without the slightest injury to the sheath.

The cost can be saved in labor on every cable pulled out.

It is very valuable in pulling the last few feet of slack in a manhole that is required for setting up and splicing.

Its price is only a small part of the cost of the manhole and rope that is usually used for slings.

List No.	Each
1302	1 inch..... \$4.00
1301	1 1/2 "..... 4.25
1300	2 "..... 4.50
1309	2 1/2 "..... 4.75
1303	3 "..... 5.00



DOUBLE EYE SPLIT
(Patents Pending)

This is an entirely new form of Grip that will appeal to all construction men as a long felt want and is of great value, so it can be placed on cable without the cable being out.

It is an indispensable article for aerial work, especially on long pulls and corners.

Work can be done with this Grip that cannot be done in any other way.

Once used, it becomes a necessity.

List No.	Each
1306	1 inch..... \$4.00
1305	1 1/2 "..... 5.00
1304	2 "..... 5.50
1303	2 1/2 "..... 6.00
1302	3 "..... 6.50

Stromberg-Carlson Telephone Booths



These Telephone Booths are well-made, are good-looking are sound-proof, are sanitary, are safe and are compact.

Equipped with—an easy-swinging Hinged Door that opens outwardly and that requires no grooves in the floor.

Provided in either oak or mahogany finishes. Standard finishes are golden oak on plain wood oak, light mahogany on birch or dark mahogany on birch.

Built with flush sides, so that several Booths may be placed side by side, forming the appearance of one continuous battery.

Requires minimum floor space,—but affords maximum comfort. Floor space only 28½ inches by 29¼ inches; inside dimensions are 90¼ inches high; 27 inches wide; 27¼ inches deep; door opening 77½ inches high and 22 inches wide.

Designed for use in narrow hallways—the open door extends only 6 inches beyond the booth's face.

Provided with a safety door,—a slight pressure on the right side of the door, either from within or without, opens the door—the door never locks.

Carried in stock—shipped knocked down—assembled with a screw driver. Furnished in the following codes:

List No.	Material	Finish	Glass Panels
2802	Plain Oak	Medium Oak	Glass Panel in door and in right side
2803	Birch	Dark Mahogany	Glass Panel in door and in right side.
2804	Birch	Light "	Glass Panel in door and in right side.
2805	Plain Oak	Medium Oak	Glass Panel in door and in both sides.
2806	Birch	Dark Mahogany	Glass Panel in door and in both sides.
2807	Birch	Light "	Glass Panel in door and in both sides.
2808	Plain Oak	Medium Oak	1 glass panel in door only.
2809	Birch	Dark Mahogany	1 glass panel in door only.
2810	Birch	Light "	1 glass panel in door only.

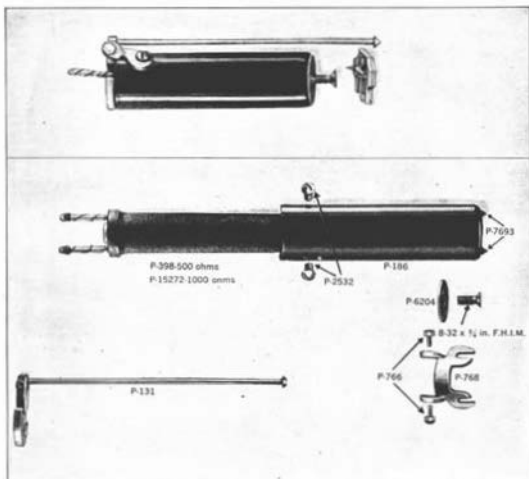
"Unless otherwise specified a Booth with glass in door and glass panel in right side will be furnished."

	Price Each
Plain Oak Booth.....	\$100.00
Birch, Mahogany.....	105.00
Plain Oak Booth, with Quarter Sawn Oak Front..	110.00

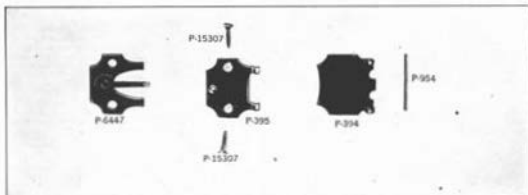
Discounts

Less 15% to operating Telephone Companies.

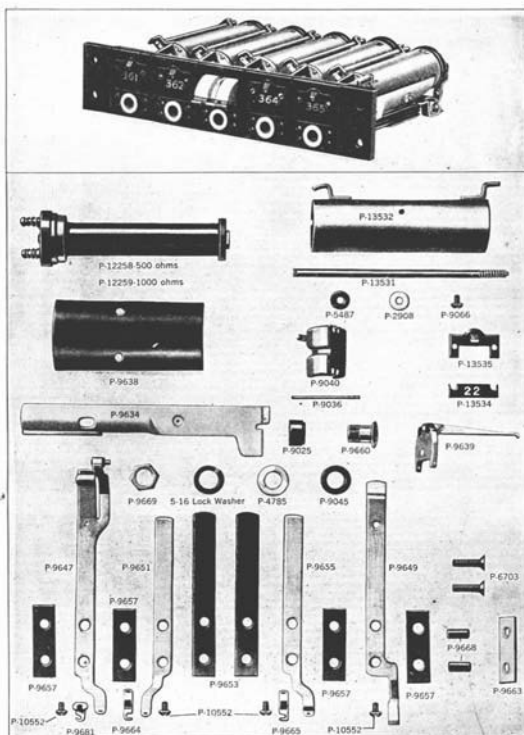
All Prices F. O. B. Chicago, Ill.



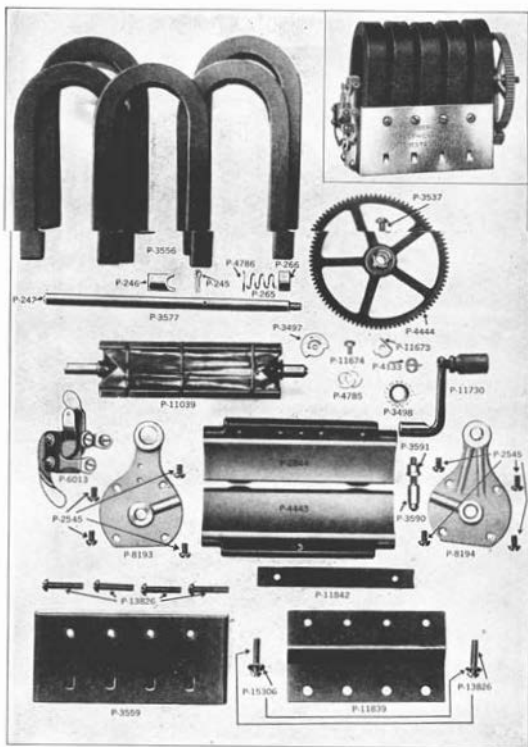
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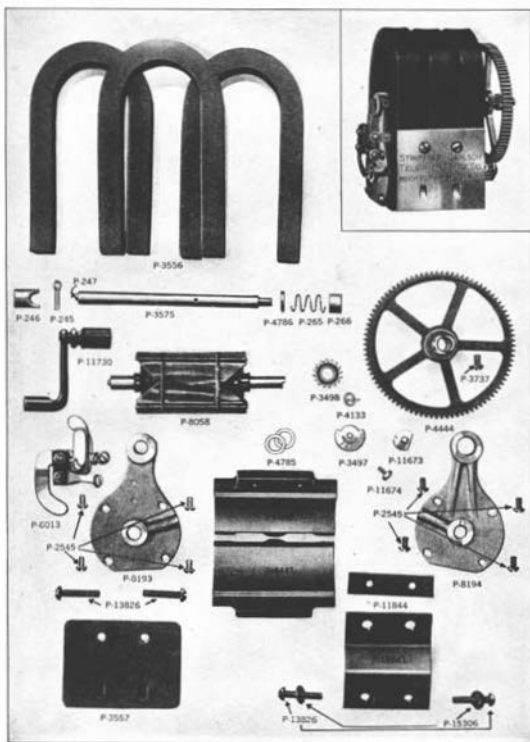
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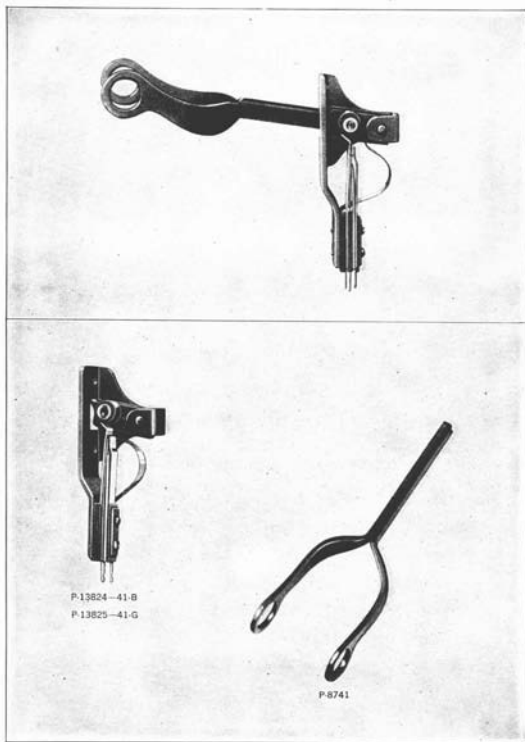
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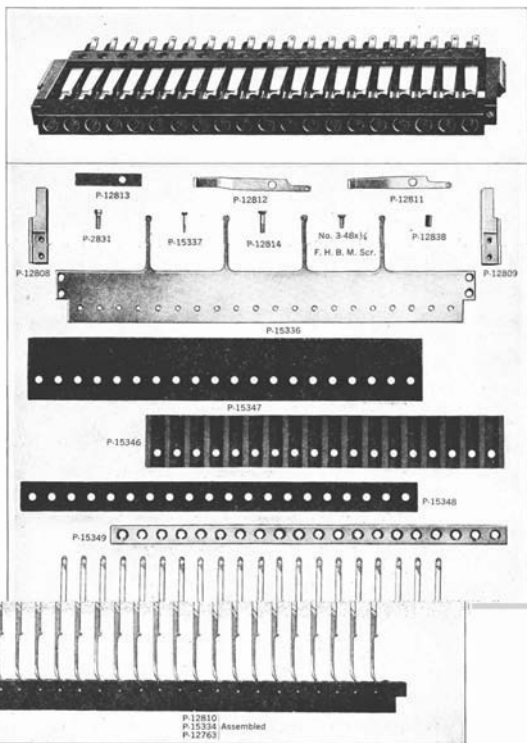
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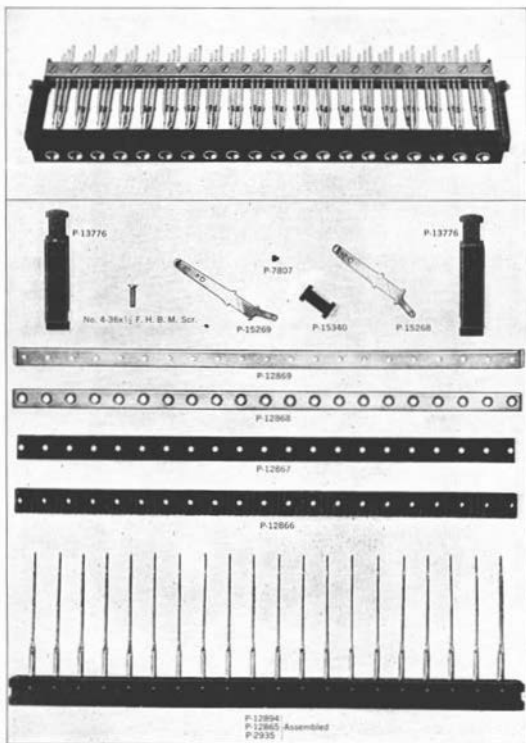
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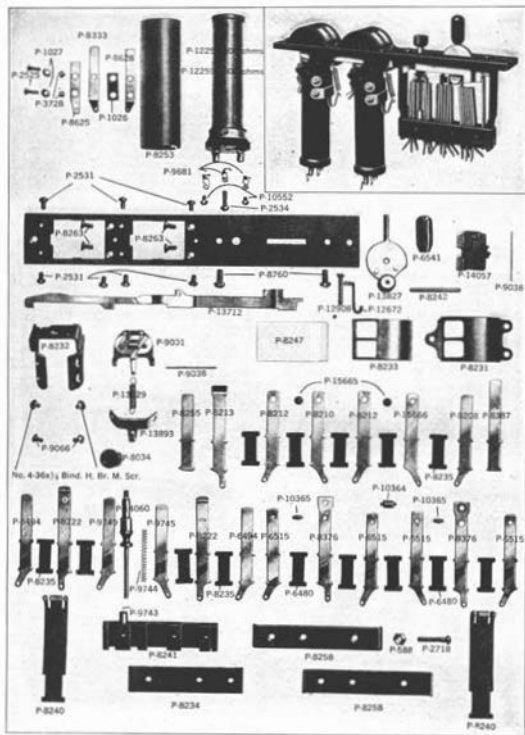
No. 41 Hookswitch



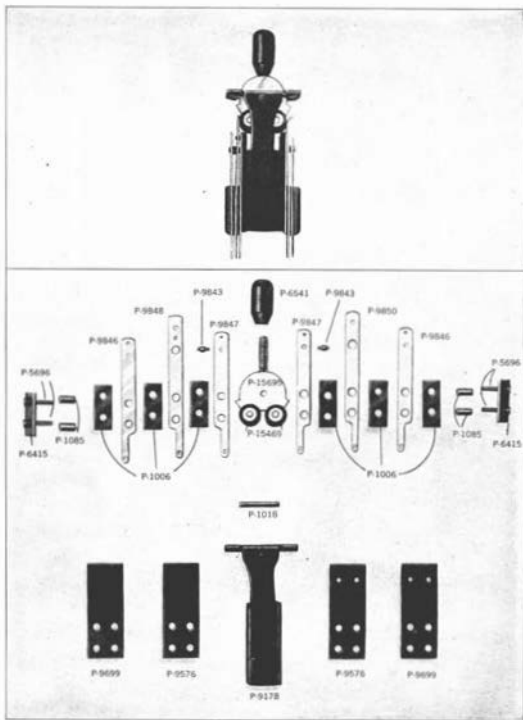
No. 127 Jack



No. 130 Jack

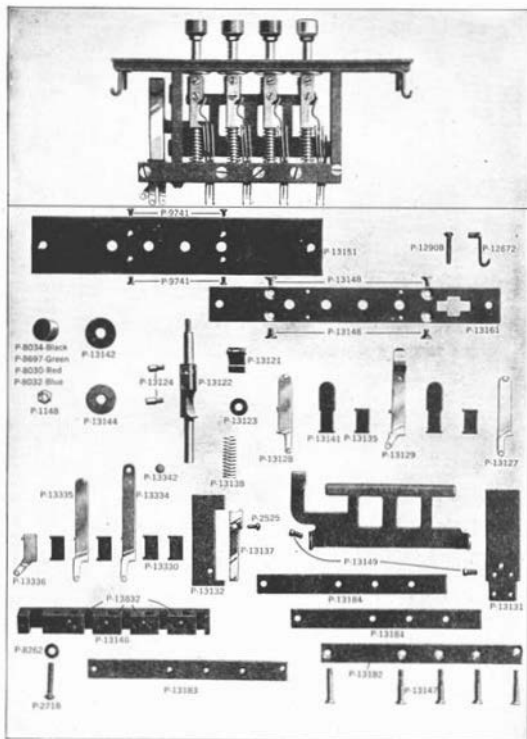


No. 169 Key

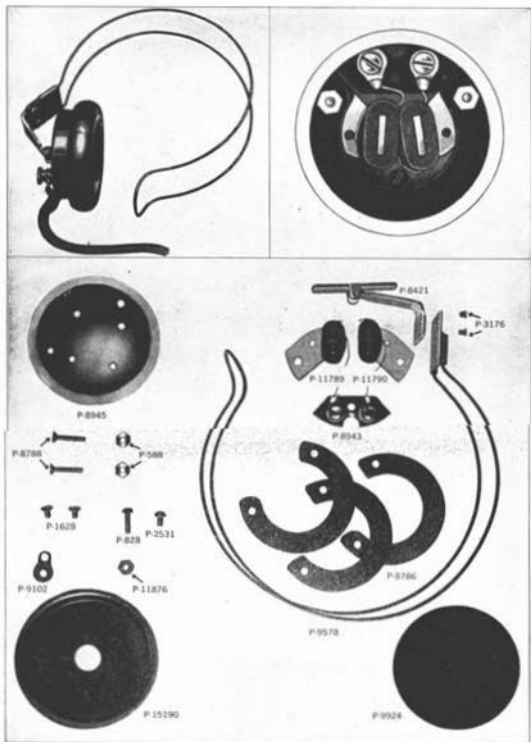


No. 170 Key

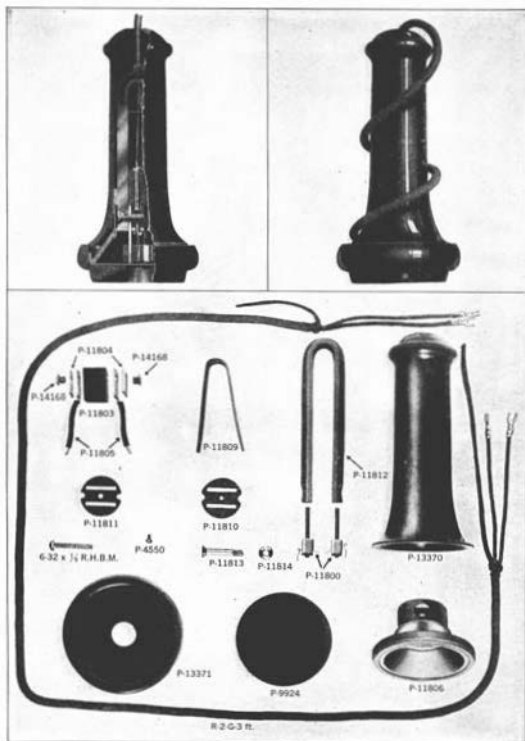
Owing to the great number of different spring combinations used on the No. 170 Type Key, it is advisable to send in the broken or worn spring as a sample when ordering.



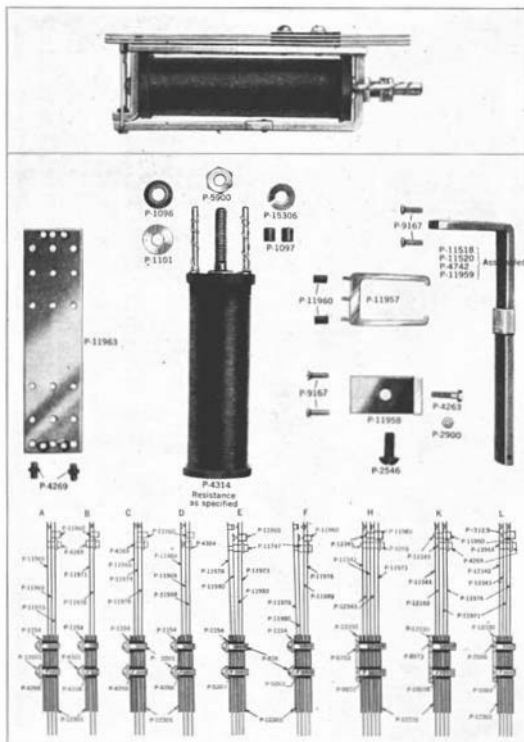
No. 200 Key



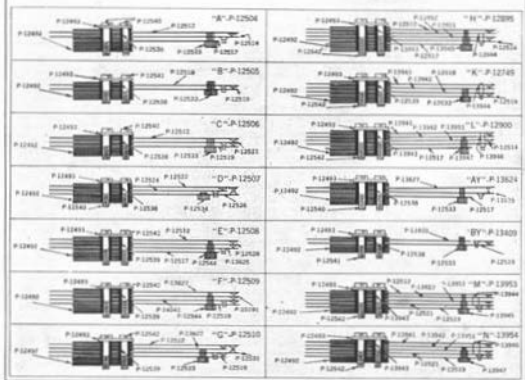
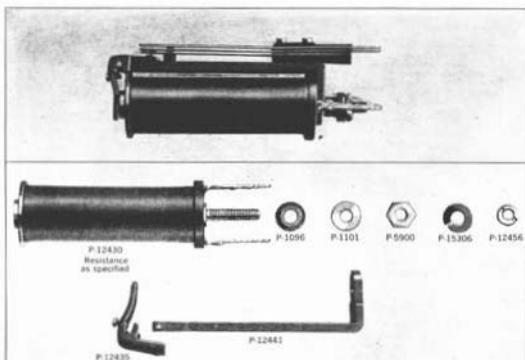
No. 20-A Receiver



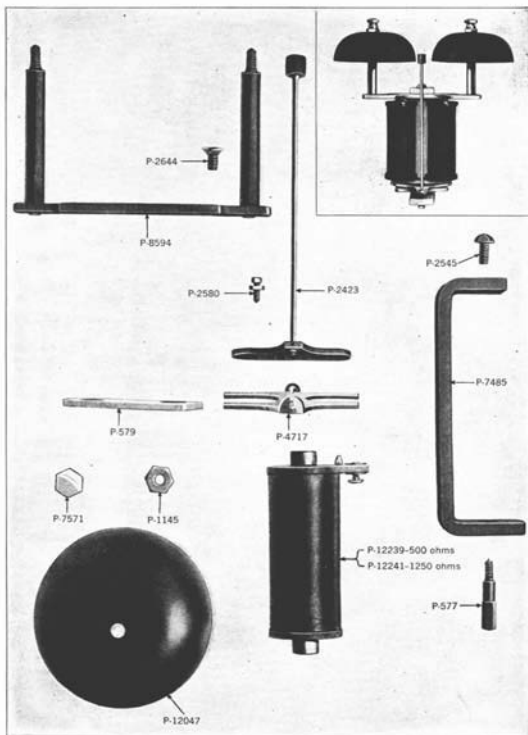
No. 27-A Receiver



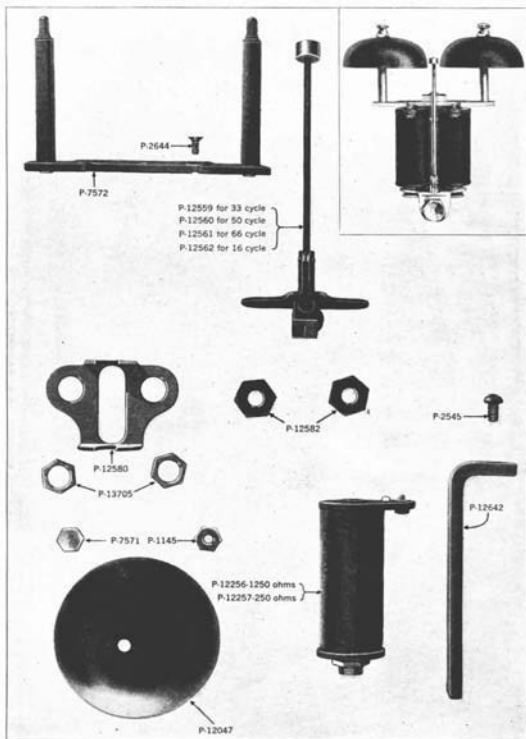
No. 150 Relay



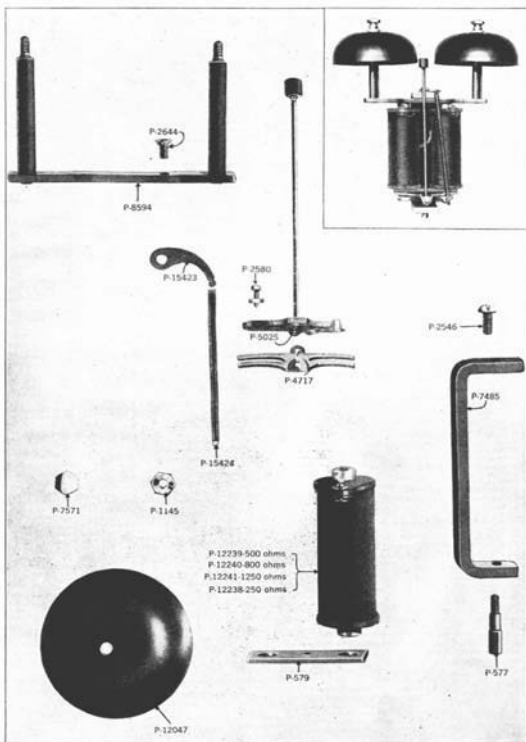
No. 200 Relay



No. 46 Ringer



No. 47 Ringer



No. 49 Ringer

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