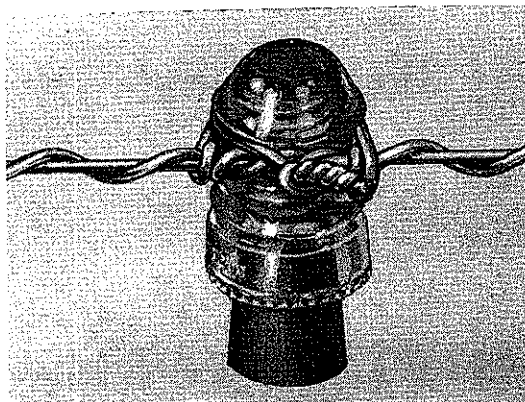


Copperweld Grip-flex 38 Insulator Ties



Used for securing solid conductors to side tie insulators. The reinforcing portion of the tie is placed on the conductor as a separate unit from the binding wire. Reinforcing portion is made from hard-drawn Copperweld and extends over the full length of the tie. Grip-Flex ties are pre-formed to a helical shape to make a tight snug fit on the conductor.

| Cat. No. | Line Wire AWG Size | Reinforcing Wire AWG Length | Binding Wire AWG Length | Wt. per 100, Lbs. |
|----------|-----------------------|--------------------------------|----------------------------|----------------------|
| S-7504 | 10 | 9 12 | 12 24 | 7 |
| S-7503 | 12 | 10 10 | 12 24 | 6 |

Diamond Tie Splints



Diamond Preformed tie splints offer a better vibration dampener, greater grip on line wire and no contact between line wire and insulators. For use with 109—12 B.W.G. Galvanized line wire.

| Cat. No. | Description | Standard Bundle | Weight per Std. Bundle Lbs. |
|----------|---------------------|--------------------|-----------------------------------|
| S-8002 | Splint 17 1/4" long | 100 | 7 3/4 |
| S-8003 | Tie wire 30" long | 600 | 50 |

Weatherproof Iron Wire



Used where lines run through trees to keep them free from grounds in damp weather. The conductor is BB double galvanized iron wire.

| Cat. No. | B.W.G. Ga. | Braid | Wt. per Mile, Lbs. |
|----------|------------|--------|-----------------------|
| S-7896 | 14 | Triple | 175 |

Gencaseal Interior and Conduit Wire

For both inside use and duct service. Furnished in twisted pair, triplex and quadded constructions. Each wire consists of solid, annealed plain (uncoated) copper insulated with tough Gencaseal (Plastic) coverings. Conductor identification is provided by colors or ridge tracers. Insulation thickness is .025 inch.

| Cat. No. | Size AWG | Number of Conductors | Color | Dia. Over Insul., M Ft., In. Lbs. |
|----------|-------------|-------------------------|-----------------|---|
| S-7945 | 22 | Twisted Pair | Brown | .075 9 |
| S-7946 | 22 | Triplex | Brown | .075 14 |
| S-7954 | 22 | Quadruple | Brown | .075 18 |
| S-7942 | 22 | Twisted Pair | Ivory | .075 9 |
| S-7943 | 22 | Triplex | Ivory | .075 14 |
| S-7940 | 22 | Twisted Pair | Red & Black | .075 9 |
| S-7944 | 22 | Triplex | Red-Ivory-Black | .075 14 |
| S-7955 | 19 | Twisted Pair | Brown | .086 14 |
| S-7956 | 19 | Triplex | Brown | .086 21 |

Gencaseal Jumper Wire

For distributing frame wiring and other uses where a small diameter wire of superior characteristics is desired. Furnished in 22 A.W.G. annealed tinned copper conductor, with a 15 mil wall of Gencaseal (Plastic) insulation. Important advantages are clear bright colors, high dielectric strength, and marked resistance to moisture and most chemical reagents. Insulation thickness is .015 inch.

| Cat. No. | Size AWG | Number of Conductors | Color | Dia. Over Insul., M Ft., In. Lbs. |
|----------|-------------|-------------------------|----------------|---|
| S-7938 | 22 | Twisted Pair | Red & White | .055 7 |
| S-7939 | 22 | Triplex | Red-White-Blue | .055 10 1/2 |
| S-7941 | 22 | Twisted Pair | Red & Black | .055 7 |

Neoprene Copper Drop and Bridle Wire

Hard copper drop wire and soft copper bridle wire are tinned or lead alloy coated. The high quality, firm, rubber-type insulation is especially compounded to develop the best balance of physical and electrical properties, and long life for communication service. Jackets are of tough, durable Neoprene which affords high resistance to abrasion, weather, sunlight, oils and greases, acids and alkalis, flame and high surface resistivity even under damp conditions. Identification is provided by longitudinal ridges molded in the Neoprene jacket of one or two conductors.

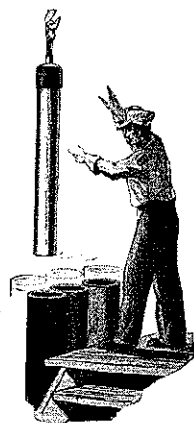
Bridle Wire

| Cat. No. | Wire Size AWG | Conductor Assembly | Dia. Over Insulation | Ship. Wt. Per M Ft., Lbs. |
|----------|------------------|-----------------------|-------------------------|---------------------------------|
| S-7848 | 20 | Twisted Pair | .085 | 22 |
| S-7849 | 20 | Triplex | .085 | 33 |
| S-7851 | 18 | Twisted Pair | .105 | 32 |
| S-7853 | 18 | Triplex | .105 | 48 |

Drop Wire

| Cat. No. | Wire Size AWG | Conductor Assembly | Dia. Over Insulation | Ship. Wt. Per M Ft., Lbs. |
|----------|------------------|-----------------------|-------------------------|---------------------------------|
| S-7872 | 16 | Twisted Pair | .125 | 54 |
| S-7873 | 14 | Twisted Pair | .156 | 80 |

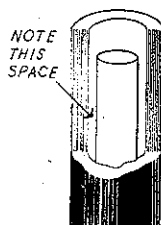
How Copperweld Products Are Made



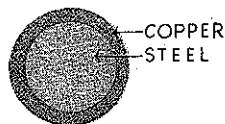
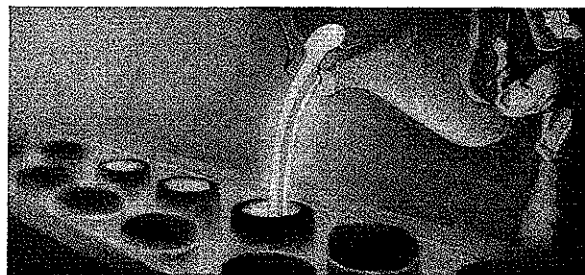
Large round steel bars of uniform forging quality are carefully tested and sawed into four-foot lengths, then thoroughly cleaned and scrubbed and prepared for the casting mold.



COPPER INGOTS—While the steel is being prepared, copper ingots of the best electrolytic grade are melted under the supervision of skilled metallurgists who prepare the copper for casting to assure absolutely sound Copperweld ingots.



THE STEEL BILLET PLACED IN A MOLD—The cleaned steel billets are placed in refractory molds having an inside diameter larger than the diameter of the steel billet. The steel billet is accurately centered in the mold and held in place to prevent shifting. The mold containing the billet is then sealed and placed in a furnace where it is heated to the required welding temperature.

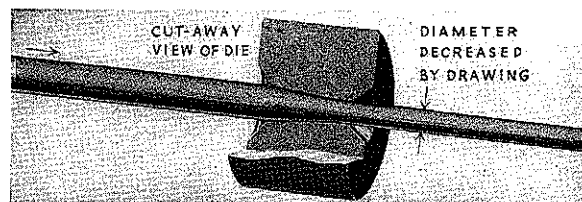


MOLTEN COPPER IS POURED INTO THE SPACE BETWEEN THE MOLD AND THE STEEL—The hot molds, with their heated steel billets inside, are withdrawn from the furnace, and molten copper is poured into them to fill the space between the steel billet and the inner wall of the mold. The hot steel and molten copper are permanently united in a **MOLTEN-WELD**. The crystalline interlocking of the two metals is so perfect that they cannot be separated except by the destruction of the material itself. When cooled the ingot is removed from the mold.



THE COPPERWELD INGOT IS HOT ROLLED TO WIRE ROD SIZE—After removal from the mold the Copperweld ingot is heated to required rolling temperature and hot rolled to wire rods about $\frac{3}{8}$ -inch in diameter. The molten-welding of the copper and the steel is so perfect that the Copperweld ingot rolls as one metal.

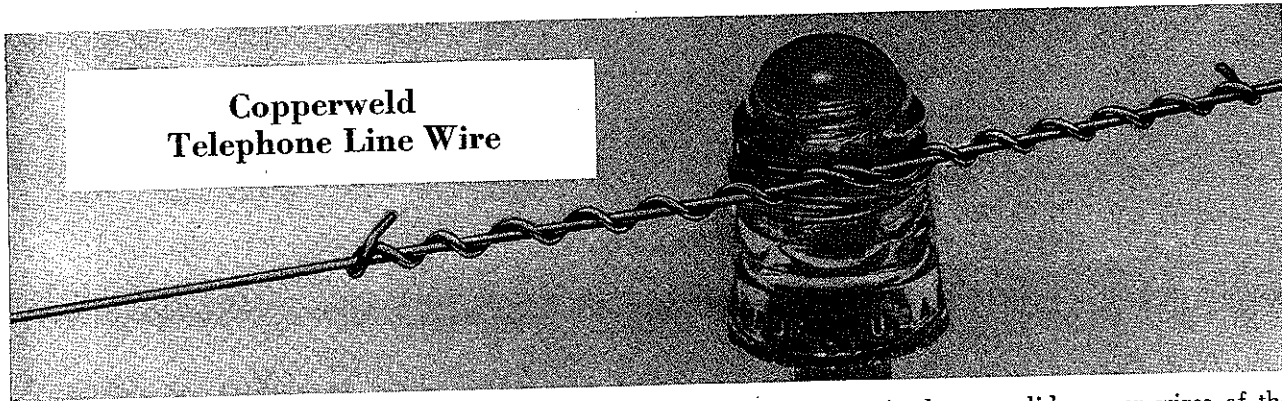
THE ROD IS COLD DRAWN TO WIRE—Copperweld wire rod is drawn to wire of all standard commercial sizes in the most modern wire drawing machinery. Standard methods of drawing are used as the perfectly molten-welded material draws the same as a single metal.



COPPERWELD WIRE IS CAREFULLY TESTED

Every coil of Copperweld wire must pass the following tests:

- (1) **DIAMETER**—Determined at both ends and middle of every coil.
- (2) **SURFACE TESTS**—The surface of every coil of Copperweld wire is tested for smoothness and freedom from surface imperfections.
- (3) **BREAKING LOAD**—The strength of all wire must conform to specification requirements. Wire used in strand is tested before stranding.
- (4) **ELONGATION**—Every coil tested. Checked with extensometer.
- (5) **CONDUCTIVITY**—Every coil is tested at both ends and the middle on a special instrument.
- (6) **TWIST TEST**—Wire must withstand a specified number of twists in a standard length. Made on specimens from every coil to guard against seams, laps and other surface imperfections of sufficient magnitude to indicate inherent defects in the wire.
- (7) **COPPER THICKNESS**—Special equipment developed by the Company, measures electrically the thickness of copper of every coil.



Copperweld Telephone Line Wire

Permanent High Strength

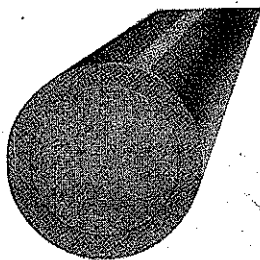
The steel core of Copperweld non-rusting line wire gives it the extra strength needed for modern long span construction. And this strength is permanent because of the protection afforded by the thick exterior of copper, molten-welded to the steel core. Copperweld's extra strength is attained without excessive weight or diameter. Lighter weight reduces stresses on poles and fittings; small diameter reduces ice loading and presents a smaller cross-section to the wind. The fact that Copperweld is strong without being tough or springy makes it easy to handle and string—linemen like to work with it. Combined in Copperweld line wire is the stability of steel and the non-rusting life of copper. Lines built with Copperweld have a permanently higher factor of safety.

During many sleet and wind storms Copperweld telephone line wires have remained unbroken and in continuous service when copper and galvanized wires of equal and larger sizes, installed on the same poles, were down.

Permanently Higher Conductivity and Permanently Better Voice Transmission

All the rust-resisting life of copper construction is obtained with Copperweld telephone line wire. The thick copper exterior provides permanently higher conductivity and permanently better voice transmission. Copperweld offers over twice the conductivity of BB iron wire; and because it has the rust-resisting life of copper, this conductivity is *permanent*—an important factor as lines grow older.

The quality or intelligibility of speech transmission over Copperweld wire is practically identical with that



The thick copper exterior of Copperweld telephone line wire is permanently molten-welded to the strong steel core and protects the wire against rusting.

received over solid copper wires of the same conductivity; and since Copperweld does not rust there is no reduction of transmission efficiency as time goes on.

Simple Construction and Permanently Low Resistance Joints and Connections

Copperweld lines are built with the same simple standards as copper wire construction. Nothing special or extra is required for joints, ties or connections. As all contacts are copper-to-copper there are no dissimilar metals in contact, no galvanic action and no electrolytic corrosion. It is easy to make a workmanlike job with Copperweld and, because of its non-rusting characteristics

there is no danger of your well-made construction developing high resistance or mechanical weakness at joints and connections in later years.

Low Cost for Both Long Span and Short Span Lines

Copperweld's economy is a by-word with telephone men who use it. Low cost long span lines are dependable when built with Copperweld wire, but it's during sleet storms on either long span or short span lines that Copperweld's economy is emphasized. Copperweld wire stands up—in weather that brings other wires down.

For new lines, longer spans may be used with Copperweld telephone line wire. Fewer poles per mile are required (with equal safety), thus saving on the cost of poles, material and labor. For existing lines, where pole spacings are already established, a size of Copperweld telephone line wire having less weight per mile and a higher factor of safety may be selected.

Copperweld Telephone Line Wire

The physical and voice transmission characteristics of solid Copperweld Telephone line wires are given in the tables below. Other information will be found on preceding page.

When ordering Copperweld you can select the smallest practical size because Copperweld telephone line wire will not rust and no allowance need be made for later loss of strength or conductivity.

Table I. Physical and Electrical Properties of Solid Wire Copperweld Telephone Conductors.

| Size Avg. or Inch | Diameter (Inch) | BREAKING STRENGTH (Lbs.) | | | WEIGHT | | RESISTANCE Ohms Per 1000 Ft. at 68°F. | | CROSS-SECTION | |
|-------------------------|--------------------|--------------------------|--------------|---------------------------|-------------------------|---------------------|---|--------------|---------------|---------|
| | | High Strength | | Extra High Strength | Lbs. Per 1000 Ft. | Lbs. Per Mile | 40% Cond. | 30% Cond. | Cir. Mils | Sq. In. |
| | | 40% Cond. | 30% Cond. | 30% Cond. | | | | | | |
| .165 | .1650 | 2,523 | 2,780 | 3,368 | 75.55 | 398.9 | .9715 | 1.295 | 27,230 | .02138 |
| 6 | .1620 | 2,433 | 2,680 | 3,247 | 72.85 | 384.6 | 1.008 | 1.343 | 26,250 | .02062 |
| 7 | .1443 | 2,011 | 2,207 | 2,681 | 57.77 | 305.0 | 1.270 | 1.694 | 20,820 | .01635 |
| 8 | .1285 | 1,660 | 1,815 | 2,204 | 45.81 | 241.9 | 1.602 | 2.136 | 16,510 | .01297 |
| .128 | .1280 | 1,647 | 1,802 | 2,188 | 45.47 | 240.1 | 1.614 | 2.152 | 16,380 | .01287 |
| 9 | .1144 | 1,368 | 1,491 | — | 36.33 | 191.8 | 2.020 | 2.693 | 13,090 | .01028 |
| .104 | .1040 | 1,177 | 1,283 | 1,325* | 30.01 | 158.5 | 2.445 | 3.260 | 10,820 | .008495 |
| 10 | .1019 | 1,130 | 1,231 | — | 28.81 | 152.1 | 2.547 | 3.396 | 10,380 | .008155 |
| 12 | .08081 | 785 | — | — | 18.12 | 95.68 | 4.051 | — | 6,530 | .005129 |
| .080 | .080 | 770 | — | — | 17.76 | 93.77 | 4.133 | — | 6,400 | .005027 |

Modulus of Elasticity: 24,000,000.
*40% Conductivity.

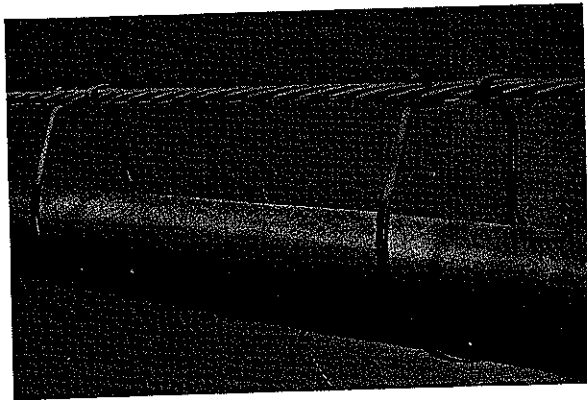
Coefficient of linear expansion: .000,007,2 per degree Fahrenheit.

Table II. Telephonic Transmission Characteristics of Copperweld Telephone Wires.

| Size Avg. or Inch | TRANSMISSION EQUIVALENT Decibels (db) per Loop Mile | | | | CHARACTERISTIC IMPEDANCE (Z) Ohms per Loop Mile | | Approx. Miles of Line Equivalent to 20 db. Loss | |
|-------------------------|--|------|-----------|------|---|-----------|---|-----------|
| | 40% Cond. | | 30% Cond. | | 40% Cond. | 30% Cond. | 40% Cond. | 30% Cond. |
| | Dry | Wet | Dry | Wet | | | | |
| .165 | .071 | .075 | .093 | .097 | 635 | 665 | 280 | 215 |
| 6 | .073 | .078 | .096 | .100 | 640 | 670 | 275 | 210 |
| 8 | .106 | .110 | .134 | .139 | 708 | 760 | 190 | 150 |
| .128 | .107 | .111 | .135 | .140 | 710 | 765 | 185 | 150 |
| 9 | .126 | .133 | .159 | .165 | 755 | 825 | 160 | 125 |
| .104 | .144 | .152 | .182 | .188 | 800 | 880 | 140 | 110 |
| 10 | .148 | .156 | .186 | .194 | 805 | 890 | 135 | 110 |
| 12 | .210 | .216 | — | — | 960 | — | 100 | — |
| .080 | .213 | .219 | — | — | 980 | — | 95 | — |

The above values are based on open wire construction using 35 pairs of D. P. Insulators per mile with twelve inch spacing between conductors and a frequency of 1000 cycles per second.

Copperweld Messenger Strand

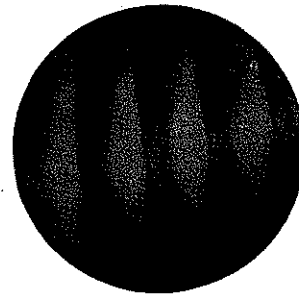


It is a real economy to provide a messenger strand that will last as long as the cable. Transferring good cable from rusted strand to new strand is an expensive operation. The installation of Copperweld non-rusting messenger strand and Copperweld cable rings will save costly messenger replacements — Copperweld strand will not rust.

The use of Copperweld non-rusting messenger strand and cable rings adds surprisingly little to the cost of an aerial cable job. Considering the total cost of the job, i.e. cable, hardware, fittings, labor, etc., it will be found that the percentage of the total represented by the slightly higher cost of Copperweld, is negligible. Seldom on an aerial cable job does the use of Copperweld increase the total cost as much as 3% — and in many cases it may be less than 1%.

Copperweld Guy Strand

Guy strand life can be put on a copper basis by specifying Copperweld Non-Rusting Strand. All Copperweld strand is guaranteed to have the rust-resisting life of solid copper. With Copperweld guy strand guy replacements are eliminated and the original safety of the line is maintained during the entire life of the conductors. Because of the natural ductility of copper, and the thickness of the molten welded exterior, Copperweld can be served safely without danger of cracking, flaking or peeling. The photograph below shows Copperweld 3-wire strand served with the Copperweld Serving Tool illustrating the perfect condition of the thick copper exterior after serving.



The use of non-rusting Copperweld guy strand adds little to the cost of the completed guy which is a total of a number of items—clamps, anchors, insulators, labor, etc.—and the strand is only one of the items in this total cost. Guying costs are only a small percentage of the total cost of the line—extremely small when consideration is given to the importance of good guying in insuring the safety of the line under extreme loading conditions.

Physical Properties of Copperweld Strand for Messenger and Guying

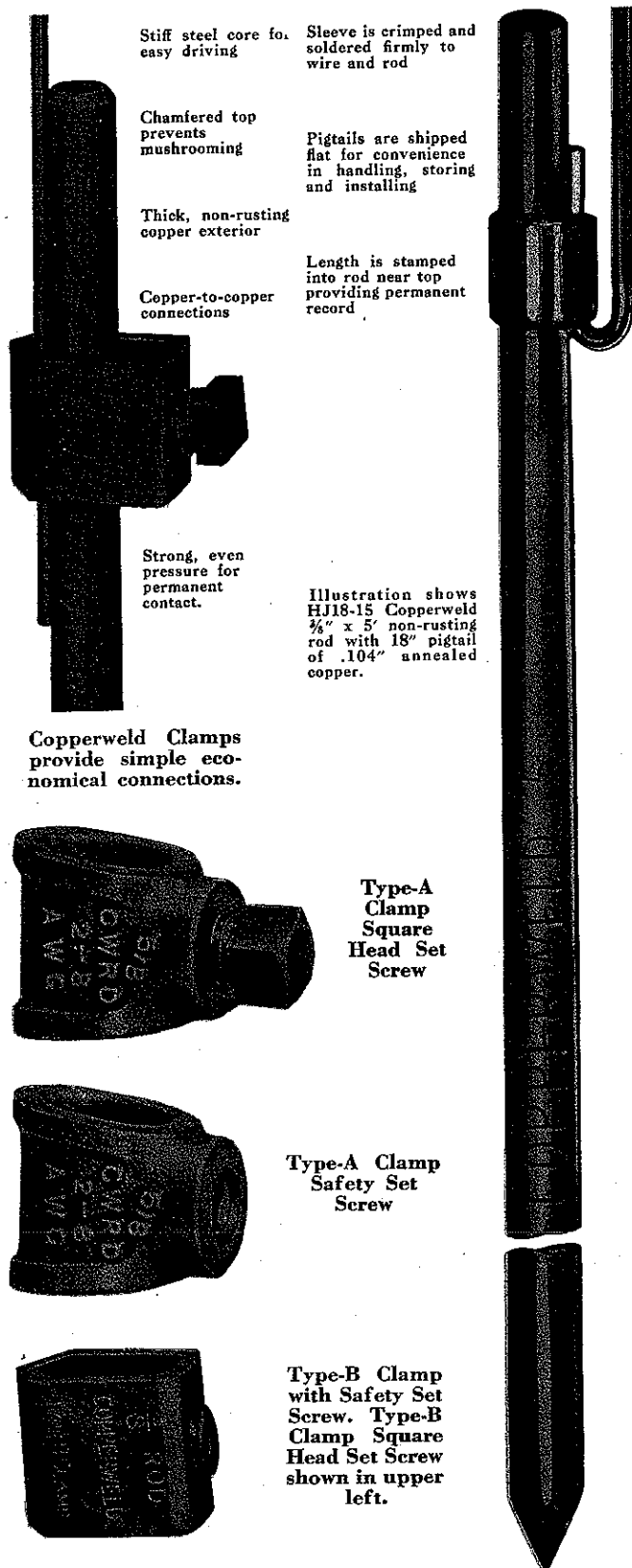


| Nominal Diameter (Inch) Size A.W.G. | Actual Dia. (Inch) | BREAKING LOAD Lbs. | | WEIGHT | | Cross- Section Sq. In. | Ft. per Pound |
|---|--------------------------|----------------------------------|---|-------------------------|---------------------|------------------------------|------------------|
| | | High Strength 30% Cond. | Extra High Strength 30% Cond. | Lbs. Per 1000 Ft. | Lbs. Per Mile | | |
| 9/16 (7 No. 5) | .546 | 20,470 | 24,650 | 649.4 | 3,429 | .1820 | 1.539 |
| 1/2 (7 No. 6) | .486 | 16,890 | 20,460 | 515.0 | 2,719 | .1443 | 1.942 |
| 7/16 (7 No. 7) | .433 | 13,910 | 16,890 | 408.4 | 2,157 | .1145 | 2.448 |
| 3/8 (7 No. 8) | .385 | 11,440 | 13,890 | 323.9 | 1,710 | .09077 | 3.087 |
| 11/32 (7 No. 9) | .343 | 9,393 | 11,280 | 256.9 | 1,356 | .07198 | 3.893 |
| 5/16 (7 No. 10) | .306 | 7,758 | 9,196 | 203.7 | 1,076 | .05708 | 4.909 |
| 3 No. 6 | .349 | 7,639 | 9,754 | 220.3 | 1,163 | .06185 | 4,539 |
| 3 No. 7 | .311 | 6,291 | 7,922 | 174.7 | 922.4 | .04905 | 5.724 |
| 3 No. 8 | .277 | 5,174 | 6,282 | 138.5 | 731.5 | .03890 | 7.218 |
| 3 No. 9 | .247 | 4,250 | 5,129 | 109.9 | 580.1 | .03085 | 9.102 |
| 3 No. 10 | .220 | 3,509 | 4,160 | 87.13 | 460.0 | .02446 | 11.47 |

Modulus of Elasticity: 23,000,000.

Coefficient of linear expansion: 000,007,2 per degree Fahrenheit.

Copperweld Telephone Ground Rods and Clamps



Because of their alloy steel core Copperweld Ground Rods are stiff, non-rusting and especially easy to drive. The economical $\frac{3}{8}$ -inch Copperweld rod in five or six foot lengths is most generally used for telephone grounds and has proven most satisfactory. The copper exterior, permanently molten-welded to the stiff steel core provides a copper surface for a copper-to-copper contact with the grounding wire. When a copper grounding wire is clamped to a Copperweld rod with a Copperweld clamp there are no dissimilar metals in contact under the ground—and no galvanic action and no electrolytic corrosion. Your grounds are permanently dependable.

Husky, one-piece Copperweld cast body, Type A Clamps and economical Copperweld drawn body, Type B Clamps provide simple and dependable ground wire connections. The Copperweld rod with annealed copper pigtail is used when a pigtail connection is preferred. On $\frac{3}{8}$ -inch rods a .104-inch annealed copper pigtail is used and on $\frac{1}{2}$ -inch rods a .128-inch annealed copper pigtail is used. Pigtail rods are furnished in 5 to 8 foot lengths with 18 inch pigtails. The pigtail connections are firmly secured to the rod by means of a crimped sleeve and soldered connection. The pigtail is fastened to the rod one inch from the top so that it doesn't interfere with driving. Rods in bundles of 10.

Standard Ground Rods

| Cat. No. | Size | Wt. per 100, Lbs. |
|----------|------------------|-------------------|
| S-6206 | $\frac{3}{8}$ x5 | 170 |
| S-6208 | $\frac{3}{8}$ x6 | 205 |
| S-6210 | $\frac{1}{2}$ x5 | 305 |
| S-6212 | $\frac{1}{2}$ x6 | 370 |
| S-6214 | $\frac{1}{2}$ x7 | 430 |
| S-6216 | $\frac{1}{2}$ x8 | 490 |

Pigtail Type Ground Rods

| Cat. No. with 18" Pigtails | Size | Wt. per 100, Lbs. |
|----------------------------|------------------|-------------------|
| S-6222 | $\frac{3}{8}$ x5 | 195 |
| S-6224 | $\frac{3}{8}$ x6 | 230 |
| S-6226 | $\frac{1}{2}$ x5 | 330 |
| S-6228 | $\frac{1}{2}$ x6 | 395 |
| S-6230 | $\frac{1}{2}$ x7 | 455 |
| S-6232 | $\frac{1}{2}$ x8 | 515 |

NOTE: For station grounds or other grounding purposes, a complete range of Copperweld ground rods are available in $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{5}{8}$ ", $\frac{3}{4}$ ", and 1" diameters, with grounding wire clamps to fit each size of rod. Lengths range from 5' to 40' in multiples of even feet.

Rod with 36" Pigtail furnished on special order.

Type B Clamps (Drawn Body)

| With Recessed Safety Set Screw | With Square Head Set Screw | Wt. Per Size 100, In. Lbs. |
|--------------------------------|----------------------------|----------------------------|
| S-3366 | S-3364 | $\frac{3}{8}$ 7 |
| S-3370 | S-3368 | $\frac{1}{2}$ 15 |
| S-3359 | S-3360 | $\frac{5}{8}$ 25 |
| S-3361 | S-3371 | $\frac{3}{4}$ 30 |

Type A Clamps (Cast Body)

| With Recessed Safety Set Screw | With Square Head Set Screw | Wt. Per Size 100, In. Lbs. |
|--------------------------------|----------------------------|----------------------------|
| S-3374 | S-3372 | $\frac{3}{8}$ 15 |
| S-3378 | S-3376 | $\frac{1}{2}$ 25 |
| S-3382 | S-3380 | $\frac{5}{8}$ 35 |
| S-3362 | S-3363 | $\frac{3}{4}$ 45 |

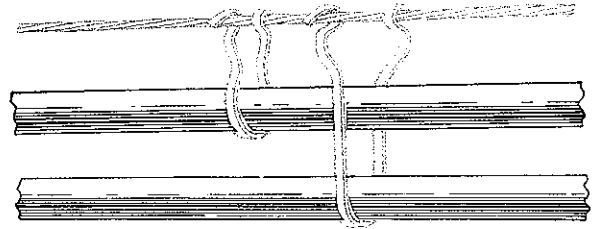
Type-B Clamp with Safety Set Screw. Type-B Clamp Square Head Set Screw shown in upper left.

Copperweld Cable Rings



Copperweld cable rings should be used on all Copperweld messenger installations. This non-rusting construction insures a long life to the aerial cable installation. All standard types of cable rings, as well as Marlin hangers with Copperweld hooks, are available in all sizes. Saddles for these rings also available.

Table at right shows standard sizes of cable rings for use on aerial cable installations.

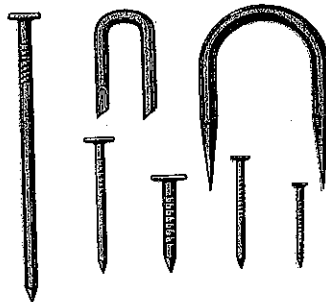


When ordering cable rings, the style of ring, diameter of ring and the size of the messenger strand should be specified.

| Diameter of Cable | Diameter of Cable Ring |
|-------------------|------------------------|
| Up to 1 in. | 1½ inches |
| 1 in. to 1⅛ in. | 2 inches |
| 1⅛ in. to 1⅜ in. | 2½ inches |
| 1⅜ in. to 2 in. | 3 inches |
| 2 in. to 2¼ in. | 3½ inches |
| 2¼ in. to 2½ in. | 4 inches |
| 2½ in. to 3 in. | 4½ inches |

Copperweld Nails

Wherever strong, non-rusting nails are desired, Copperweld Nails fully meet the requirements. They run approximately 8% more nails per pound than copper nails. Because of their moderate price, they are being used extensively in many types of construction.



Some of the uses of these nails are: To secure wood insulator pins in cross-arms; for attaching wood brackets and pole steps; for attaching numbers and identification tags to wood poles; fastening strain plates; erecting board or picket fencing and wooden frame work for supporting fence fabrics; and for slate, tile and composition roofing.

Common Smooth

Packed 100 lbs. to the keg.

| Cat. No. | Size | Length (Inches) | Diameter (Inch) | Approx. Nails per Lb. |
|----------|------|-----------------|-----------------|-----------------------|
| S-5420 | 4d | 1½ | .091 | 350 |
| S-5422 | 6d | 2 | .102 | 200 |
| S-5424 | 8d | 2½ | .128 | 100 |
| S-5426 | 10d | 3 | .144 | 68 |
| S-5428 | 20d | 4 | .182 | 32 |
| S-5430 | 30d | 4½ | .204 | 23 |
| S-5431 | 40d | 5 | .204 | 20 |
| S-5432 | 50d | 5½ | .229 | 14 |
| S-5434 | 60d | 6 | .258 | 11 |

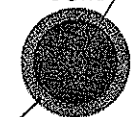
Broadhead

Packed 100 lbs. to the keg.

| Cat. No. | Size | Length (Inches) | Diameter (Inch) | Approx. Nails per Lb. |
|----------|------|-----------------|-----------------|-----------------------|
| S-5415 | 2d | 1 | .120 | 260 |
| S-5416 | 3d | 1¼ | .120 | 220 |
| S-5417 | 4d | 1½ | .120 | 190 |
| S-5418 | 5d | 1¾ | .120 | 160 |
| S-5419 | 6d | 2 | .120 | 145 |

Copperweld Staples

EASY DRIVING
STIFF STEEL
CORE



NON-RUSTING
THICK OUTER
LAYER OF
PURE COPPER

A Copperweld Rolled Point Staple rests squarely on its points permitting it to be easily driven straight and true. Copperweld Rolled Point Staples make a neat job when installed and—because they are non-rusting—the installation with Copperweld Rolled Point Staples STAYS NEAT. In the smaller sizes, the Cut Point Staples are well suited for general use. Although a little more difficult to drive than the Rolled

Point Staple, they cost somewhat less.

Rolled Point Staples

DIMENSIONS Packed in convenient unit
See diagram left boxes—10 boxes to the case



| Cat. No. | A Length | B Width between Legs | C Size Wire | Wt. per 100, Lbs. |
|----------|----------|----------------------|-------------|-------------------|
| S-7172 | 1¼" | ¼" | .114" | .7 |
| S-7174 | 1½" | ⅝" | .144" | 1.3 |
| S-7176 | 1¾" | ¾" | .144" | 1.5 |
| S-7178 | 2" | 1½" | .162" | 2.2 |
| S-7182 | 3" | 1" | .250" | 7.8 |

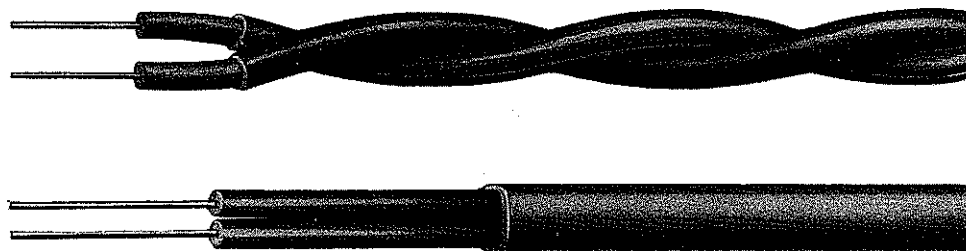
Cut Point Staples

DIMENSIONS
See diagram at left



| Cat. No. | A Length | B—Width between Legs | C—Size Wire |
|----------|----------|----------------------|-------------|
| S-7169 | 2" | ½" | .162" |
| S-7170 | 1¾" | ½" | .162" |
| S-7171 | 1½" | ¾" | .162" |
| S-7173 | 2" | 1¼" | .162" |
| S-7175 | 1¼" | ⅝" | .114" |

Insulated Telephone Wires Manufactured by General Cable Corporation For Automatic Electric Company



NEOTEL Drop Wire

NEOTEL wires are designed primarily for service as telephone drops from service loop to subscriber's premises. Made to rigid specifications and exacting manufacturing standards, they have time-tested, tough, weather and abrasion-resistant, long-lived Neoprene jackets as protective coverings.

Neotel drop wires are available in two standard types, comprising twisted pair and parallel constructions.

Twisted Pair: Conductors individually insulated with high quality rubber insulation, individually jacketed with tough Neoprene, twisted together. **Parallel:** Conductors laid parallel, insulated with high quality rubber insulation, protected by tough Neoprene jacket overall.

Standard conductors of Neotel Drop Wires are size 17 A.W.G. solid, hard drawn, grade 30 bronze or size 18 A.W.G. "Copperweld", tinned or lead alloy coated.

Neotel insulation is a high quality, firm, rubber-type insulation especially compounded to develop the best balance of physical and electrical properties, and long life for communication service. Jackets are of tough, durable Neoprene which affords a high

order of resistance to abrasion, weather, sunlight, oils and greases, acids and alkalis, and flame, and has high surface resistivity even under damp conditions. The construction as a whole is firm and resistant to compression cutting in clamps. The insulation is tightly adherent to the conductors, and the Neoprene jacket tightly adheres to the underlying insulation, obviating slippage or sleeving of component parts with respect to one another and the supporting clamps.

In parallel constructions, polarity identification is provided by two longitudinal ridges molded in one minor face of the overall Neoprene jacket. In twisted pair constructions, identification is provided by two longitudinal ridges molded in the Neoprene jacket of one conductor.

Neotel drop wire is furnished in cartons which are clearly marked showing contents, wire size and footage. The approximate length per carton is 1,000 feet or as specified, but a small percentage of cartons in any one shipment may contain a maximum of 1,250 feet or not more than three lengths per carton. The minimum length of wire in a carton containing more than one length is not less than 250 feet. The actual length in each coil is clearly indicated by tags attached.

| Cat. No. | Type | Conductor Assembly | Diameter Over Insulation Inches | Diameter Over Jacket Inches | Minimum Breaking Strength per Conductor Before Insulating Lbs. | Maximum Resistance per 1000 Ft. at 20°C Ohms | Shipping Weight Lbs. per 1000 Ft. |
|--|------|--------------------|---------------------------------|-----------------------------|--|--|-----------------------------------|
| Size 17 A.W.G. Bronze Conductors ("Grade 30") | | | | | | | |
| S-7904 | GT | Twisted Pair | 0.110 | 0.160 (Single) | 170 | 17 | 40 |
| S-7906 | GP | Parallel | 0.110 x 0.220 | 0.190 x 0.280 | 170 | 17 | 40 |
| Size 18 A.W.G. Copperweld Conductors | | | | | | | |
| S-7816 | GT | Twisted Pair | 0.105 | 0.155 (Single) | 170 | 22 | 36 |
| S-7817 | GP | Parallel | 0.105 x 0.210 | 0.185 x 0.270 | 170 | 22 | 36 |

GENCATEL Drop Wire



GENCATEL telephone drop wires have a combined insulation and jacket of Polyethylene. This synthetic thermoplastic material has excellent physical properties and outstanding electrical properties, making it well adapted indeed for telephone drop service. In fact from the electrical standpoint, polyethylene is perhaps the most nearly perfect of all of the solid type, thermoplastic extrudable insulations. In addition, it is practically immune to the effects of moisture and weather, is suitable for installation and operation over a broad temperature range from -70°C. to $+80^{\circ}\text{C.}$, is little affected by the common acids and alkalies, and the black pigmented type is highly resistant to crazing and checking from ultra-violet light. For this reason black is the standard color of Gencatel drop wires. In common with all thermoplastic materials polyethylene exhibits some tendency toward cold flow under continued heavy pressure, making it advisable to employ types of clamps having liberal bearing surfaces which give relatively low, well distributed clamping pressures.

Gencatel telephone drop wires are available in two standard constructions, twisted pair and parallel. In the twisted pair type, the conductors are individually covered with a combination insulation-jacket of black polyethylene, and then twisted together. In the parallel type, the two conductors are laid parallel and cov-

ered with an oval-section, combination insulation-jacket of black polyethylene. Both constructions are very compact and of light weight, reducing ice and wind loadings and facilitating handling.

Standard Gencatel drop wire is regularly furnished in size 17 A.W.G. solid, harddrawn, Grade 30 bronze conductors. There being no chemical interaction between the conductor and the insulation, tin or lead-alloy conductor coating is dispensed with. Conductors of other sizes and materials are available on special order.

Polarity identification is provided in both forms of constructions. In the twisted pair type, this consists of a ridged tracer on one of the insulated singles. In the parallel type of drop wire, a longitudinal tracer groove is provided in one major face of the oval section.

Gencatel drop wire is furnished in cartons which are clearly marked showing contents, wire size and footage. The approximate length per carton is 1,000 feet or as specified, but a small percentage of cartons in any one shipment may contain a maximum of 1,250 feet or not more than three lengths per carton. The minimum length of wire in a carton containing more than one length is not less than 250 feet. The actual length in each coil is clearly indicated by tags attached.

Bronze Conductors ("Grade 30")

| Cat. No. | Conductor Assembly | Wire Size A.W.G. | Diameter Over Insulation Inches | Minimum Breaking Strength per Conductor Lbs. | Maximum Resistance per 1000 Ft. at 20° C. Ohms | Shipping Weight Net Lbs. per 1000 Ft. |
|----------|--------------------|------------------|---------------------------------|--|--|---------------------------------------|
| S-7825 | Parallel | 17 | .125 x .250 | 170 | 17 | 24 |
| S-7827 | Twisted Pair | 17 | .125* | 170 | 17 | 24 |

*Overall diameter of one conductor of twisted pair.

Conduit or Duct Wire



Rubber covered and braided wire, slick finished for easy pulling through conduits. Identical with same gauge bridle wire it can also be used as interior wire. Because of its small size and slick finish a great many wires can be accommodated in one conduit and it should always be used for pulling rather than loose-braided interior wire. Order by number shown below.

| Cat. No. | B. & S. Gauge | Colors | Conductor Assembly | Weight per 1000 ft., Lbs. |
|----------|---------------|--------------------|--------------------|---------------------------|
| S-7970 | 22 | Red & Green | Twisted Pr. | 14 |
| S-7971 | 22 | Red, Green, Yellow | Triplex | 21 |

Ground Wire



A braided and rubber covered copper wire for substation grounds, single conductor only. Use S-7878 for grounding cable terminals and 10 wire cross arm arresters. Furnished in coils of 500 feet.

| Cat. No. | Color of Braid | B. & S. Gauge | Weight per M ft., Lbs. |
|----------|----------------|---------------|------------------------|
| S-7878 | Black | 6 | 132 |
| S-7886 | White | 14 | 25 |
| S-7888 | Black | 14 | 25 |
| S-7890 | Brown | 14 | 25 |
| S-7880 | Black | 12 | 34 |
| S-7881 | Black | 10 | 56 |

Copper Drop Wire



Twisted pair drop wire used in toll work. Hard drawn copper with a breaking strength of not less than 120 pounds for the 16 gauge, 190 pounds for the 14 gauge. Insulation is of rubber compound especially designed for drop wire service. Compound has high tensile strength and rigidity to resist deformation. It is compounded to resist ageing and assure long life. For identification there is a raised thread tracer in the braid of one conductor. Approximate length of coils is 1000 feet with eyes of 15 inches.

| Cat. No. | Type | B. & S. Gauge | Diam. Over Insulation | Weight per 1000 ft., Lbs. |
|----------|--------|---------------|-----------------------|---------------------------|
| S-7870 | S-16-B | 16 | .125 | 37 |
| S-7874 | S-14-B | 14 | .156 | 65 |

Monotype Interior Wire



Furnished in single, double and triple conductors with 19 and 22 B. & S. gauge tinned soft copper wire. The conductors are smoothly covered with a rubber insulating compound. The wire is then encased in a closely woven uniform braid of hard glazed two-ply cotton thread.

The 19 gauge wire is supplied in coils of approximately 500 feet. The 22 gauge wire is packed in an unbroken 1,000 ft. length arranged in 200 foot fish-line coils, packed in one box.

| Cat. No. | Size B. & S. Ga. | No. of Conductors | Braid | Weight per M. Ft., Lbs. |
|----------|------------------|-------------------|-------------|-------------------------|
| S-7910 | 22 | 1 | Brown | 5 |
| S-7912 | 22 | 2 | Brown | 10 |
| S-7914 | 22 | 3 | Brown | 15 |
| S-7916 | 22 | 2 | Ivory | 10 |
| S-7918 | 22 | 3 | Ivory | 15 |
| S-7920 | 19 | 1 | Olive Green | 10 |
| S-7922 | 19 | 2 | Olive Green | 21 |
| S-7924 | 19 | 3 | Olive Green | 32 |
| S-7935 | 19 | 2 | Brown | 21 |
| S-7936 | 19 | 3 | Brown | 32 |

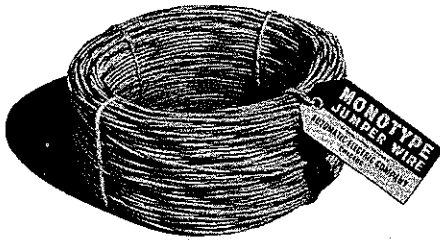
Bridle or Jumper Wire



A rubber covered, black saturated weatherproof braid soft drawn copper wire used to connect open lines to cable terminals. Has pitch and mica finish. The duplex and triplex wires are furnished with tracers for identification of the conductors. Put up in coils of approximately 500 feet.

| Cat. No. | Type | Size B. & S. Gauge | Number of Conductors | Weight per 1000 ft., Lbs. |
|----------|--------|--------------------|----------------------|---------------------------|
| S-7850 | S-22-B | 22 | 2 | 12 |
| S-7852 | S-22-C | 22 | 3 | 18 |
| S-7854 | S-20-B | 20 | 2 | 20 |
| S-7855 | S-20-C | 20 | 3 | 30 |
| S-7856 | S-19-A | 19 | 1 | 11 |
| S-7858 | S-19-B | 19 | 2 | 22 |
| S-7860 | S-19-C | 19 | 3 | 33 |
| S-7864 | S-18-B | 18 | 2 | 28 |
| S-7865 | S-18-C | 18 | 3 | 42 |

Monotype Flame Proof Jumper Wire



Monotype Jumper Wire is insulated by an exclusive process developed by Automatic Electric engineers. It has a very small diameter and exceptional flame proof and insulating qualities. In a series of carefully conducted comparative tests, it has proved its superiority on seven different points as follows:

1. Higher Insulation Resistance—At average room temperature and humidity, Monotype Jumper Wire shows substantially higher insulation resistance than any other wire tested.
2. Withstands Moisture Better—Monotype insulation resistance, under conditions of high temperature and humidity, is several times that of other types.
3. Better Insulation Recovery—Monotype insulation recovery, after drying out, is practically 100%. No other type approaches this performance.
4. Higher "Kink Test" Insulation—The foregoing

insulation tests show even more startling contrast when made with "kinked" wire.

5. Better Flame Proofing—The burning rate is appreciably slower than that of other jumper wires.

6. Complete Protection Against Corrosion—Monotype insulation is non-corrosive, and safeguards the conductor from external influence.

7. Brighter, More Lasting Colors — Transparent sheath improves and preserves color of insulation.

Monotype Jumper Wire is regularly supplied with No. 22 AWG enameled or tinned copper conductors. It can be supplied with No. 19 or 20 gauge conductors on special order. Furnished in convenient coils of 500 feet or in one piece lengths as specified.

No. 22 Tinned Enameled

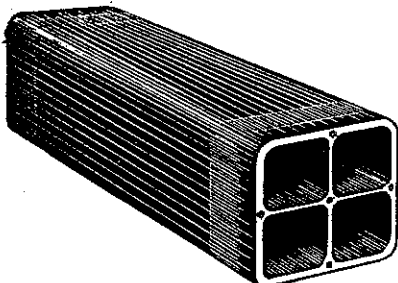
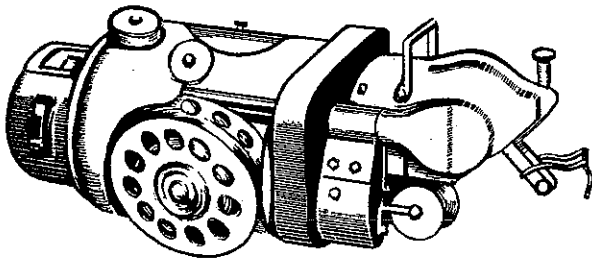
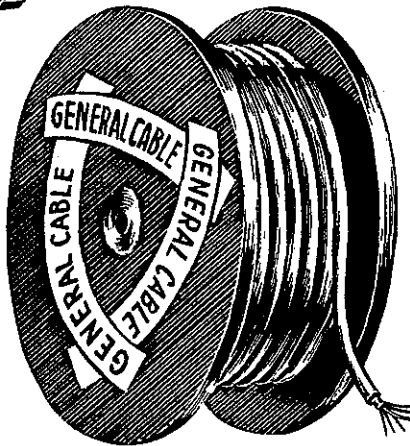
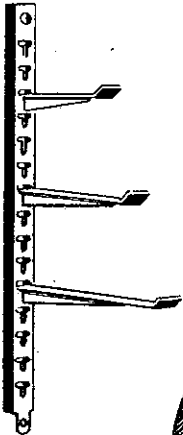
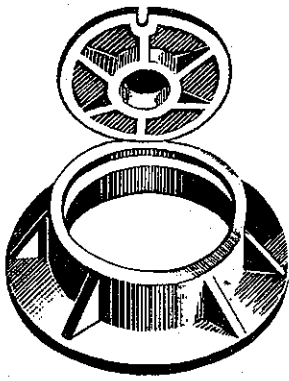
| Cat. No. | No. of Conductors | Colors | Weight per 1000 Ft., Lbs. |
|----------|-------------------|----------------------------|---------------------------|
| WA-50 | 1 | White | 2.70 |
| WA-51 | 2 | White and Red | 5.40 |
| WA-52 | 2 | White and Black | 5.40 |
| WA-53 | 3 | White, Red and Blue | 8.10 |
| WA-54 | 4 | White, Red, Blue and Black | 10.80 |

No. 22 Tinned Only

| Cat. No. | No. of Conductors | Colors | Weight per 1000 Ft., Lbs. |
|----------|-------------------|----------------------------|---------------------------|
| WA-55 | 1 | White | 2.70 |
| WA-56 | 2 | White and Red | 5.40 |
| WA-57 | 2 | White and Black | 5.40 |
| WA-58 | 3 | White, Red and Blue | 8.10 |
| WA-59 | 4 | White, Red, Blue and Black | 10.80 |

Comparison of Wire Gauges

| No. | Diameter in Millimeters B. & S. | American or Brown and Sharp (B.&S.) | Diameter in Inches Birmingham Wire Gauge (B.W.G.) | Washburn and Moen (W.&M.) | Old English Gauge (O.E.G.) | New British Standard (N.B.S.) |
|---------|---------------------------------|-------------------------------------|---|---------------------------|----------------------------|-------------------------------|
| 6..... | 4.115 | .1620 | .203 | .192 | .203 | .192 |
| 7..... | 3.665 | .1443 | .180 | .177 | .180 | .176 |
| 8..... | 3.264 | .1285 | .165 | .162 | .165 | .160 |
| 9..... | 2.906 | .1144 | .148 | .148 | .148 | .144 |
| 10..... | 2.588 | .1019 | .134 | .135 | .134 | .128 |
| 11..... | 2.304 | .0907 | .120 | .120 | .120 | .116 |
| 12..... | 2.052 | .0808 | .109 | .105 | .109 | .104 |
| 13..... | 1.83 | .0720 | .095 | .092 | .095 | .092 |
| 14..... | 1.628 | .0641 | .083 | .080 | .083 | .080 |
| 15..... | 1.45 | .0571 | .072 | .072 | .072 | .072 |
| 16..... | 1.29 | .0508 | .065 | .063 | .065 | .064 |
| 17..... | 1.149 | .0453 | .058 | .054 | .058 | .056 |
| 18..... | 1.0236 | .0403 | .049 | .047 | .049 | .048 |
| 19..... | .9115 | .0359 | .042 | .041 | .040 | .040 |
| 20..... | .81 | .0320 | .035 | .035 | .035 | .036 |
| 21..... | .7239 | .0285 | .032 | .032 | .0315 | .032 |
| 22..... | .6434 | .0254 | .028 | .028 | .0295 | .028 |
| 23..... | .574 | .0226 | .025 | .025 | .027 | .024 |
| 24..... | .5105 | .0201 | .022 | .023 | .025 | .022 |
| 25..... | .4547 | .0179 | .020 | .020 | .023 | .020 |
| 26..... | .4039 | .0159 | .018 | .018 | .0205 | .018 |
| 27..... | .3607 | .0142 | .016 | .017 | .0188 | .0164 |
| 28..... | .32 | .0126 | .014 | .016 | .0165 | .0148 |
| 29..... | .287 | .0113 | .013 | .015 | .0155 | .0136 |
| 30..... | .254 | .0100 | .012 | .014 | .0138 | .0124 |



SPINNING MACHINES

7 Cable — Cable Supplies

MANHOLE FRAMES

SPINNING WIRE

CABLE GUIDES

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Paper-Insulated Telephone Cables

*Manufactured by General Cable Corporation
for Automatic Electric Company*

Products of the General Cable Corporation are manufactured under strict supervision, with constant inspection and testing to insure rigid adherence to every specification detail. Over 50 years of experience and constant research guarantee you the finest cable in every respect—in conductors, insulation and sheath.

The Conductors in General Cable are of bright annealed copper wire, rolled and drawn from high-conductivity copper-wire bars.

The Insulation is dry paper, the accepted standard for lead-sheathed telephone cables. It provides maximum transmission efficiency and reliability consistent with economical first cost and maintenance. Dry paper insulation does not deteriorate; it has an extremely long life. This insulation is loosely applied and is of contrasting color on the two conductors of each pair. Successive layers of the paired wires are laid up helically and the final assembly is then covered with more wrappings of paper.

The Sheath is a lead-antimony alloy developed by extensive research in General Cable Corporation laboratories. The life of dry-paper cables is dependent upon a strong and ductile sheath that will remain free from leaks; General Cable manufacturing techniques and standards produce lead sheaths as near to perfection as science has been able to design them.

As a final check of its integrity, the sheath is subjected to an internal gas pressure test immediately before shipment. The pressure is maintained in the cables for 24 hours, or until it becomes stationary, thus giving absolute assurance against leaks.

Several standard types of paper-insulated lead-sheathed cables used by the telephone industry for local or loop service are described in the following pages. Each of these types is recommended for certain applications:

Lead-antimony sheathed cables without further protection are used for aerial service or for underground service in conduit.

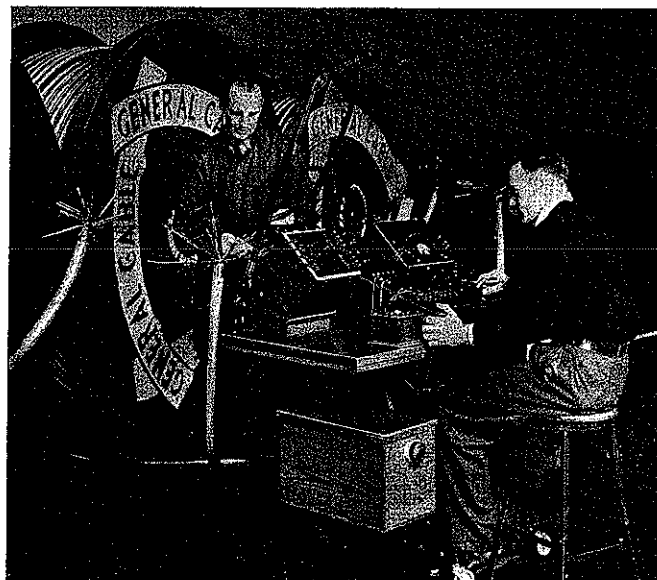
Lead-antimony sheathed cables enclosed within further protective coverings of impregnated jute and steel tape armor are used for direct installation in the earth.

Conventional protective jackets can also be applied over the lead-antimony sheathed cables for installations where corrosive or electrolytic conditions are known to warrant the extra protection.

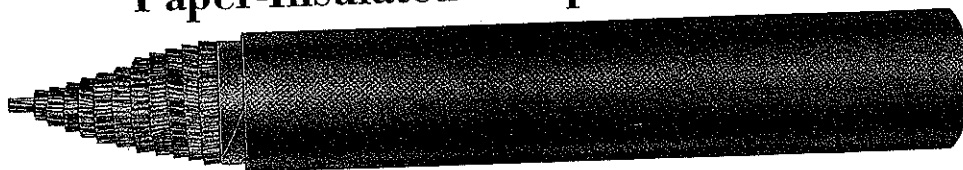
Steel-wire armored cables of special design are used for underwater service.

Testing Telephone Cable

Over 50 years of scientific research and development are behind the cable manufactured by General Cable Corporation. This research and development is your guarantee of long life and low maintenance costs.



Paper-Insulated Telephone Cables



Type 24S-90—(No. 24 AWG)

Conductors: Size 24 AWG with single-wrap dry paper insulation.

Color Coding: Standard color groups.

Mutual Capacitance: (a-c testing): Average not exceeding .090 microfarads per mile of cable.

Conductor Resistance: Not to exceed 145 ohms per mile of cable at 68°F.

Insulation Resistance: Not less than 500 meg-ohm miles.

Dielectric Strength: Insulation capable of withstanding for 2 seconds a-c test potential of 500 volts crest between conductors and 1400 volts crest between conductors and sheath.

Attenuation: Approximately 2.20 decibels per loop mile (1000 cycles).

Sheath: Lead-antimony alloy.

| Number of Pairs in Cable | Number of Guaranteed Pairs | Reel Length, Feet | Sheath Thickness, Inches | Mean Overall Diameter, Inches | Weight per 1000 ft., Lbs. |
|--------------------------------|----------------------------------|-------------------------|--------------------------------|-------------------------------------|---------------------------------|
| 11 | 10 | 3500 | .061 | .40 | 370 |
| 16 | 15 | 3500 | .062 | .43 | 430 |
| 26 | 25 | 3500 | .064 | .49 | 530 |
| 51 | 50 | 3000 | .067 | .61 | 800 |
| 76 | 75 | 2500 | .069 | .72 | 1020 |
| 101 | 100 | 2500 | .071 | .79 | 1200 |
| 152 | 150 | 2500 | .075 | .92 | 1620 |
| 202 | 200 | 1800 | .078 | 1.05 | 1950 |
| 303 | 300 | 1600 | .082 | 1.24 | 2650 |
| 404 | 400 | 1400 | .087 | 1.41 | 3285 |
| 606 | 601 | 1100 | .093 | 1.71 | 4625 |
| 909 | 902 | 900 | .101 | 2.06 | 6610 |
| 1212 | 1203 | 650 | .109 | 2.38 | 8580 |

Jute or Parkway Finish is also available. Specifications are identical

Type 22S-90—(No. 22 AWG)

Conductors: Size 22 AWG with single wrap dry paper insulation.

Color Coding: Standard color groups.

Mutual Capacitance (a-c testing): Average not exceeding .090 microfarads per mile of cable.

Conductor Resistance: Not to exceed 92 ohms per mile of cable at 68° F.

Insulation Resistance: Not less than 500 meg-ohm miles.

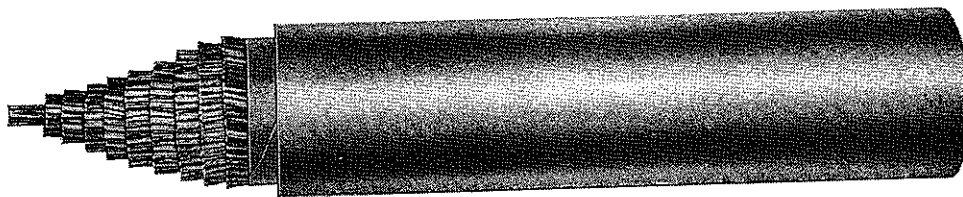
Dielectric Strength: Insulation capable of withstanding a-c test potential for 2 seconds (maximum instantaneous) of 500 volts between conductors, and 1400 volts between conductors and sheath.

Attenuation: Approximately 1.80 decibels per loop mile (1000 cycles).

Sheath: Lead-antimony alloy.

| Number of Pairs in Cable | Number of Guaranteed Pairs | Reel Length, Feet | Sheath Thickness, Inches | Mean Overall Diameter, Inches | Weight per 1000 ft., Lbs. |
|--------------------------------|----------------------------------|-------------------------|--------------------------------|-------------------------------------|---------------------------------|
| 11 | 10 | 3500 | .063 | .45 | 480 |
| 16 | 15 | 3500 | .064 | .50 | 580 |
| 26 | 25 | 3500 | .066 | .58 | 735 |
| 51 | 50 | 3000 | .070 | .75 | 1095 |
| 76 | 75 | 2500 | .073 | .86 | 1380 |
| 101 | 100 | 2500 | .076 | .98 | 1660 |
| 152 | 151 | 1600 | .080 | 1.14 | 2320 |
| 202 | 201 | 1600 | .084 | 1.29 | 2440 |
| 303 | 301 | 1400 | .091 | 1.56 | 3900 |
| 404 | 401 | 1200 | .095 | 1.77 | 4750 |
| 606 | 602 | 900 | .104 | 2.13 | 6845 |
| 909 | 903 | 650 | .115 | 2.56 | 9975 |

Jute or Parkway Finish is also available. Specifications are identical



Type 19S-90—(No. 19 AWG)

Conductors: Size 19 AWG with single-wrap dry paper insulation.

Color Coding: Standard color groups.

Mutual Capacitance (a-c testing): Average not exceeding .090 microfarads per mile of cable.

Conductor Resistance: Not to exceed 46 ohms per mile of cable (68°F.).

Insulation Resistance: Not less than 500 meg-ohm miles.

Dielectric Strength: Insulation capable of withstanding a-c test potential for 2 seconds (maximum instantaneous) of 700 volts between conductors, and 1400 volts between conductors and sheath.

Attenuation: Approximately 1.30 decibels per loop mile (1000 cycles).

Sheath: Lead-antimony alloy.

| No. of Pairs in Cable | No. of Guaranteed Pairs | Reel Length, Feet | Sheath Thickness, Inches | Mean Overall Diameter, Inches | Weight per 1000 ft., Lbs. |
|-----------------------|-------------------------|-------------------|--------------------------|-------------------------------|---------------------------|
| 6 | 5 | 3500 | .063 | .47 | 500 |
| 11 | 10 | 3500 | .065 | .57 | 675 |
| 16 | 15 | 3500 | .067 | .65 | 835 |
| 26 | 25 | 3000 | .070 | .75 | 1100 |
| 51 | 50 | 2500 | .075 | .96 | 1635 |
| 76 | 75 | 1800 | .080 | 1.14 | 2325 |
| 101 | 100 | 1600 | .084 | 1.29 | 2805 |
| 152 | 151 | 1400 | .090 | 1.54 | 3870 |
| 202 | 201 | 1200 | .095 | 1.76 | 5040 |
| 303 | 302 | 900 | .104 | 2.13 | 6975 |
| 404 | 402 | 700 | .112 | 2.43 | 9075 |
| 455 | 452 | 650 | .115 | 2.56 | 10015 |

Jute or Parkway Finish is also available. Specifications are identical

Type 26S-85—(No. 26 AWG)

Conductors: Size 26 AWG with single-wrap dry paper insulation.

Color Coding: Color groups depending on size.

Mutual Capacitance (a-c testing): Average not exceeding .085 microfarad per mile of cable.

Insulation Resistance: Not less than 500 meg-ohm miles.

Dielectric Strength: Insulation capable of withstanding a test potential up to 500 volts a-c.

Attenuation: Approximately 2.9 decibels per mile.

Sheath: Lead-antimony alloy.

| No. of Pairs in Cable | No. of Guaranteed Pairs | Reel Length, Feet | Sheath Thickness, Inches | Mean OD of any 10 ft. section, Inches | Approx. Wt. per 1000 Ft. |
|-----------------------|-------------------------|-------------------|--------------------------|---------------------------------------|--------------------------|
| 11 | 10 | 3500 | .061 | .33 | 310 |
| 16 | 15 | 3300 | .061 | .36 | 360 |
| 26 | 25 | 4000 | .063 | .43 | 440 |
| 51 | 50 | 4200 | .065 | .53 | 640 |
| 76 | 75 | 3700 | .067 | .61 | 800 |
| 101 | 100 | 3500 | .069 | .69 | 950 |
| 152 | 150 | 2400 | .072 | .80 | 1240 |
| 202 | 200 | 2500 | .074 | .90 | 1450 |
| 303 | 300 | 1600 | .078 | 1.07 | 1940 |
| 404 | 400 | 1600 | .081 | 1.20 | 2410 |
| 606 | 601 | 1400 | .087 | 1.44 | 3370 |
| 909 | 902 | 1100 | .094 | 1.74 | 4810 |
| 1212 | 1203 | 900 | .100 | 2.00 | 6090 |
| 1818 | 1806 | 800 | .110 | 2.41 | 8440 |
| 2121 | 2108 | 800 | .115 | 2.61 | 10180 |

Jute or Parkway Finish is also available. Specifications are identical

Type 16S-72—(No. 16 AWG)

Conductors: Size 16 AWG with single wrap dry paper insulation.

Color Coding: Green-orange pairs alternating with blue-orange pairs, and a red-orange pair in each layer containing an odd number of pairs. Two orange-white tracer pairs, one in the center and one in the outside layer.

Mutual Capacitance (a-c testing): Average not exceeding .072 microfarads per mile of cable.

Conductor Resistance: Not to exceed 23 ohms per mile of cable at 68°F.

Insulation Resistance: Not less than 500 meg-ohm miles.

Dielectric Strength: Insulation capable of withstanding a-c test potential for 2 seconds (maximum instantaneous) of 1000 volts between conductors, and 1400 volts between conductors and sheath.

Attenuation: Approximately 0.75 decibels per loop mile (1000 cycles).

Sheath: Lead-antimony alloy.

| Number of Pairs in Cable | Reel Length, Feet | Sheath Thickness, Inches | Mean Overall Diameter, Inches | Weight per 1000 ft., Lbs. |
|--------------------------|-------------------|--------------------------|-------------------------------|---------------------------|
| 11 | 2000 | .072 | .85 | 1200 |
| 16 | 1500 | .075 | .98 | 1540 |
| 26 | 1500 | .080 | 1.14 | 2100 |
| 51 | 1200 | .089 | 1.50 | 3330 |
| 101 | 800 | .103 | 2.06 | 6050 |
| 152 | 600 | .113 | 2.47 | 8350 |

Jute or Parkway Finish is also available. Specifications are identical

Rubber-Insulated Telephone Cable

For underground distribution, service connections, mines and other locations where severe moisture conditions are encountered. When a subscriber objects to an overhead drop, many telephone companies are making it a practice to install this wire upon payment of extra cost and extra installation charges. Furnished in the required number of pairs, of size 19 AWG annealed, tinned or lead-alloy-coated copper wire, each conductor rubber-insulated to a diameter of .094". Pairs are cabled together with jute fillers (except the two-pair construction where the four conductors are cabled around a jute center); a rubber-faced tape is used to bind the core, and a tightly fitting sheath is applied over the taped core.

| Cat. No. | No. Pairs | Sheath Thickness | Overall Diam., In. | Wt. Per 1000', Lbs. |
|----------|-----------|------------------|--------------------|---------------------|
| S-7980 | 1 | .047" | .31 | 260 |
| S-7982 | 2 | .047" | .35 | 310 |
| S-7986 | 6 | .047" | .64 | 810 |

Switchboard Cables

Textile-insulated switchboard cables for installation of telephone equipment, interior distribution or terminating other cables. Conductors are No. 22 annealed copper tinned or tinned enamel, insulated with double acetate yarns and single cotton servings. Standard color coding. Saturated waxed core.

Braided Type—Tinned Conductors

| Cat. No. | Pairs | Wt. Per 100 Ft., Lbs. |
|----------|-------|-----------------------|
| WB-10 | 6 | 5 |
| WB-11 | 11 | 7 |
| WB-12 | 16 | 10 |
| WB-13 | 26 | 15 |
| WB-14 | 51 | 30 |
| WB-15 | 101 | 75 |

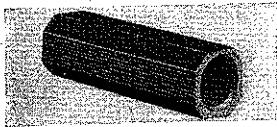
Lead Covered—Tinned Conductors

| | | |
|-------|-----|-----|
| WB-16 | 6 | 20 |
| WB-17 | 11 | 28 |
| WB-18 | 16 | 36 |
| WB-19 | 26 | 49 |
| WB-20 | 51 | 82 |
| WB-21 | 101 | 140 |

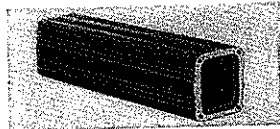
Lead Covered—Tinned Enameled Conductors

| | | |
|-------|-----|-----|
| WB-22 | 6 | 20 |
| WB-23 | 11 | 28 |
| WB-24 | 16 | 36 |
| WB-25 | 26 | 49 |
| WB-26 | 51 | 82 |
| WB-27 | 101 | 140 |

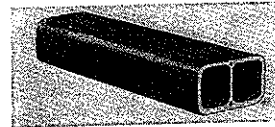
Clay Conduit



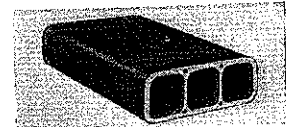
Single Duct— $3\frac{1}{4}$ ", $3\frac{1}{2}$ " and $4\frac{1}{4}$ " Round bore—18" long.



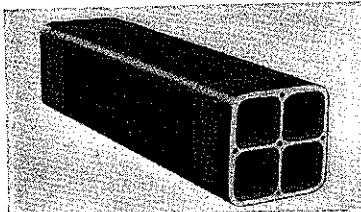
Single Duct — $3\frac{1}{4}$ " x 24" lg. and $4\frac{1}{4}$ " x 18" lg.—Sq. bore.



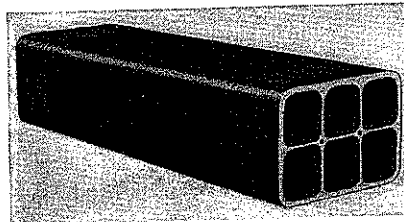
2-way— $3\frac{1}{4}$ ", $3\frac{1}{2}$ " and $4\frac{1}{4}$ " bore—24" long



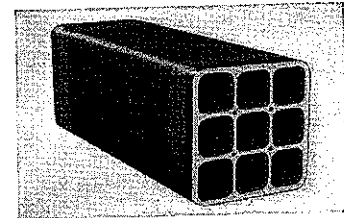
3-way— $3\frac{1}{4}$ ", $3\frac{1}{2}$ " and $4\frac{1}{4}$ " bore—24" long.



4-way— $3\frac{1}{4}$ ", $3\frac{1}{2}$ " and $4\frac{1}{4}$ " bore—36" long.



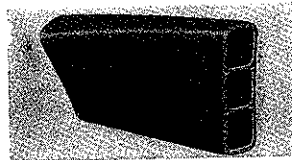
6-way— $3\frac{1}{4}$ ", $3\frac{1}{2}$ " and $4\frac{1}{4}$ " bore—36" long.



9-way— $3\frac{1}{4}$ " bore—36" long.
9-way— $4\frac{1}{4}$ " bore—24" long.



Mitered Conduit 3° —10' Radius (for curve const.) $3\frac{1}{4}$ ", $3\frac{1}{2}$ " and $4\frac{1}{4}$ " bore—Approx. length $6'' \times 6\frac{3}{4}''$; 2, 3 and 6-way, edge or flat position; 4 and 9-way in one position.



Transposition Conduit (for transposing ducts and cables) 24" long
2, 3 and 6-way, $3\frac{1}{4}$ " bore; $22\frac{1}{2}^{\circ}$ R.H. or L.H.
2, 3 and 6-way, $3\frac{1}{2}$ " bore; 18° R.H. or L.H.
2, 3 and 6-way, $4\frac{1}{4}$ " bore; 15° R.H. or L.H.



Branch Conduit (for dividing line)
 $3\frac{1}{4}$ ", $3\frac{1}{2}$ " and $4\frac{1}{4}$ " bore—24" long;
2, 3, 4, 6 and 9-way for 2 branches;
3 and 6-way for 3 branches.

Short lengths—1, 4, 6 and 9-way—6", 9" and 12" long. 2 and 3-way—6", 8" and 12" long.)

Clay conduit is manufactured from special high-grade fire clays, vitrified at over 2,000 degrees, and salt glazed to provide permanently smooth duct surfaces. Because of the following characteristics, it has been adopted as standard material for underground cable work by many telephone companies:

Permanence—Clay conduit is permanent because it will not soften, swell, or disintegrate on exposure to heat, moisture, frost, steam or chemical attack.

Strength—The thickness of the walls and webs of clay conduit gives it the strength to safely carry street loads and to permit immediate back-filling of the trench. Modern shipping methods insure arrival on the job in good condition with strength unimpaired.

Flexibility—The comprehensive line of shapes and sizes as illustrated assures extreme flexibility in con-

struction, fewer manholes and consequently less splicing and bending of cables and lower installation costs. The smooth duct surfaces provide easy and safe cable pulling.

Low Cost—The economy of clay conduit is evident in savings in maintenance. Repairs to cables can easily be made and the duct line restored to normal with split conduit. Salvage or complete replacement of valuable cables can be made at any time with little expense.

The listings above show all sizes in standard shapes. Scored or split shapes can also be furnished.

Full stocks strategically located assure prompt shipments. Engineering service furnished on special conduit problems.

Clay Conduit—Cont'd.

| Number per piece | Duct holes Standard bore, in. | Number of* dowel holes | Standard length, in. | Duct feet per piece | Actual size of duct hole, in. | Approximate outside dimensions, in. | Lengths in which short pieces are made, in. | Minimum carload, duct feet | Approx. Wt. per piece, pounds |
|----------------------|-------------------------------------|------------------------------|----------------------------|---------------------------|-------------------------------------|---|---|----------------------------------|-------------------------------------|
| Single Duct | | | | | | | | | |
| 1 | 3 1/4 round | 0 | 18 | 1 1/2 | 3 3/8 | 4 1/2 x 4 1/2 | 6, 9, 12 | 8700 | 12 |
| 1 | 3 1/2 round | 0 | 18 | 1 1/2 | 3 5/8 | 4 7/8 x 4 7/8 | 6, 9, 12 | 6900 | 15 |
| 1 | 4 1/4 round | 0 | 18 | 1 1/2 | 4 3/8 | 5 5/8 x 5 5/8 | 6, 9, 12 | 5700 | 18 |
| 1 | 3 1/4 square | 4 | 24 | 2 | 3 3/8 | 4 3/4 x 4 3/4 | 6, 9, 12 | 6100 | 20 |
| 1 | 3 1/2 square | 0 | 18 | 1 1/2 | 3 5/8 | 5 x 5 | 6, 9, 12 | 5700 | 17 |
| 1 | 4 1/4 square | 4 | 18 | 1 1/2 | 4 3/8 | 5 7/8 x 5 7/8 | 6, 9, 12 | 4800 | 21 |
| Multiple Duct | | | | | | | | | |
| 2 | 3 1/4 square | 2 | 24 | 4 | 3 3/8 | 4 3/4 x 8 3/4 | 6, 8, 12 | 8200 | 34 |
| 3 | 3 1/4 square | 4 | 24 | 6 | 3 3/8 | 4 3/4 x 12 3/4 | 6, 8, 12 | 8100 | 48 |
| 4 | 3 1/4 square | 5 | 36 | 12 | 3 3/8 | 8 3/4 x 8 3/4 | 6, 9, 12 | 9600 | 87 |
| 6 | 3 1/4 square | 2 | 36 | 18 | 3 3/8 | 8 3/4 x 12 3/4 | 6, 9, 12 | 10000 | 130 |
| 8 | 3 1/4 square | 3 | 36 | 24 | 3 3/8 | 8 3/4 x 16 3/4 | 6, 9, 12 | 10000 | 187 |
| 9 | 3 1/4 square | 4 | 36 | 27 | 3 3/8 | 12 3/4 x 12 3/4 | 6, 9, 12 | 10000 | 168 |
| 2 | 3 1/2 square | 2 | 24 | 4 | 3 5/8 | 5 1/8 x 9 5/8 | 6, 8, 12 | 7000 | 36 |
| 3 | 3 1/2 square | 4 | 24 | 6 | 3 5/8 | 5 1/8 x 13 5/8 | 6, 8, 12 | 7200 | 54 |
| 4 | 3 1/2 square | 5 | 36 | 12 | 3 5/8 | 9 5/8 x 9 5/8 | 6, 9, 12 | 8200 | 100 |
| 6 | 3 1/2 square | 2 | 36 | 18 | 3 5/8 | 9 5/8 x 13 5/8 | 6, 9, 12 | 8600 | 145 |
| 2 | 4 1/4 square | 2 | 24 | 4 | 4 3/8 | 5 1/8 x 11 | 6, 8, 12 | 5600 | 50 |
| 3 | 4 1/4 square | 4 | 24 | 6 | 4 3/8 | 5 1/8 x 16 1/8 | 6, 8, 12 | 6000 | 70 |
| 4 | 4 1/4 square | 5 | 36 | 12 | 4 3/8 | 11 x 11 | 6, 9, 12 | 6600 | 130 |
| 6 | 4 1/4 square | 2 | 36 | 18 | 4 3/8 | 11 x 16 1/8 | 6, 9, 12 | 6800 | 185 |
| 9 | 4 1/4 square | 4 | 24 | 18 | 4 3/8 | 16 1/8 x 16 1/8 | 6, 9, 12 | 7300 | 170 |

* For dowels, see Page 130.

Single Duct Bends



Single Duct Bends can be furnished in all standard bores in either 90 degree 18 and 24 inch radii or in 45 degree 18, 24 and 36 inch radii.

Bends can be furnished knifed for splitting.

Joint Paper Tape

Paraffin paper used for wrapping clay-conduit joints before pouring cement or mortaring. Furnished in 4- and 6-inch widths, 100 yards per roll.

Special Shapes and Types

For constructing curves of 10 foot radius or more in single or multiple duct, mitered conduit may be used. Mitered conduit is furnished 3 degree, 10 foot radius and approximately 6 inches long. (30 pieces making one 90 degree curve.) As the 2, 3, and 6 way are furnished in flat and edge position, the customer should specify whether the conduit is to be laid flat or on edge. The radius of the curves built of these sections may be increased by interposing straight short pieces between the mitered pieces.

Branch Conduit

Branch conduit permits the division of multiple duct main lines into two or more branch lines. Such a division is highly advantageous in splaying main

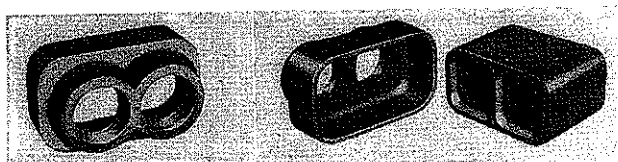
duct lines into central offices, manholes or cable vaults, or for lateral or service connections — frequently saving the necessity of a manhole. Standard length 24 inches.

Transposition Conduit

Transposition conduit (two, three, and six way) is of considerable advantage in changing the position or height of conduit lines, in order to avoid certain streets, or to cross viaducts or bridges—frequently saving the necessity of a manhole. Standard length is 24".

The 3 1/4" bore requires 4 pieces or 8 feet to make a 90 degree turn, the 3 1/2" bore 10 feet and the 4 1/4" bore 12 feet.

Pipe Connectors



For the purpose of connecting clay conduit to cast iron or steel pipe for pole risers or entering buildings, pipe connectors are available in 3 1/4", 3 1/2" and 4 1/4" bore in single, 2, 3 and 4 way. The 3 1/4" and 3 1/2" inch bore is reamed for 3" pipe and the 4 1/4" bore for 4" pipe. Also furnished threaded on special order.

Fibre Conduit

Straight, tough, uniform tubes for underground cable duct. Made of fibrous pulp saturated with a preservative and water-proofing compound. Not affected by heat, cold or acids which may be present in ground. Light in weight—two men can easily carry 200 feet. Readily cut with lathe tools or saw.

Generally supplied in an assortment of five and eight-foot lengths. Approximately 15% short lengths with each order saves time and labor by reducing the number of standard lengths usually cut. Harrington or Socket joints furnished as specified (if type is not specified on order Harrington joints will be shipped).

For the Harrington joint the tapered end fits snugly into a sleeve, or coupling, furnished with each length of conduit. The socket joints (male and female) are carefully cut and fitted so that they make their own water-tight connection, with no offset inside.

Standard bends and elbows are available in "S" bends, 90 degree and 45 degree elbows and bends. Bends and elbows should not be confused, as an elbow has a smaller radius than a bend. These are designed with smooth inside bore to facilitate pulling cable through.

Fibre plugs, butt joint couplings, solid and split bushings and fibre duct bells are available on order.

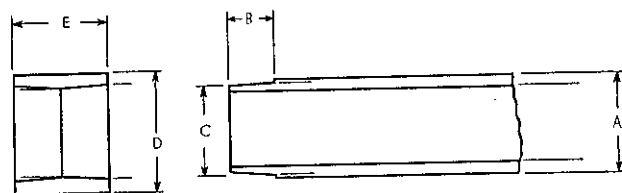
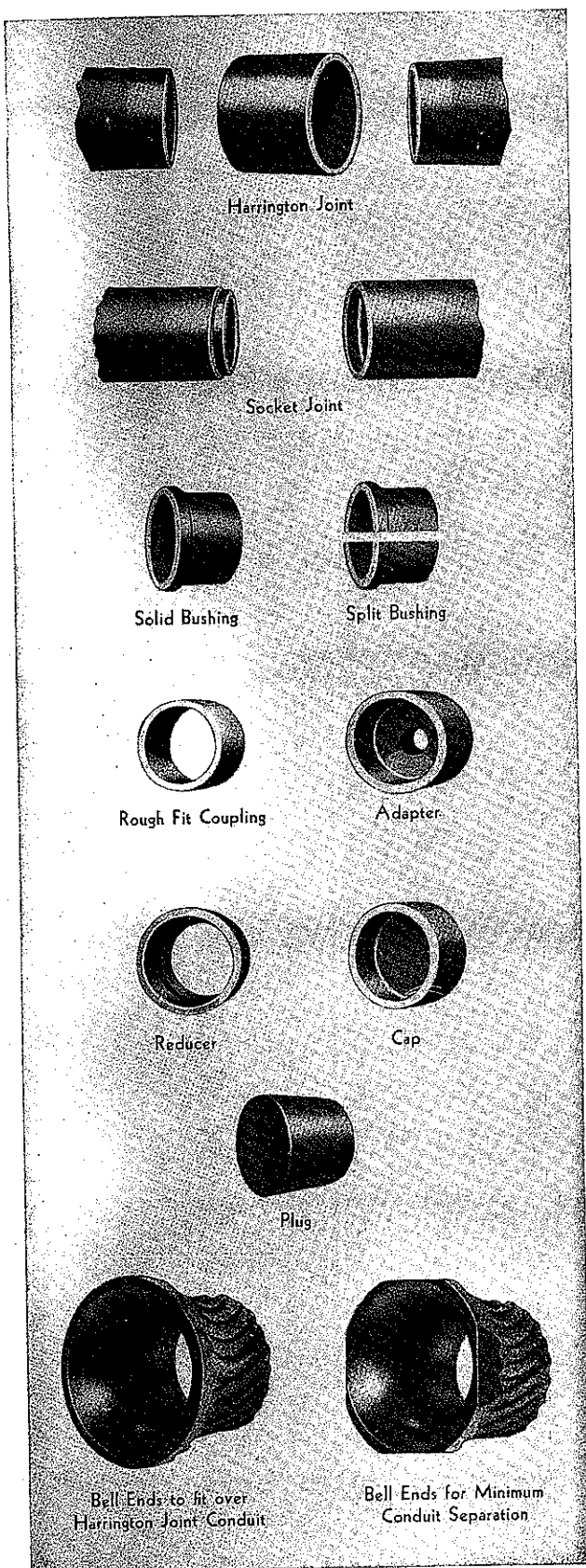


Chart of Harrington Conduit and Couplings

| Size of Conduit | Dimensions in Inches | | | | |
|--------------------|----------------------|-------|-------|-------|------|
| | A | B | C | D | E |
| 1½ | 2.094 | 1.313 | 1.920 | 2.469 | 2.75 |
| 2 | 2.563 | 1.438 | 2.390 | 2.969 | 3.00 |
| 2½ | 3.063 | 1.438 | 2.900 | 3.469 | 3.00 |
| 3½ | 4.063 | 1.688 | 3.897 | 4.531 | 3.50 |
| 3 | 3.530 | 1.688 | 3.350 | 3.969 | 3.50 |
| 4 | 4.566 | 1.938 | 4.378 | 5.000 | 4.00 |
| 4½ | 5.142 | 1.938 | 4.957 | 5.656 | 4.00 |
| 5 | 5.738 | 1.938 | 5.553 | 6.371 | 4.00 |

Inter-Locking Wood Conduit

Manufactured from selected Southern Pine, lengthwise split, treated with the best grade of Creosote, 15 lbs. to the cubic foot. Conduit can be opened for repairs at any point. Can be furnished in single ducts or in any multiple desired to meet requirements.

The single ducts have mortised and tenoned joints, the multiples are finished with butt joints.

Furnished in the following sizes:

| Size, Inches | Weight Per Ft. of Single Duct, Lbs. |
|--------------|--|
| 2 | 3 |
| 3 | 5 |
| 3½ | 6 |
| 4½ | 8 |

Pipe Bends and Conduit Fittings

Pipe bends serve many purposes in subsidiary conduit construction and are used particularly where cable emerges from the ground at poles or at buildings. They are made of a good grade of cast iron with ends flanged as illustrated for the fittings. All bends are 90°.

The fittings are formed as shown with one end to fit under the "U" cable guard and the other end to fit the pipe bend.

Pipe Bends

| Cat. No. | Inside Diam., In. | Radius of Curve, In. | Wt., Lbs. |
|----------|----------------------|-------------------------|--------------|
| S-2466 | 2 | 24 | 27 |
| S-2468 | 3 | 30 | 41 |

Pipe Caps

| Cat. No. | Joins Cable Guard Cat. No. | To Pipe Bend Size, In. | Wt. of Caps, Lbs. |
|----------|----------------------------------|------------------------------|----------------------|
| S-3272 | S-4512 | 2 | 1¼ |
| S-3270 | S-4512 | 3 | 2½ |
| S-3268 | S-4514 | 3 | 2 |

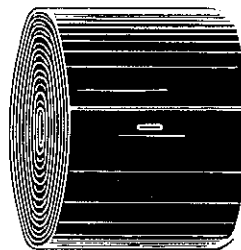
Korite Compound

A non-corrosive, acid resisting, non-conducting material used to protect underground cable without the use of conduit. Melting point is approximately 175° F.

Korite is easy to apply. A trench is dug and a wooden or metal trough is placed beside it. A strip of tarred felt paper is then laid in the trough and coating of Korite applied. After the compound has cooled slightly, the cable is laid on it and more Korite is poured over it. The paper is then wrapped about the cable and as soon as the compound cools, the cable is laid in the trench and the earth filled in.

100 lbs. of Korite will coat about 325 feet of 25 pairs, 300 feet of 50 pairs, 200 feet of 75 pairs, 165 feet of 100 pairs, 150 feet of 125 pairs, 125 feet of 150 pairs, and 100 feet of 200 pairs.

| Cat. No. | Wt. per Container, Lbs. |
|--------------|----------------------------|
| S-5628 | 100 |

Tarred Paper

Tarred felt-paper is used in conjunction with compounds such as Korite for underground cable installation. As described in paragraph on compound (above) it is used to wrap cable before burying. Furnished in rolls 144 feet long.

| Cat. No. | Width, In. | Wt. per Roll, Lbs. |
|----------|------------|-----------------------|
| S-7456 | 6 | 10 |

Dowel Pins

Used to assure proper alignment and smoothness when laying clay conduit. The Dowel Pins are inserted in holes provided in the end of each length.

| Cat. No. | Size, In. | Collar, In. | Wt. per 100, Lbs. |
|----------|-----------|-------------|----------------------|
| S-5706 | 1/8 x 3 | 5/8 | 9 |

Fibre Test Boards

Used for classifying pairs when testing out cable. Large, easy-to-read numbers that will not wash off. Standard numbering. Weights, 6 lbs. per 100.

| Cat. No. | Numbering |
|----------|-----------|
| S-2729 | 1- 51 |
| S-2730 | 51- 101 |
| S-2731 | 102- 152 |
| S-2732 | 152- 202 |
| S-2733 | 203- 253 |
| S-2734 | 253- 303 |
| S-2735 | 304- 354 |
| S-2736 | 354- 404 |
| S-2737 | 405- 455 |
| S-2738 | 455- 505 |
| S-2739 | 506- 556 |
| S-2740 | 556- 606 |
| S-2723 | 607- 657 |
| S-2724 | 657- 707 |
| S-2725 | 708- 758 |
| S-2726 | 758- 808 |
| S-2727 | 809- 859 |
| S-2728 | 859- 909 |
| S-2699 | 910- 960 |
| S-2701 | 960-1010 |
| S-2702 | 1011-1061 |
| S-2703 | 1061-1111 |
| S-2704 | 1112-1162 |
| S-2705 | 1162-1212 |

Linen Test Boards

For use in tagging out the conductors in connection with making test splices in cables. Weight, $\frac{3}{4}$ lbs. per 100. Consists of tag-linen strips $1\frac{7}{8}$ inches wide and $10\frac{1}{8}$ inches long having numbered holes and printed in the following sets of numbers:

| Cat. No. | Numbered |
|----------|----------|
| S-2741 | 1- 51 |
| S-2742 | 51-101 |
| S-2743 | 102-152 |
| S-2744 | 152-202 |
| S-2745 | 203-253 |
| S-2746 | 253-303 |
| S-2747 | 304-354 |
| S-2748 | 354-404 |
| S-2749 | 405-455 |
| S-2750 | 455-505 |
| S-2751 | 506-556 |
| S-2752 | 556-606 |

Underground Cable Racks

Hot Galvanized



Rack sections are made in three lengths which can be combined into almost any desired length. These sections are made from $1\frac{1}{2} \times 9/16 \times 3/16$ inch open-hearth channel steel, amply strong to support the heaviest cables. They should be fastened to manhole walls by means of $\frac{1}{2}$ -inch by four-inch expansion bolts.

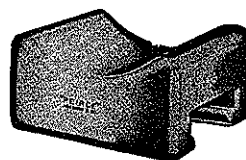
The hooks are cut from open-hearth steel "T" sections and have smooth, well-rounded top surfaces, $1\frac{1}{2}$ inches wide, which will not injure cables.

| Cat. No. | No. Holes | Length, In. | Bolt Spacing, In. | Wt. per 100, Lbs. |
|----------|-----------|-------------|-------------------|-------------------|
| S-6014 | 8 | 15 | 13 $\frac{1}{2}$ | 155 |
| S-6016 | 14 | 24 | 22 $\frac{1}{2}$ | 265 |
| S-6018 | 18 | 30 | 28 $\frac{1}{2}$ | 315 |

Cable Rack Hooks

| Cat. No. | Ext. Length, In. | Steel Size, In. | Wt. per 100, Lbs. |
|----------|------------------|---|-------------------|
| S-6020 | 4 | $1\frac{1}{2} \times 1\frac{1}{8} \times \frac{3}{8}$ | 61 |
| S-6022 | 7 $\frac{1}{2}$ | $1\frac{1}{2} \times 1\frac{1}{8} \times \frac{3}{8}$ | 110 |
| S-6024 | 10 | $1\frac{1}{2} \times 1\frac{1}{8} \times \frac{3}{8}$ | 135 |

Cable Rack Insulators

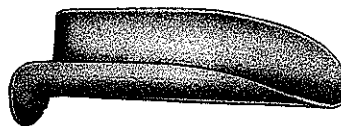


Used on channel-type rack. Provides a smooth, rounded surface for cable. Permits creepage without injury and furnishes proper insulation between cable and rack.

| Cat. No. | Radius for Cable, In. | Size, In. | Wt. per 100, Lbs. |
|----------|-----------------------|--------------------------|-------------------|
| S-4930 | 1 $\frac{1}{2}$ | 2 $\frac{3}{4} \times 3$ | 105 |

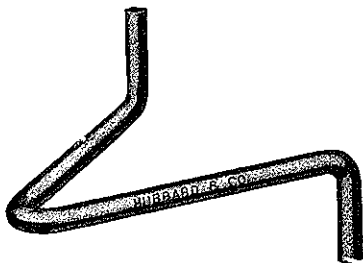
Zinc Cable Duct Shields

Hot Galvanized



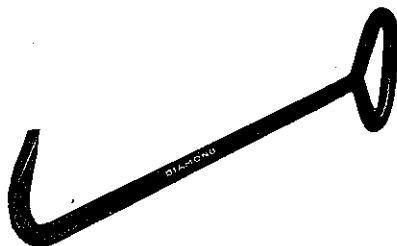
Used at the entrance of the duct to protect cable from creepage wear due to expansion and contraction of the sheaths.

| Cat. No. | Diam., In. | Length, In. | Wt. per 100, Lbs. |
|----------|-----------------|-------------|-------------------|
| S-6816 | 3 | 8 | 68 |
| S-6817 | 3 $\frac{1}{4}$ | 6 | 53 |

Pulling-In Irons

Pulling-In Irons are set into the concrete walls, or brick walls, of street vaults opposite duct entrances, to provide strong attachments for pulling in blocks when installing or removing cables.

| Cat. No. | Diam., Steel, In. | Extension, In. | Wt. per 100, Lbs. |
|----------|-------------------|----------------|-------------------|
| S-4958 | $\frac{7}{8}$ | 9 | 550 |
| S-4960 | $\frac{7}{8}$ | 12 | 650 |

Manhole Cover Hook

Designed to raise a manhole cover by prying the wedge-point end of the hook under the groove in the cover. High quality tool steel, suitably hardened to prevent bending.

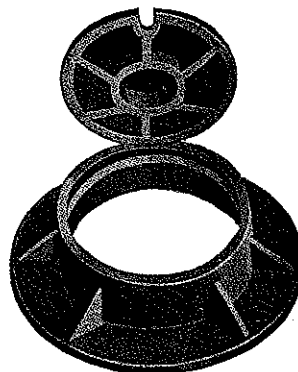
| Cat. No. | Length, In. | Wt. Lbs. |
|----------|-------------|----------|
| S-4828 | 26½ | 3 |

Gas Pressure Cable Testing

For gas pressure testing of aerial or underground cables and cable splices we offer a complete line of plugs, valves, cylinders of gas and all necessary equipment. These are shipped with complete instructions for using. Ask for further information and prices.

Loading Coils

The use of loading coils, even on relatively short runs of aerial or underground cable, has become an important requirement for best transmission under modern conditions. We are prepared to supply compact and efficient loading coil assemblies for any set of conditions. Write for technical information on Monotype Loading Coils, or send complete information and specifications for your proposed cable installation and we shall be glad to make recommendations.

Manhole Frames and Covers

Accurately formed but not machined. Weight used should be determined by traffic to be supported. Base diameters are 36 inches, covers, 22½ inches.

| Cat. No. | Type No. | Height, In. | Weight Set., Lbs. |
|----------|----------|-------------|-------------------|
| S-4255 | R-1015 | 9 | 540 |
| S-4256 | R-1030 | 9 | 450 |
| S-4257 | R-1040 | 9 | 400 |
| S-4258 | R-1077 | 7 | 325 |
| S-4259 | R-1080 | 6 | 320 |

Type B

Heavier cast type with machined cover to assure accuracy and eliminate cover rocking.

| Cat. No. | Type No. | Diam., In. | Weight Set., Lbs. |
|----------|----------|------------|-------------------|
| S-4249 | 11351 | 24 | 582 |
| S-4250 | 11353 | 27 | 670 |
| S-4251 | 14052 | 30 | 800 |

Manhole Ladders**Hot Galvanized**

Galvanized open-hearth steel manhole ladders. Supports are 1½x9/16x3/16 inch channel steel. Rungs are ⅝-inch round open-hearth steel. The rungs pass through the supports and are riveted on the outside of the ladder for greater safety. Rung spacing is 12 inches, ladder width (inside) 12 inches.



| Cat. No. | No. Rungs | Length, Ft. | Wt., Lbs. |
|----------|-----------|-------------|-----------|
| S-5142 | 5 | 6 | 23 |
| S-5143 | 6 | 6½ | 24½ |
| S-5144 | 7 | 8 | 30 |
| S-5145 | 9 | 10 | 38 |
| S-5146 | 10 | 11 | 42 |
| S-5147 | 11 | 12 | 46 |
| S-5148 | 12 | 13 | 49 |

Manhole Sheave



For pulling cable or carrying the winch line at right angles. Built for all sizes of cable up to three inches diameter, or any size winch line.

Can be used on end of truck, or over top of manhole, in connection with a snatch block in the manhole, eliminating the necessity of manhole skids.

Large sheave is three inches wide, diameter is $7\frac{3}{4}$ inches. Small sheave is three inches wide, $4\frac{3}{4}$ inches diameter. Furnished as illustrated including $\frac{1}{4}$ -inch chain, 24 inches long, with hook for anchoring when winch line is released suddenly.

| Cat. No. | Wt., Lbs. |
|--------------|-----------|
| S-6791 | 100 |

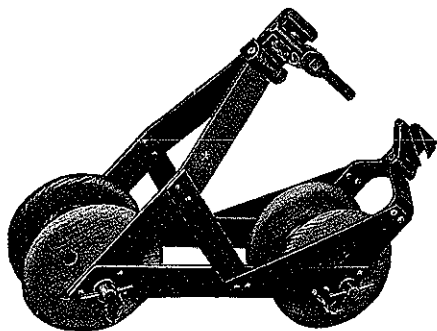
Skids and Sheaves



For leading the pulling line from the mouth of the duct through the manhole to the capstan or winch. The skids have pin holes every six inches from top to bottom, so that the sheaves can be placed at correct height to correspond to height of duct and top of manhole. Standard length nine feet. Other lengths are available on special order.

| Cat. No. | Length | Wt., Lbs. |
|----------|--------|-----------|
| S-3275 | 9 Ft. | 235 |

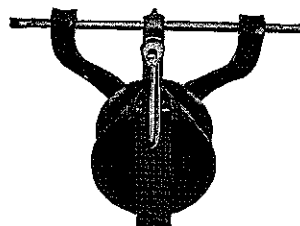
Aerial Cable Guides



With wood rollers. For pulling cable into supporting rings.

| Cat. No. | Wt., Lbs. |
|--------------|-----------|
| S-4536 | 32 |

Bierce Cable Rollers

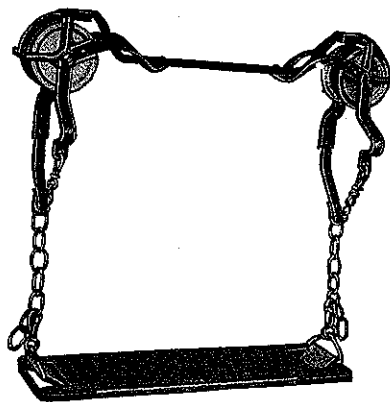


The frame is made of forged steel and the roller of cast iron, supported and protected on both sides by pressed steel disks, which insures the roller as well as the cable against injury, and prevents the cable or rope from catching when being pulled over the roller.

The clamping device is mounted upon the hinged member and allows the frame to be rigidly clamped in position without placing any side strain upon the messenger.

| Cat. No. | Wt., Lbs. |
|--------------|-----------|
| S-6256 | 7½ |

Lineman's Flexible Safety Chair



These flexible chairs can be collapsed, strapped and tied for convenient transportation. Adjustable, up or down, by snaps and chain.

Seat is made of high grade fir reinforced with strap steel imbedded in wood. Holes are provided in frame for safety belt attachment.

Electric welded link chain. Drop forged snaps. Rubber tired wheels that can easily be re-tired.

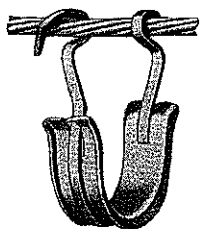
| Cat. No. | Height | Width, In. | Wt., Lbs. |
|----------|------------|------------|-----------|
| S-3317 | Adjustable | 21 | 27 |

Rigid Safety Chair

The framework is made of steel channels and braced with steel straps.

| Cat. No. | Height | Width, In. | Wt., Lbs. |
|----------|--------|------------|-----------|
| S-3316 | 25½" | 21 | 29 |

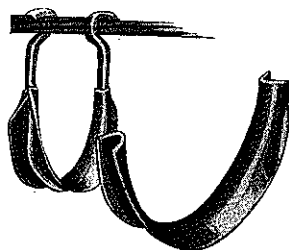
National Cable Ring Saddles



Made to fit inside of rings and support the cable sheath so that vibration will not cut and chafe it. Made of galvanized steel. Bronze or aluminum cable ring saddles available on special order.

| Cat. No. | Size, In. | Standard Package | Wt. per M, Lbs. |
|----------|-----------|------------------|-----------------|
| S-6290 | 1½ | 1000 | 90 |
| S-6294 | 2 | 1000 | 100 |
| S-6298 | 2½ | 500 | 110 |
| S-6306 | 3 | 500 | 135 |
| S-6307 | 3½ | 500 | 150 |

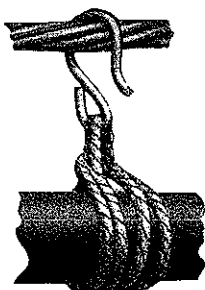
Kearney Cable Ring Saddles



Especially formed to be installed on rings now in service, to provide a wide, smoother bearing service for the cable sheath and eliminate ring-cutting. They are easily installed by closing the ends of the saddles around the rings,

as shown, with a pair of pliers. Made of soft aluminum. Available in five sizes.

| Cat. No. | Saddle Size, In. | Wt. per 100, Lbs. |
|----------|------------------|-------------------|
| S-6288 | 1½ | 2 |
| S-6292 | 2 | 2 |
| S-6296 | 2½ | 3 |
| S-6300 | 3 | 4 |
| S-6302 | 3½ | 4 |



Marline Cable Hangers

The hooks are made from No. 9 wire and are regalvanized by the hot-dip process after they are formed. This makes them practically rust-proof. The loop is three-ply marline twine in the lengths indicated in the listing below.

| Cat. No. | Max. Diam. Cable, In. | Loop Length, In. | Wt. per M, Lbs. |
|----------|-----------------------|------------------|-----------------|
| S-4723 | ⅞ | 9 | 35 |
| S-4711 | 1 | 10 | 36 |
| S-4712 | 1⅛ | 11 | 37 |
| S-4713 | 1¼ | 12 | 38 |
| S-4714 | 1½ | 13 | 39 |
| S-4715 | 1⅝ | 14 | 40 |
| S-4716 | 1¾ | 15 | 42 |
| S-4717 | 2 | 16 | 45 |
| S-4719 | 2¼ | 18 | 49 |
| S-4721 | 2½ | 20 | 62 |

Reliable Zinc Cable Hangers

These cable hangers have proved that wear on cable sheath can be eliminated. Hangers are rust-proof and unusually neat in appearance. Entire sheath is solidly grounded to messenger and grade clamp is not needed as cable will not creep on steep grades.

Maintenance cost of aerial cable is materially reduced and enclosure of entire cable and messenger with cable moulding may be made.

Pull cable into rings spaced six to ten feet apart to support cable while Reliable hangers are placed.

Use three bolt cable suspension clamps with groove below through bolt or universal messenger hangers. Messenger safety straps are not needed except on very large cables.

Wear gloves with leather-faced fingers.

Select the correct size Reliable hanger for clamping the cable and cable splice from this table:

| Cat. No. | Type | Length, In. | Max. Cable Size on ⅝-in. Str. | Wt. per 1000, Lbs. |
|----------|------|-------------|-------------------------------|--------------------|
| S-4724 | 1 | 7⅞ | ¾" | 50 |
| S-4725 | 2 | 11 | 1⅛" | 65 |
| S-4726 | 3 | 14 | 1⅝" | 105 |
| S-4727 | 4 | 16 | 2" | 135 |

Larger sizes are available on request

Space the hangers 20" apart but not nearer than 10" from any splice.



1

"V" opening near bottom of cable

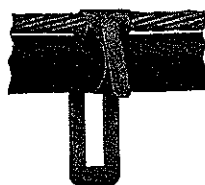


2

Remove bends and fit hanger snugly to cable

Wrap cable with lead strips (suspension clamp shields) under each piece of messenger hardware which might abrade cable sheath, or

Suspend cable to clear messenger hardware by using one adjustable cable strap on each side.



3

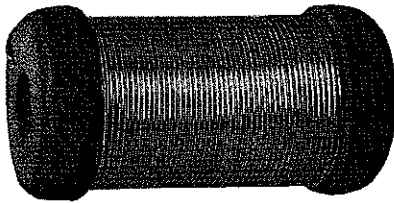
Bend both ends sharply over strand



4

Do not use cutting jaws of pliers on hangers

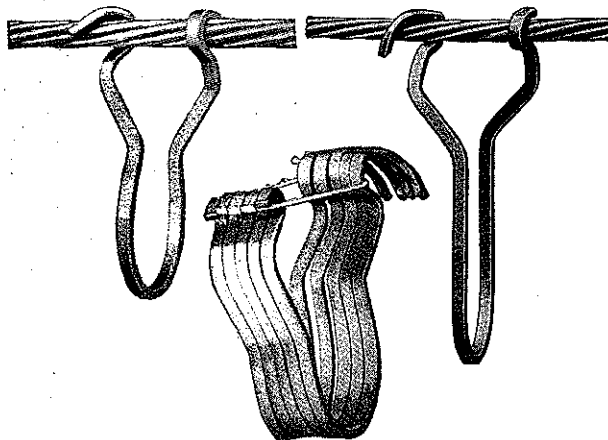
Lashing Wire



For use in lashing lead sleeves and for attaching aerial cable to supporting strand. Consists of No. 16 B. & S. Ga. annealed tinned copper wire. Approx. 1 lb. spool.

| Cat. No. | Std. Pkg., Lbs. |
|----------|-----------------|
| S-7810 | 30 |

National Cable Rings



National Rings have a reputation for dependability. With them you can pull the cable either way. You don't have to reride the messenger to replace or respace rings. Once placed, because of the tension-grip, they remain rigidly in place and will not slip along, or jump off, the messenger.

National Rings are made from the finest materials procurable and are hot-dip galvanized by a special process assuring maximum smoothness.

National Extra-Long Rings, designed to enable you to hang an additional cable on existing strand, create savings in time and material.

Regular Galvanized

| Cat. No. | Size In. | For Cable Diam., In. | Standard Package | Wt. per 1000, Lbs. |
|----------|----------|----------------------|------------------|--------------------|
| S-6118 | 1½ | ½ to 1½ | 1000 | 47 |
| S-6119 | 2-Light | ½ to 1½ | 500 | 66 |
| S-6121 | 2-Heavy | ½ to 1½ | 500 | 90 |
| S-6123 | 2½ | 1½ to 1½ | 500 | 106 |
| S-6125 | 3 | 1½ to 2½ | 400 | 125 |
| S-6071 | 3½ | 2½ to 2½ | 300 | 140 |
| S-6073 | 4 | 2½ to 3 | 250 | 250 |
| S-6075 | 4½ | 3 to 3½ | 250 | 210 |

Regular rings are made in all strand sizes—specify size desired.

Regular Copperweld

| Cat. No. | Size, In. | Strand Size, Inches | Wt. per 1000, Lbs. |
|----------|-----------|---------------------|--------------------|
| S-6133 | 1½ | ⅞ to ⅞ | 43 |
| S-6134 | 2 | ⅞ to ⅞ | 96 |
| S-6135 | 2½ | ⅞ | 110 |
| S-6136 | 3 | ⅞ | 125 |
| S-6137 | 3½ | ⅞ | 140 |

Standard packages of 1000 each.

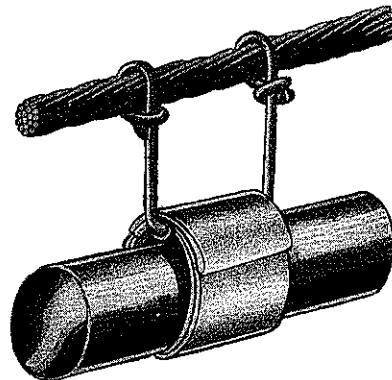
Extra-Long Galvanized

| Cat. No. | Size, In. | Length Under Strand, In. | Standard Package | Wt. per 1000, Lbs. |
|----------|-----------|--------------------------|------------------|--------------------|
| S-6105 | 1½ | 4¾ | 500 | 114 |
| S-6106 | 2 | 5¾ | 300 | 170 |
| S-6107 | 2½ | 6¾ | 250 | 216 |
| S-6109 | 3 | 7¾ | 200 | 255 |
| S-6111 | 3½ | 8 | 200 | 270 |

Made in all strand sizes. Specify size desired.

Also available in Copperweld.

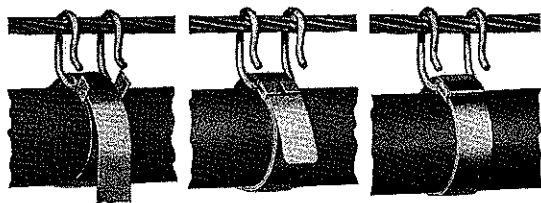
Aerial Cable Supports



For supporting cable at poles, preventing ring cut. Adjustable to any height. Supports without wires are used on spun cable, with cable spacers shown on next page.

| With Wire Cat. No. | Without Wire Cat. No. | Length of Strap, In. | Maximum Size Cable or Sleeve Dia. In. | Maximum Size Cir. In. | Wt. per 1000, Lbs. |
|--------------------|-----------------------|----------------------|---------------------------------------|-----------------------|--------------------|
| S-7366 | S-7377 | 10 | ¾ | 2½ | 84 |
| S-7368 | S-7378 | 16 | 1⅞ | 3⅞ | 110 |
| S-7370 | S-7379 | 22 | 2 | 6⅞ | 130 |
| S-7372 | S-7380 | 28 | 2⅞ | 8⅞ | 162 |
| S-7374 | S-7381 | 34 | 3⅞ | 10 | 186 |
| S-7385 | S-7387 | 50 | 5 | 15⅞ | 256 |

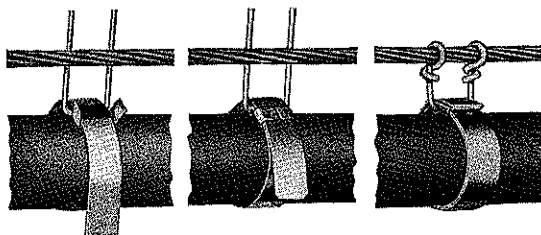
National Zinc-Wraps



Zinc-Wraps are designed for use in supporting the entire span. They may be easily and quickly installed. The split clasp allows the strap to be tightly wrapped around the cable and locked. This feature eliminates the difficulty of feeding the strap through a solid buckle.

| Cat. No. | Max. Cable Diam., In. | Package | Wt. Pkg., Lbs. |
|----------|-----------------------|---------|----------------|
| S-8129 | $\frac{3}{4}$ | 500 | 39 |
| S-8130 | 1 | 500 | 40 |
| S-8131 | $1\frac{1}{2}$ | 500 | 48 |
| S-8132 | 2 | 250 | 28 |
| S-8133 | $2\frac{5}{8}$ | 250 | 40 |

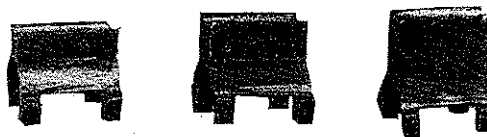
National Adjust-A-Strap



National Adjust-A-Straps are designed for use where the cable is hung with rings and it is desirable to replace two or more rings on either side of the pole. They have long wire supports which can be bent to line-up with any size cable ring.

| Cat. No. | Cable Diam., In. | Package | Wt. Pkg., Lbs. |
|----------|---------------------------------|---------|------------------|
| S-2001 | $\frac{3}{4}$ | 500 | 39 |
| S-2007 | 1 | 500 | 40 |
| S-2008 | $1\frac{1}{2}$ | 500 | 48 $\frac{1}{2}$ |
| S-2010 | 2 | 250 | 28 |
| S-2011 | $2\frac{5}{8}$ | 250 | 40 |
| S-2031 | $3\frac{1}{4}$ | 200 | 37 $\frac{1}{2}$ |
| S-2032 | 5 | 200 | 52 $\frac{1}{4}$ |
| S-2034 | $6\frac{1}{2}$ | 200 | 62 |
| S-2035 | $6\frac{1}{2}$ (10 inch hanger) | 200 | 66 |

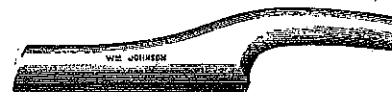
Cable Spacers



Used in lashed cable construction to provide a separation between cable and strand. Upper concaved surface bears against underside of strand; lower concaved flanges may be bent to fit curve of cable. Also used in connection with aerial cable supports. Page 135.

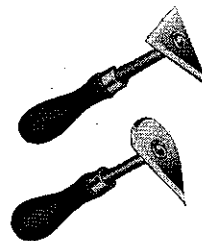
| Cat. No. | Size, In. | Wt. Per 100, Lbs. |
|----------|---------------|-------------------|
| S-7144 | $\frac{1}{4}$ | 12 $\frac{1}{2}$ |
| S-7145 | $\frac{1}{2}$ | 20 |
| S-7155 | $\frac{3}{4}$ | 25 |

Hardwood Dressers



| Cat. No. | Weight Per Dozen, Lbs. |
|----------|------------------------|
| S-3950 | 10 |

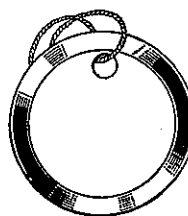
Shave Hooks



These are made so that the blade may be taken off or put on by means of the set screw, as illustrated. Furnished either with triangle or half oval blades.

| Cat. No. | Type of Blade | Length, In. | Wt. per Doz., Lbs. |
|----------|---------------|----------------|--------------------|
| S-4862 | Triangle | $5\frac{1}{2}$ | 2 $\frac{3}{4}$ |
| S-4864 | Half Oval | $5\frac{1}{2}$ | 2 $\frac{3}{4}$ |

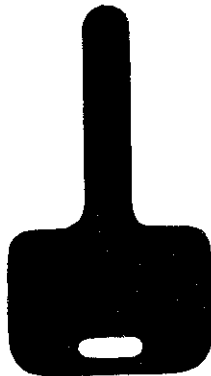
Metal Rim Tags



For tagging cables or wires as a means of identification after they have been tested out and assembled into groups. Made of thin, tough cardboard and bound with metal. Ordinarily furnished in one inch diameter but can be supplied in other sizes upon special order.

| Cat. No. | Wt. per 1000, Lbs. |
|----------|--------------------|
| S-9762 | 1 $\frac{1}{4}$ |

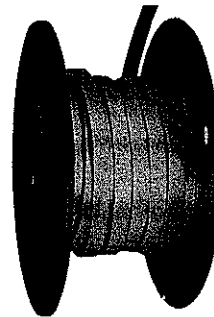
Terminal Tags



For use in marking pairs at cable terminals. Made of sheet lead. Slot and tongue type (illustrated) fastens around the cable terminal stub. Round type has hole for mounting with wire. Diameter is $1\frac{3}{8}$ inches.

| Cat. No. | Type | Wt. per 100, Lbs. |
|----------|-----------------|-------------------|
| S-7400 | Slot and tongue | 10 |
| S-7402 | Round | 9 |

Bonding Ribbon

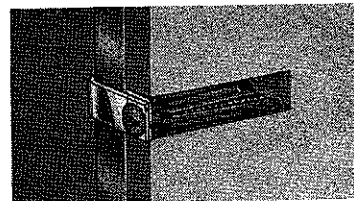


Consists of spools of .0625 x .375 inch copper strips used for bonding cable. Approximately 12 feet to the pound.

Furnished in 5 lb. spools as illustrated.

| Cat. No. | Wt. per Spool, Lbs. |
|----------|---------------------|
| S-6062 | 6 |

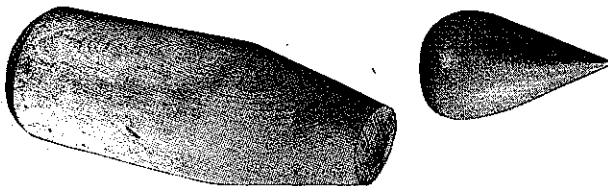
Bonding Ribbon Clamp



Used for clamping bonding ribbon in manholes and cable vaults. Mounts with S-2121, $\frac{1}{4}$ " x 1" Hammer Drive Anchor (see page 50).

| Cat. No. | Wt. per 100, Lbs. |
|----------|-------------------|
| S-3356 | $\frac{3}{4}$ |

Turn Pins; Drift Plugs



Used for expanding ends of lead sheaths and for smoothing out and straightening lead sheaths. Turn Pin is top shaped (as shown), Drift Plug is cylindrical with tapered end.

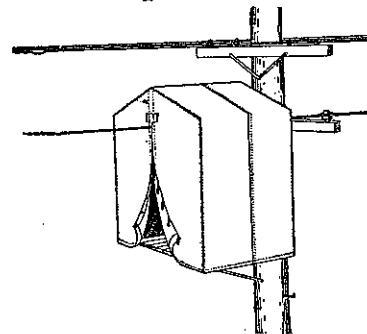
Turn Pins

| Cat. No. | Diam., In. | Wt., Lbs. |
|----------|----------------|---------------|
| S-5683 | 1 | $\frac{1}{8}$ |
| S-5684 | 2 | $\frac{1}{4}$ |
| S-5686 | $2\frac{1}{4}$ | $\frac{1}{4}$ |
| S-5688 | $2\frac{1}{2}$ | $\frac{1}{4}$ |
| S-5690 | $2\frac{3}{4}$ | $\frac{3}{8}$ |

Drift Plug

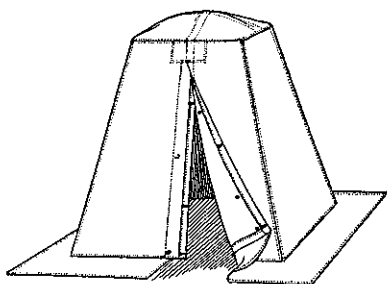
| Cat. No. | Diam., In. | Wt., Lbs. |
|----------|----------------|----------------|
| S-5848 | 1 | $\frac{1}{8}$ |
| S-5849 | $1\frac{1}{4}$ | $\frac{1}{8}$ |
| S-5850 | $1\frac{1}{2}$ | $\frac{1}{4}$ |
| S-5851 | $1\frac{3}{4}$ | $\frac{1}{4}$ |
| S-5852 | 2 | $\frac{3}{8}$ |
| S-5853 | $2\frac{1}{4}$ | $\frac{3}{4}$ |
| S-5854 | $2\frac{1}{2}$ | $\frac{7}{8}$ |
| S-5846 | $2\frac{3}{4}$ | $1\frac{1}{8}$ |
| S-5856 | 3 | $1\frac{3}{8}$ |
| S-5855 | $3\frac{1}{2}$ | $2\frac{1}{4}$ |
| S-5857 | 4 | $3\frac{3}{8}$ |
| S-5858 | $4\frac{1}{2}$ | $5\frac{1}{4}$ |
| S-5859 | 5 | $7\frac{1}{8}$ |

Cable Splicer's Tents



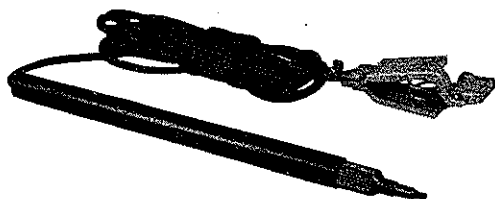
Used in conjunction with pole platforms. Made of 10 oz. white army cotton duck. The roof is spread and supported by means of a collapsible three-ribbed galvanized metal framework which fastens to the cable suspension strand. On each of two opposite sides of the tent there is an opening which can be laced from the inside after the tent is erected. Height; 8'8"; width, 4'6 $\frac{1}{2}$ ". Furnished in two lengths as shown.

| Cat. No. | Type | Length | Wt., Lbs. |
|----------|------|--------|-----------|
| S-7467 | S100 | 3'2" | 34 |
| S-7468 | L100 | 4'6" | 41 |

Ground Tent

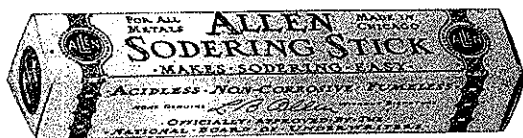
For use of underground cable splicing forces when working during inclement weather. Consists of an iron pipe frame work covered with 10 oz. cotton duck. A sod flap 1 ft. wide is provided around the base except at the opening. 6½' high, 3' wide at top, 6' wide at bottom.

| Cat. No. | Type | Wt., Lbs. |
|----------|------|-----------|
| S-7466 | 1020 | 60 |

Needle Point Test Pick

Used by cable splicing forces for identifying wires in making test splices. Consists of a brass sleeve covered by a brass shell with a brass nipple holding a number of sewing needles screwed in one end. A six-foot cord is fastened to the other end and is trimmed with a test clip. Extra needle-points also available.

| Cat. No. | Description | Wt., Oz. |
|----------|-------------------------|----------|
| S-7482 | Test Point Complete | 3 |
| S-7489 | Extra Needle Point Only | ¼ |

Allen Soldering Stick

Convenient flux cylinder. Easy to carry and apply. No waste — just apply to heated joint. Non-corrosive.

| Cat. No. | Wt., Oz. |
|----------|----------|
| S-7212 | 2 |

Soldering Paste

Nokorode soldering paste is absolutely non-corrosive. It can be used for soldering any metal except aluminum. Carefully compounded, does not discolor or stain. A small amount suffices for any ordinary job. Not affected by heat or spatter, solder does not turn dark after using. Safe and fast.

| Cat. No. | Standard Package |
|----------|------------------|
| S-5632 | 2 Oz. Can |
| S-5634 | 1 Lb. Can |

Self-Fluxing Solder

Three types—acid, rosin and stearine core. Efficient all around solders for general use. A hollow core carries the flux and when heated and melted with the iron the solder becomes self-fluxing.

| Cat. No. | Core | Diam., In. | Wt. per Spool, Lbs. |
|----------|----------|------------|---------------------|
| S-7092 | Rosin | 3/32 | 1 |
| S-7094 | Rosin | 3/32 | 5 |
| S-7100 | Acid | 1/8 | 1 |
| S-7102 | Acid | 1/8 | 5 |
| S-7104 | Stearine | 1/8 | 1 |
| S-7097 | Stearine | 1/8 | 5 |
| S-7101 | Rosin | 1/16 | 1 |
| S-7103 | Rosin | 1/16 | 5 |

Wire Solder

Same type as bar solder but preferred by some users. Furnished in one pound and five pound spools.

| Cat. No. | Size | Type | Wt., Lbs. |
|----------|------|-------------------|-----------|
| S-7112 | 9 | 40% Tin; 60% Lead | 1 |
| S-7114 | 9 | 40% Tin; 60% Lead | 5 |
| S-7116 | 9 | 50% Tin; 50% Lead | 5 |
| S-7120 | 6 | 50% Tin; 50% Lead | 5 |

Arsenical Cable Wiping Solder
Telephone Specification

Finer-textured solder especially designed for cable wiping. Has a small amount of arsenic added to lead-tin alloy which makes it solidify more slowly.

| Cat. No. | Description | Wt. per Bar, Lbs. |
|----------|---------------------|-------------------|
| S-7105 | Cable Wiping Solder | 1½ |

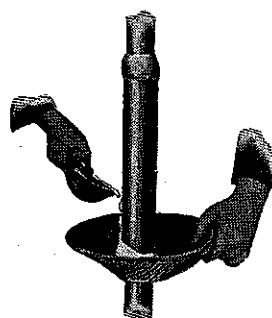
Bar Solder



Standard type bar solder furnished in 1½ pound bars packed 100 pounds to the box. Different types and compositions are listed below. Order by catalog number.

| Cat. No. | Type |
|-------------|----------------------------------|
| S-7106..... | Wiping Solder, 37% Tin; 63% Lead |
| S-7108..... | 40% Tin; 60% Lead |
| S-7110..... | 50% Tin; 50% Lead |

Vertical Joint Wiping Cloths

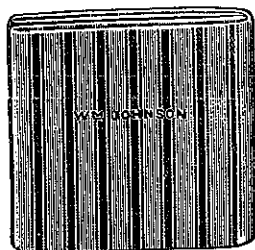


tionally durable and long-lived.

Economical wiping cloths which make a vertical splice as smooth and easy to make as a horizontal. Wiping side which comes in contact with solder is perfectly smooth. Wiping surface of selected English moleskin is treated with special dressing to protect cloth from heat and prevent half-molten solder from sticking to surface. Exceptionally durable and long-lived.

| Cat. No. | Size Opening, In. | Outside Diam., In. |
|----------|-------------------|--------------------|
| S-3743 | 1 | 9 |
| S-3744 | 1¾ | 11 |
| S-3745 | 2¾ | 12 |
| S-3748 | 3¾ | 14 |
| S-3749 | 6 | 17 |

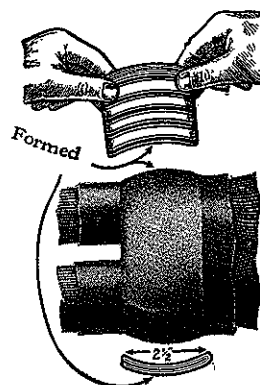
Wiping Cloths



Made of cotton ticking, in the following sizes:

| Cat. No. | Size, In. |
|----------|-----------|
| S-3728 | 2½ x 2½ |
| S-3730 | 3½ x 3½ |
| S-3732 | 4 x 4 |

Formed Wiping Cloths



Cloth ticking with a curved shape to give a symmetrical wiping surface. Herringbone design. Require no breaking in as the firm press takes the clumsiness out of the cloth. Can be worked up to any desired flexibility by bending in the fingers. Has a slick, smooth surface to which solder cannot stick.

Formed Cloths

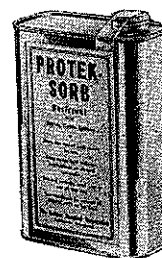
| Cat. No. | Size, In. |
|----------|-----------|
| S-3712 | 2 x 2 |
| S-3714 | 3½ x 2½ |
| S-3716 | 3 x 3 |
| S-3718 | 3½ x 3½ |
| S-3720 | 4 x 4 |

Catch Cloths

Flat, straight edged cloths made of ticking.

| | |
|--------|-------|
| S-3736 | 5 x 5 |
| S-3738 | 6 x 6 |
| S-3740 | 6 x 7 |
| S-3741 | 7 x 8 |
| S-3742 | 8 x 8 |

Protek-Sorb Desiccant—Type B



Use of Protek-Sorb Desiccant for drying cable splices eliminates the hazards and inconveniences of "boiling-out" cable splices with hot, melted paraffin. Splices are dried by pouring a recommended quantity of Protek-Sorb Desiccant into the splice before it is closed. Protek-Sorb desiccant is a granular material. It is chemically inert and non-corrosive. It will not dust, cake, powder or liquefy even when completely saturated.

| Cat. No. | Size | Cans Per Case | Wt. Per Can, Lbs. |
|----------|-----------|---------------|-------------------|
| S-5957 | 160 Grams | 12 | ½ |
| S-5958 | 650 Grams | 12 | 1½ |

Drierite Desiccant

An improved method of drying out cable splices. A granulated compound, it is placed in among conductors after wires have been spliced. Wrapping with muslin and covering with lead sleeve is then done in the usual manner. No boiling out of conductor insulation is necessary. No fumes, no danger of burns.

| Cat. No. | Quantity |
|----------|----------|
| S-5956 | 1/8 Pt. |
| S-5959 | 1/2 Pt. |
| S-5960 | 1 Qt. |

Use of Dessicant is indicated in following table:

| Total Number of Pairs Entering Splice | Number of cans Required in Splice | | | |
|---------------------------------------|-----------------------------------|--------|--------------------|--------------|
| | Paper Insulation | | Textile Insulation | |
| | Small | Medium | Small | Medium Large |
| Up to 80 | | | 1 | |
| 81 to 130 | 1/2 | | 2 | |
| 131 to 205 | 1 | | 3 | |
| 206 to 255 | 1 | | 1 | 1 |
| 256 to 360 | 1 1/2 | | 1 | 1 |
| 361 to 410 | 2 | | 1 1/2 | |
| 411 to 475 | 2 | | 2 | |
| 476 to 725 | 3 | | 2 | |
| 476 to 725 | 3 | | 2 1/2 | |
| 726 to 810 | 3 | | 3 | |
| 811 to 965 | | 1 | | 1 |
| 966 to 1115 | 1 | 1 | | 1 |

Pothhead Compound

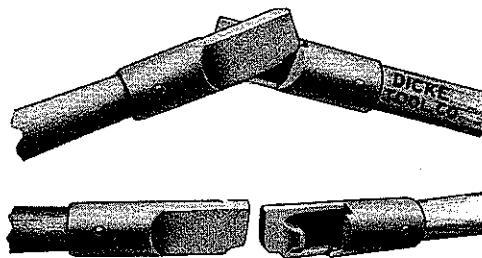
A pothead or filling compound of high insulating quality which is non-corrosive and will not melt at temperatures lower than 190 F.

| Cat. No. | Description | Weight, Lbs. |
|----------|----------------------------|--------------|
| S-3770 | 1 Gallon Pothhead Compound | 11 |

Cable Pulling Compound

An improved compound, neutral in reaction, which will not attack lead sheath of cable. Water repellant — will not dissolve or emulsify. Maximum lubricating value, won't separate, harden or gum. Forms a permanent film on cable which will lubricate on entrance or removal of cable from duct. Easily applied by brush, two pounds will lubricate approximately 100 feet of 3 1/2-inch O. D. cable.

| Cat. No. | Size |
|----------|--------------|
| S-3772 | 40 Lb. Pail |
| S-3778 | 150 Lb. Drum |

Universal Duct Rods

Fitted with galvanized malleable iron couplings designed so that the rods can be joined together without forcing and have a minimum of end play. Shafts are seasoned, straight-grained hickory and are tapered to eliminate drag. The couplings are interchangeable and the construction is entirely open to prevent clogging with sand or clay. The couplings will not separate until one rod is moved not less than 35 degrees from horizontal position.

| Cat. No. | Length, Ft. | Wt., Lbs. |
|----------------------|-------------|-----------|
| S-4088 | 3 | 1 1/2 |
| S-4089 | 4 | 2 |
| S-4092 (with wheels) | 3 | 2 1/2 |
| S-4094 (with wheels) | 4 | 3 |

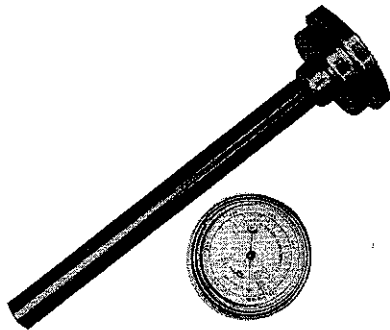
Double-Jacketed Compound Kettle

A five-quart double-jacketed kettle for melting compounds. Made of heavy steel with bottom and spouts brazed, furnished complete with double ring on bail for lowering and raising in manhole or on a pole.

Double-jacket, covering sides, top and spout, prevents explosions of the compound while melting by conducting the heat from the furnace to all parts of the kettle and insures even melting of the compound in its entire mass. Jacket also keeps the compound at correct pouring temperature after removing from the furnace.

| Cat. No. | Capacity, Qts. | Weight, Lbs. |
|----------|----------------|--------------|
| S-5030 | 5 | 6 1/2 |

Dillon Temperometer

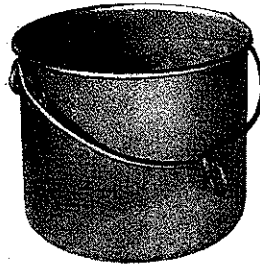


A scientific instrument that measures the correct temperatures of cable damming and impregnating waxes and compounds and wiping solder. For best results these compounds must be heated to specific temperatures. The Temperometer tells you what these temperatures are and registers them for you.

The Temperometer is rugged and compact. The dial is 2 1/8-inch diameter, calibrated from 150 degrees to 1000 degrees Fahrenheit.

| Cat. No. | Length, In. | Tube Size, In. | Wt., Lbs. |
|----------|-------------|----------------|-----------|
| S-7464 | 9 | 3/4 | 1 1/4 |

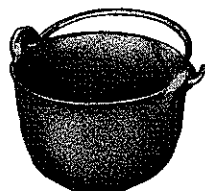
Paraffin Pots



Steel pot for use in heating paraffin and beeswax compounds for cable splices, etc. Capacity is eight quarts. Cover must be ordered separately.

| Cat. No. | Description | Wt., Lbs. |
|----------|----------------------------|-----------|
| S-5942 | Melting Pot Less Cover | 5 1/4 |
| S-5943 | Cover Only for Melting Pot | 1 1/2 |

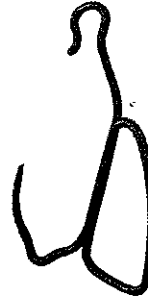
Melting Pots



Cast iron solder-melting pots.

| Cat. No. | Diameter, In. | Wt., Lbs. |
|----------|---------------|-----------|
| S-5936 | 5 | 2 1/2 |
| S-5938 | 6 | 3 3/4 |
| S-5940 | 8 | 9 1/4 |

Pot Hook Handle



For use of cable splicers in carrying paraffin or solder pots; hanging pots on aerial cable messenger or, for suspending pots from cable hooks underground. Made from 1/8-inch steel rod with hook and rest on one side and handle on the other.

| Cat. No. | Wt. per Doz., Lbs. |
|----------|--------------------|
| S-4858 | 4 |

Drip Pans

For use of cable splicers in boiling out cable splices, forms, etc. Size is 15 inches by 26 inches by 2 1/2 inches.

| Cat. No. | Wt., Lbs. |
|----------|-----------|
| S-5619 | 6 |

Paraffin Dipper

For use of cable splicers in boiling out insulation on cable conductors, etc. Capacity is 1 3/4 pints. Has 10-inch strap-iron handle.

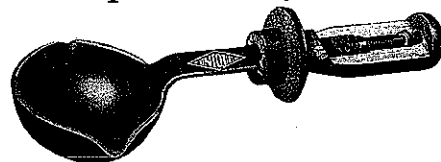
| Cat. No. | Wt., Lbs. |
|----------|-----------|
| S-3940 | 1 |

Metal Pouring Ladles



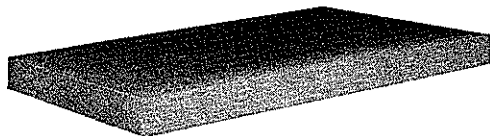
| Cat. No. | Size, In. | Lead Capacity, Lbs. | Wt., Lbs. |
|----------|-----------|---------------------|-----------|
| S-5176 | 3 | 2 1/4 | 1 1/2 |
| S-5178 | 4 | 4 1/2 | 1 |

Unique Pouring Ladles



A short ladle with wood handle. Air space around the shank keeps handle cool. Designed with lips lower than bowl and rounded to enable user to pour solder drop by drop or in a large stream without spilling over the edge. Handle easily attached or removed with only a screw driver.

| Cat. No. | Diameter of Bowl, In. | Depth of Bowl, In. | Capacity Pt. | Weight, Oz. |
|----------|-----------------------|--------------------|--------------|-------------|
| S-5168 | 2 1/2 | 1 3/8 | 1/8 | 10 |
| S-5170 | 3 | 1 1/2 | 1/4 | 12 |
| S-5172 | 3 1/2 | 1 3/4 | 3/8 | 14 |
| S-5174 | 4 | 2 | 1/2 | 18 |

Paraffin

Used for boiling out paper insulated cable. Can be supplied in any quantity desired but is usually furnished in 11 lb. cakes as illustrated or in cartons of approximately 93 lbs. each. Melting point, 125-127°F.

| Cat. No. | Std. Pkg. | Wt. per Ctn., Lbs. |
|----------|-----------|-----------------------|
| S-5626 | 9 Cakes | 93 |

Beeswax

Finest quality beeswax for impregnating or boiling out cable forms, cores of silk and cotton cables to render them moisture-resisting and prevent the insulation from fraying. 100% pure beeswax.

| Cat. No. | Wt. per Cake, Lbs. |
|----------|-----------------------|
| S-2397 | 1 |

Candles

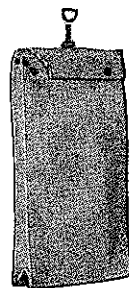
Both stearine (stearic acid) or plumber's (tallow) candles. For application to lead sheath prior to pouring on hot lead in making splices. The stearine candles are wickless and sold by the pound — approximately six to the pound. Plumber's candles are sold by the dozen.

| Cat. No. | Description | Length, In. | Wt. per 100, Lbs. |
|----------|-------------------|-------------|----------------------|
| S-7190 | Stearine Candles | 4½ | 17 |
| S-3250 | Plumber's Candles | 4 | 20 |

Cable Splicer's Mirror

Generally used by cable splicers in examining under side of wipe-joint or cable splices. Consists of a heavy, polished plate glass set into a rubber frame. Convenient size—3½ inches by 3½ inches.

| Cat. No. | Wt., Lbs. |
|----------|-----------|
| S-5324 | ¼ |

Rubber Glove Carrier

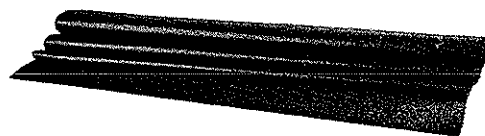
Made of 4/0 (36-ounce) hard woven duck with heavy webbing gussets. Front, bottom, back and flap made of one piece, which adds materially to durability and strength. Equipped with two-way snap for convenience in detaching from deering. Ventilating eyelets in bottom. Eight inches wide, 15 inches long and 2¾ inches at bottom. Expansion at top is 5½ inches.

| Cat. No. | Wt., Lbs. |
|----------|-----------|
| S-2337 | ¾ |

Rubber Gloves

Steam-cured, gum rubber. Designed to meet all specifications — government or A.S.T.M. Exceptional flexibility permits handling small wires or pliers without tiring. Made in two styles — curved or straight finger as listed below. Both are 10,000 volt rated. Standard length is 14 inches.

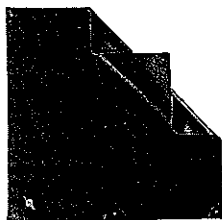
| Cat. No. | Finger Type | Size | Wt., Lbs. |
|----------|--------------------------------------|------|-----------|
| S-4438 | Straight | 9 | ¾ |
| S-4440 | Straight | 10 | ¾ |
| S-4442 | Curved | 9 | ¾ |
| S-4446 | Curved | 10 | ¾ |
| S-5962 | Leather Protectors For Rubber Gloves | | ½ |

Cable Wrapping Cloth

A closely woven cotton fabric impregnated with waterproofing compound. For use in temporarily closing splices and openings in sheath of aerial cables to protect them from the weather. Furnished in sheets 24 inches by 38 inches or in yardage approximately 38 inches in width.

| Cat. No. | Description | Wt., Lbs. |
|----------|----------------------|-------------|
| S-3708 | Sheet—24"x38" | ¼ per Sheet |
| S-3710 | Yardage as specified | ¾ per Yard |

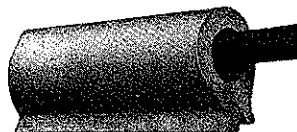
Rubber Blankets



For folding, wrapping or hanging to provide an insulating barrier between workers and high tension wires. Made of highest quality to withstand 20,000 volts for three minutes. Substantial bead moulded on all four edges to strengthen and prevent tearing. Furnished in black rubber, with or without eyelets as follows:

| Cat. No. | Type | Description | Size, In. |
|----------|-------|---------------------------------------|-----------|
| S-2575 | 300 | Plain, $\frac{1}{8}$ in. thick | 36 x 36 |
| S-2576 | 300-E | With Eyelets, $\frac{1}{8}$ in. thick | 36 x 36 |
| S-2579 | 400 | Plain, $\frac{1}{8}$ in. thick | 27 x 36 |
| S-2580 | 400-E | With Eyelets, $\frac{1}{8}$ in. thick | 27 x 36 |

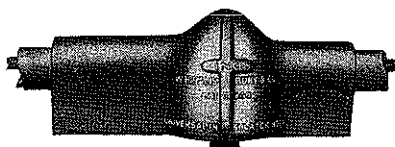
Rubber Line Hose



A convenient means of protecting linemen from accidental contact with energized lines. Easy to install. Patented locking arrangement prevents accidental loosening. High dielectric strength.

| Cat. No. | Inside Diameter, In. | Length, Ft. | Wt., Lbs. |
|----------|----------------------|-----------------|-----------------|
| S-4866 | $\frac{5}{8}$ | 3 | 2 $\frac{1}{2}$ |
| S-4867 | $\frac{5}{8}$ | 4 $\frac{1}{2}$ | 4 |
| S-4868 | $\frac{5}{8}$ | 6 | 5 |
| S-4869 | 1 | 3 | 3 $\frac{1}{2}$ |
| S-4870 | 1 | 4 $\frac{1}{2}$ | 4 $\frac{1}{2}$ |
| S-4871 | 1 | 6 | 7 |

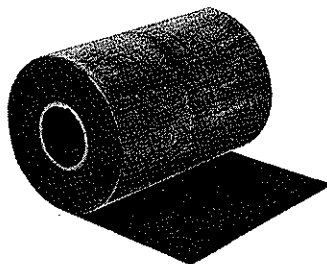
Rubber Insulator Hoods



Used in conjunction with Line Hose to cover conductors where they pass over insulators. Easy to install. Lock under insulators and cannot be accidentally dislodged.

| Cat. No. | Type of Insulator | Wt., Lbs. |
|----------|-------------------|-----------------|
| S-4819 | Power | 4 $\frac{3}{4}$ |
| S-4820 | Telephone | 4 $\frac{3}{4}$ |

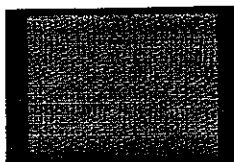
Rubber Insulating Bandage



Used for temporary insulation to protect cable splices from moisture, or, as a temporary insulating barrier for protection from high-tension wires. Roll is 14 feet long, four inches wide.

| Cat. No. | Weight, Oz. |
|----------|-------------|
| S-2343 | 12 |

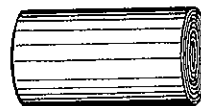
Cable Splicer's Cotton Tape



One inch cotton tape used to protect insulation of cable conductors from the cut edges of lead sheath. Should not be confused with cable splicer's muslin which is four inches wide.

| Cat. No. | Size | Wt., Lbs. |
|----------|---------------------------|---------------|
| S-7412 | 1 in. wide x 18 yds. long | $\frac{1}{4}$ |

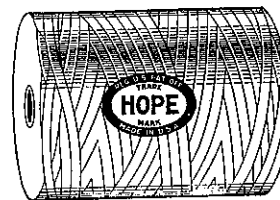
Cable Splicer's Muslin



Also called Muslin Tape. Used for wrapping cable splices. Put up in rolls 4" wide and approximately 10 yards long.

| Cat. No. | Size | Wt., Lbs. |
|----------|-----------------|---------------|
| S-5370 | 4 in. x 10 yds. | $\frac{1}{4}$ |

Cotton Sleeving



A tubular white cotton fabric used to insulate bare wires for ties, relays, keys or jacks.

| Cat. No. | Diameter, In. | Yards Per Lb. | Wt. per Spool, Lbs. |
|----------|---------------|---------------|---------------------|
| S-7042 | 1/16 | 525 | 1 |
| S-7044 | 1/8 | 215 | 1 |
| S-7046 | 5/32 | 180 | 1 |

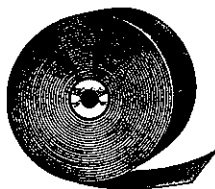
Lead Sleeving



Furnished in a wide range of lengths and diameters to meet specific requirements. Listed below are the most commonly used sizes and lengths. These sizes can also be furnished in six or 10 foot mill lengths for greater economy. Inside diameters are given below. All sleeves under three inches have a wall thickness of $\frac{1}{8}$ -inch; those with a diameter of three inches or more have a $\frac{3}{16}$ -inch wall.

| Cat. No. | Size, In. | No. Pr. | B & S Ga. | Wt. Per Ft., Lbs. |
|----------|----------------------|---------|-----------|-------------------|
| S-6819 | $\frac{3}{4}$ x 15 | 6 | 19,22 | 2.00 |
| | | 11 | 19,22,24 | |
| | | 16 | 19,22,24 | |
| | | 26 | 24 | |
| S-6820 | 1 x 15 | 51 | 24 | 2.18 |
| | | 26 | 19,22 | |
| S-6821 | 1 $\frac{1}{4}$ x 15 | 51 | 22 | 2.66 |
| | | 76 | 24 | |
| S-7059 | 1 $\frac{1}{2}$ x 15 | 51 | 19 | 3.15 |
| | | 76 | 22 | |
| | | 101 | 22,24 | |
| S-7062 | 1 $\frac{3}{4}$ x 17 | 76 | 19 | 3.63 |
| | | 152 | 24 | |
| S-7064 | 2 x 17 | 101 | 19 | 4.11 |
| | | 152 | 22 | |
| | | 202 | 24 | |
| S-6822 | 2 $\frac{1}{4}$ x 17 | 202 | 22 | 4.60 |
| | | 303 | 24 | |
| S-6823 | 2 $\frac{1}{4}$ x 20 | 152 | 19 | 4.60 |
| | | 202 | 19 | |
| S-6825 | 2 $\frac{3}{4}$ x 20 | 303 | 22 | 5.56 |
| | | 404 | 24 | |
| | | 455 | 22,24 | |
| S-6827 | 3 x 20 | 404 | 22 | 9.00 |
| | | 455 | 22,24 | |
| S-6829 | 3 $\frac{1}{2}$ x 20 | 303 | 19 | 10.50 |
| | | 606 | 22,24 | |
| S-6831 | 4 x 20 | 404 | 19 | 12.00 |
| | | 455 | 19 | |
| | | 909 | 22,24 | |
| S-6833 | 4 $\frac{1}{2}$ x 20 | 1212 | 24 | 13.50 |

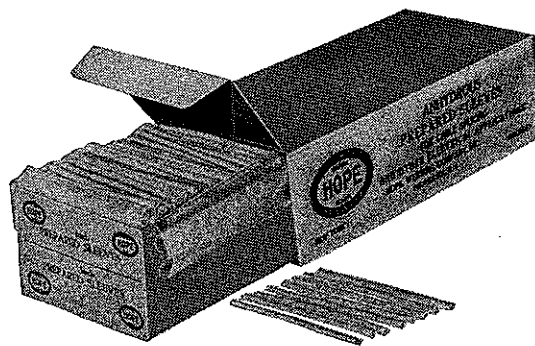
Cable Pastes



Two-inch paper gummed on one side for use in limiting the length of a wiped joint and giving it a neat and finished appearance. Furnished in rolls of 100 feet.

| Cat. No. | Wt., Lbs. |
|----------|---------------|
| S-5646 | $\frac{1}{2}$ |

Prepared Sleeves



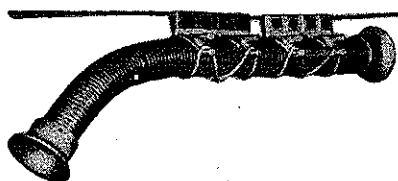
Prepared waxed single-wall cotton sleeves $3\frac{1}{4}$ inches long. Packed in moisture-proof boxes, ready to use.

| Cat. No. | Size, In. | For Gauge | Approx. No. to Box | Wt. per Box, Lbs. |
|----------|-----------|-----------|--------------------|-------------------|
| S-6902 | 3/32 | 26 | 900 | 1 |
| S-6896 | 1/8 | 24 | 700 | $\frac{1}{8}$ |
| S-6898 | 5/32 | 22 | 400 | $\frac{3}{4}$ |
| S-6900 | 1/4 | 19-16 | 200 | $\frac{3}{4}$ |
| S-6904 | 3/8 | 13 | 100 | $\frac{3}{4}$ |

Double-wall sleeves for toll cable splicing.

| Cat. No. | Size, In. | For Gauge | Approximate No. in Box | Wt. per Box, Lbs. |
|----------|-----------|-----------|------------------------|-------------------|
| S-7115 | 5/32 | 22 | 300 | 1 |
| S-7117 | 1/4 | 19-16 | 150 | 1 |

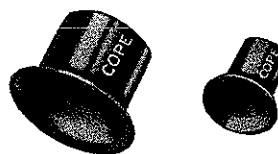
Aerial Cable Feeder



Used for pulling in aerial cable. Wide-mouth aluminum bells and flexible steel tubing prevent injury to cable or sheath. Feeder is 6 ft. long. Two pairs of malleable iron clamps are included.

| Cat. No. | Wt., Lbs. |
|----------|-----------|
| S-3233 | 26 |

Drawing-In Protector



Machined brass protector used to protect cable while it is being drawn into conduit.

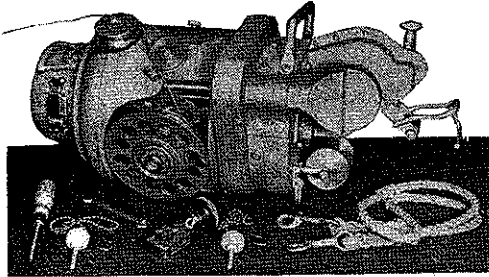
| Cat. No. | Conduit Size, In. | Wt., Lbs. |
|----------|-----------------------|-----------------|
| S-3242 | 3 Round | 3 |
| S-3244 | 3 $\frac{1}{2}$ Round | 3 $\frac{1}{2}$ |
| S-3259 | 4 Round | 4 |
| S-3260 | 3 Square | 4 $\frac{1}{2}$ |
| S-3261 | 4 Square | 5 |

Cable Spinning Equipment

The following equipment was designed to support and maintain aerial cable to steel or Copperweld supporting strand by spiraling a suitable size wire around

the cable and strand. This method has proved its value; with the proper equipment, it's easy and quick, and cable once up is up to stay.

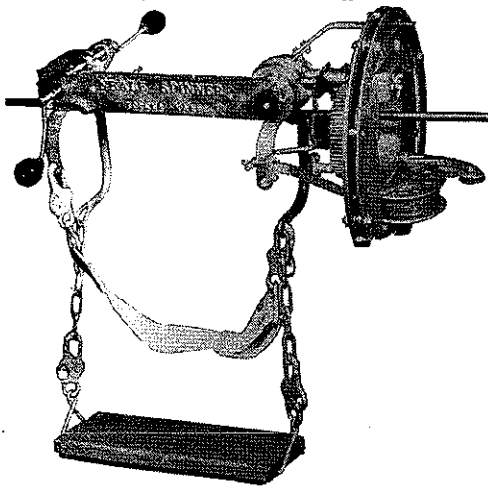
Model D Pull-type Spinner



Designed for use by construction crews to place and spin new cable, or for maintenance spinning of existing cable. This machine is instantly adjustable to take cable from minimum size to a maximum diameter of 2 1/4 inches. The spinning wire supply is always visible. A ratchet on the strand wheel makes it impossible for the spinning wire to slack off when pull on the tow line is released. Furnished with one lashing wire clamp, two adjustment wrenches, one screwdriver, one open end wrench, one tow rope, and is packed in a sturdy metal-bound chest.

Cat. No. Wt., Lbs.
S-7141 42

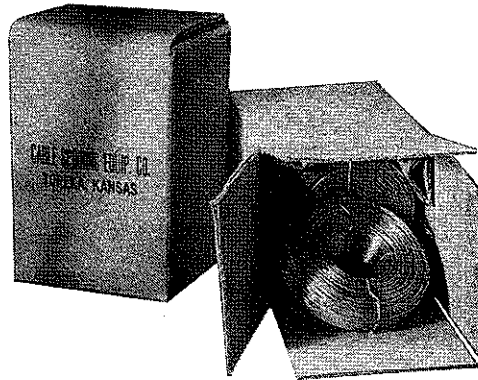
Model B One-Man Spinner



Designed for spinning new cable or maintenance spinning of existing cable. May be operated by man riding the seat, or pulled along the supporting strand by a man on the ground. Two supporting trolley wheels are linked by means of a sprocket chain. Machine is shipped with the following equipment: spinner chest, seat, safety belt, one tube of grease and one lashing wire clamp.

Cat. No. Wt., Lbs.
S-7121 53

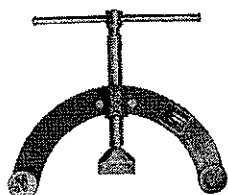
Cable Spinning Wire



All types of spinning wire are furnished on a Type 1A cone-shaped hub, the standard hub on all Neale Spinning Machines (Type 3A straight hub, standard on Western Electric Pull Type Spinner, can be furnished on request). Spinning wire packed 6 coils per carton. In figuring the amount of spinning wire, add 10% to the length of the cable that is to be spun.

Cat. No.

- S-7790 .091" Steel Spinning Wire. Type 1A. Heavy galvanized "C" coating on annealed steel spinning wire. For use where corrosion conditions are normal. Use with steel strand. Approx. 325' per coil. Wt., 45 1/2 lbs. per carton.
- S-7789 .091" Aluminum Alloy Spinning Wire. Type 7A. High corrosion resistance. Used with steel strand. Approx. 325' each coil. This wire (alloy 525 1/4 H) is approximately one-third the weight of steel or copper wire of equivalent diameter. It has good strength characteristics with an ultimate tensile strength of 197 lbs. minimum. Wt., 16 1/2 lbs. per carton.
- S-7777 .061" Type 10A Stainless Steel Spinning Wire. Highest corrosion-resisting spinning wire under all conditions. Approx. 650' per coil. Grade: Stainless type 316 cold drawn wire (Chromium 16% to 18%; Nickel 10% to 14%; Molybdenum 2% to 3%). Size: .061". Tensile Strength: 90,000 to 105,000 PSI. Breaking Load: 250 lbs. minimum, 325 lbs. maximum. Wt., 40 lbs. per carton.
- S-7791 .091" Copperweld Spinning Wire. Type 4A. Recommended for use in areas subject to corrosive fumes of atmosphere. Used only with Copperweld strand. Approx. 325' each coil. Wt., 45 lbs. per carton.
- S-7779 .090" Copper Spinning Wire. Type 6A. Solid soft-drawn spinning wire. Used in heavy corrosive areas. Use only with Copperweld strand. Approx. 325' each coil. Wt., 45 lbs. per carton.
- S-7793 .061" Galvanized Spinning Wire. Type 9A. Heavy galvanized "C" coating. Used on small cable up to and including 51 pair, 26 gauge, in areas where corrosion is normal. Used with steel strand. Approx. 650' each coil. Wt., 42 lbs. per carton.

Little Giant Slack Puller

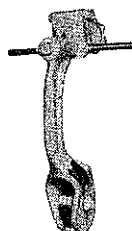
The Little Giant Slack Puller makes a simple operation out of an ordinarily difficult one. Furnished with either slip handle or ratchet. Yoke and moving parts are cadmium plated.

| <i>Cat. No.</i> | <i>Handle</i> | <i>Wt., Lbs.</i> |
|-----------------|---------------|------------------|
| S-6009 | Regular Slide | 16½ |
| S-6010 | Ratchet | 17 |

Lashing Wire Clamp

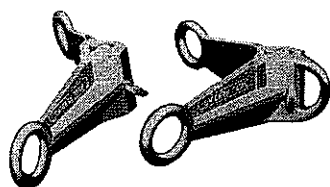
A positive-action clamp to hold the spinning wire in place when terminating at the pole, and to keep slack from running back when repairing cable. Made of bronze alloy with cadmium-plated screw.

| <i>Cat. No.</i> | <i>Wt., Lbs.</i> |
|-----------------|------------------|
| S-3430 | 1 |

Handline Block

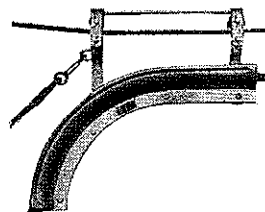
Clamps on the strand without damage to the cable, and will not slip on a grade. No wrench needed for installation. Made of bronze alloy.

| <i>Cat. No.</i> | <i>Wt., Lbs.</i> |
|-----------------|------------------|
| S-2581 | 4 |

Platform Clamps

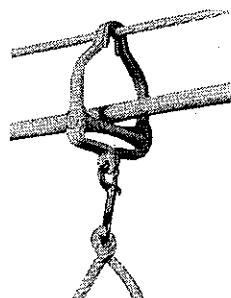
Used for supporting splicer's platform from aerial cable. Clamps made of bronze alloy and will not slide on grade or damage the cable. Packed one pair to carton.

| <i>Cat. No.</i> | <i>Wt., Lbs.</i> |
|-----------------|------------------|
| S-3431 | 11 |

Cable-Placing Shoe

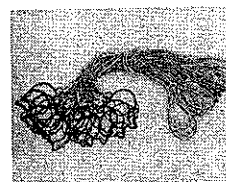
Used ahead of the spinner to raise the cable from the reel to the strand when placing and spinning cable in same operation. Made of light-weight cast aluminum with steel arms and rollers. Special locking pins make it impossible for shoe to come off the strand.

| <i>Cat. No.</i> | <i>Wt., Lbs.</i> |
|-----------------|------------------|
| S-3347 | 10 |

Bronze Cable-Placing Ring

Cast bronze body and bronze roller eliminate any possible damage to cable sheath. Hinges open to facilitate placing on strand. Can be used on all sizes of cable. Recommended for use where cable is to be placed in temporary rings prior to spinning. Furnished less rope.

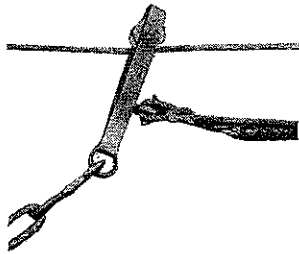
| <i>Cat. No.</i> | <i>Wt., Lbs.</i> |
|-----------------|------------------|
| S-3348 | 1 |

Steel Cable-Placing Rings

Used for pulling in new cable. Attached to cable, rings distribute themselves every five feet along length of the span. Furnished in sets of 20, with 110 feet of rope.

| <i>Cat. No.</i> | <i>Wt., Lbs.</i> |
|-----------------|------------------|
| S-3349 | 5½ |

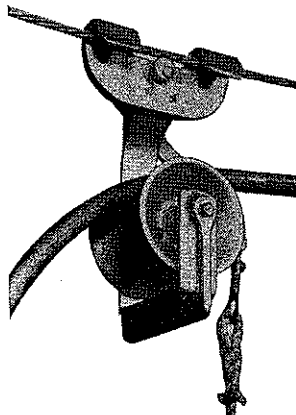
Cable Placing Ring Guide Roller



Made of cadmium-plated steel with bronze bushing. Used with cable placing rings, it offers a means of pulling the cable in, and guiding it from the ground. The cable grip and cable placing ring rope is secured to roller and a pulling line is fastened to bottom eye.

Cat. No. *Wt., Lbs.*
S-3351 4

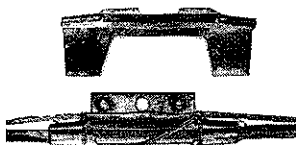
Cable Placing Roller



Made of cast aluminum with bronze bushings. Can be locked or released on the strand or from the ground.

Cat. No. *Wt., Lbs.*
S-3353 5

Lead Shields

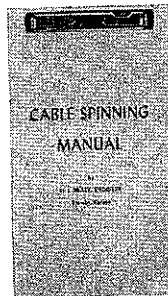


Molded lead shields designed for maximum protection at the pole. Serve as a dampener to high-frequency vibrations while allowing absolutely no slacking off of spinning

wires. Cable cannot bow at the pole or be injured by supports or hangers.

| Cat. No. | Type No. | For Cable Diam., In. | Wt., Lbs. |
|----------|----------|----------------------|-----------|
| S-6805 | 1 | 1 | 3 |
| S-6801 | 2 | 1½ | 3½ |
| S-6803 | 3 | 2.61 | 4 |

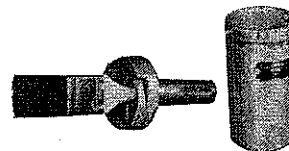
Cable Spinning Manual



A compact pocket size manual explaining the correct way to solve the problems encountered in spinning cable.

Cat. No. *Wt., Lbs.*
S-5991 ¼

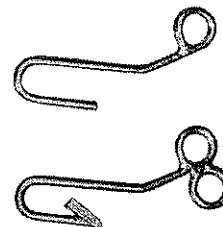
Soap Can and Brush



Keeps pressure testing soap and paint from drying out. Light-weight cast aluminum can with a tight fitting top. Cover serves as handle and holder for paint brush. Spring belt clip on the side of the container.

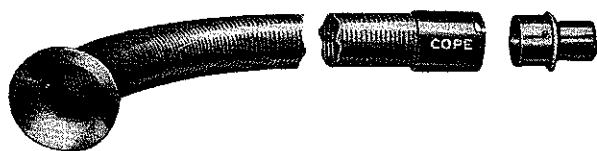
Cat. No. *Wt., Lbs.*
S-3839 1½

Platform Hooks



Single-eye hook is used on supporting ropes of splicer's platform when the ropes are adjustable. Double eye hook is used on splicer's platform when supporting ropes are not adjustable. (Platform is made adjustable by threading rope through double-eye hook.) Made of Cadmium plated steel.

| Cat. No. | Type | Wt., Lbs. |
|----------|--------|-----------|
| S-4855 | Single | 1 |
| S-4856 | Double | 1¼ |

Cable Feeder

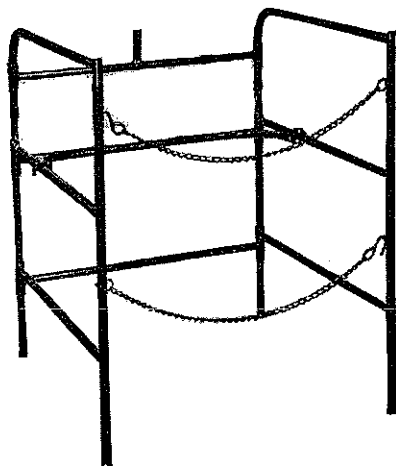
Used to feed the cable from the reel into the conduit. Feeder protects the cable, and facilitates lubrication. Heavy 4" galvanized flexible steel tubing is securely fixed to a finished brass bell. Conduit end of tube terminates in a steel sleeve to which a brass nozzle of conduit size can be attached.

Feeders

| <i>Cat. No.</i> | <i>Length</i> | <i>Wt., Lbs.</i> |
|-----------------|---------------|------------------|
| S-3234 | 9' - 0" | 40 |
| S-3235 | 12' - 0" | 50 |
| S-3236 | 16' - 0" | 65 |
| S-3237 | 20' - 0" | 80 |

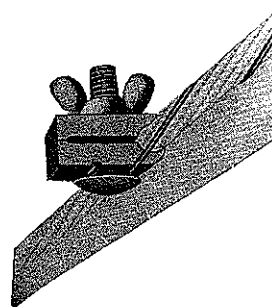
Nozzles

| <i>Cat. No.</i> | <i>Size</i> | <i>Wt., Lbs.</i> |
|-----------------|-----------------|------------------|
| S-3238 | 3" Diameter | 4 |
| S-3239 | 3 1/2" Diameter | 4 1/2 |
| S-3240 | 4" Diameter | 5 |

Manhole Guard Rails

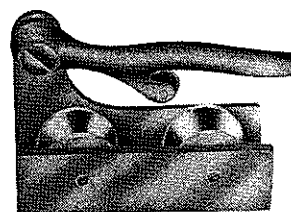
Made of 3/4" steel pipe; all fixed joints are welded, sleeves and hinges are seamless steel tubing. Has 2 chains, and a flag holder. Finished in red enamel. Size: 42" high, 32" deep, 32" wide.

| <i>Cat. No.</i> | <i>Wt., Lbs.</i> |
|-----------------|------------------|
| S-4518 | 50 |

Cable Lashing Clamp

Used for binding spinning wire to strand. Made of galvanized steel.

| <i>Cat. No.</i> | <i>Wt., per 100, Lbs.</i> |
|-----------------|---------------------------|
| S-3463 | 18 |

Cable Sheath Slitter

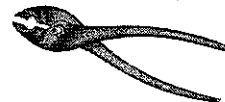
Used for longitudinally slitting the sheath of cables from 1/2 to 1 inch in diameter. It consists of an aluminum frame with 2 V-shaped rollers and a hinged handle with a disc cutter.

| <i>Cat. No.</i> | <i>Wt., Lbs.</i> |
|-----------------|------------------|
| S-3281 | 3 |

Cable Sheath Opener

Used in prying open the sheath of cables after slitting, to expose the conductors for repairs. Opener has two hooks of different shapes to care for difference in cable size and for changes in the sheath contour during the opening operation.

| <i>Cat. No.</i> | <i>Wt., Lbs.</i> |
|-----------------|------------------|
| S-3279 | 1/2 |

Sheath Closing Pliers

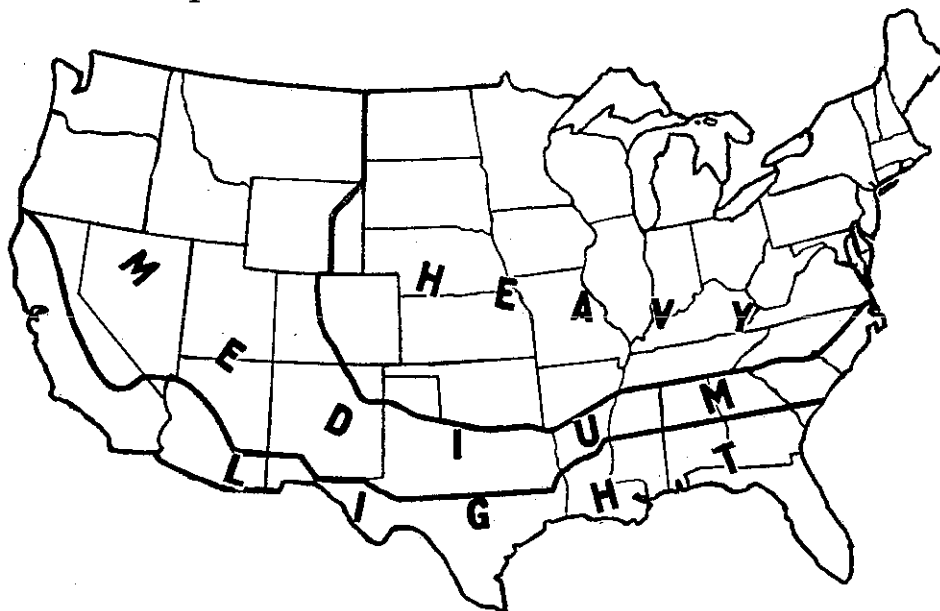
Used for closing the cable sheath after it has been slit and opened to expose the conductors for repairs.

| <i>Cat. No.</i> | <i>Wt., Lbs.</i> |
|-----------------|------------------|
| S-3277 | 1/2 |

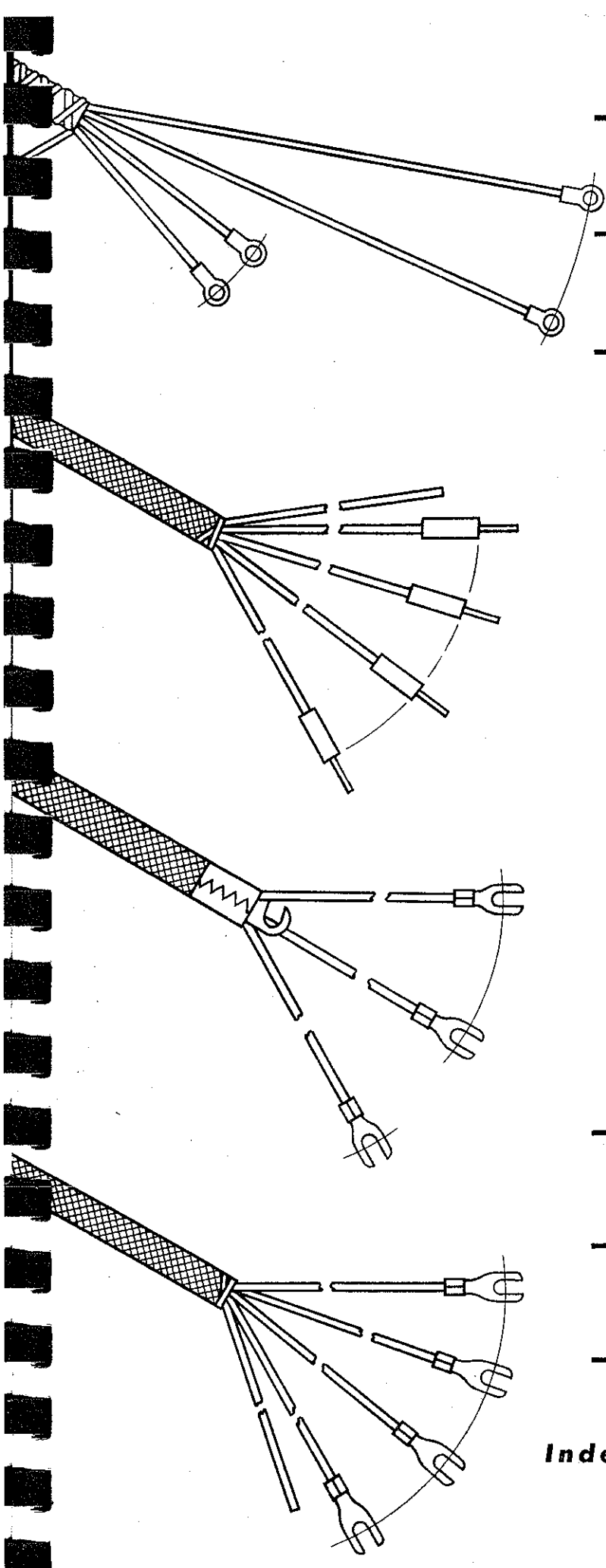
Tables of Wires and Cables

| Wire Gauge | Open Wire | | | | | | | Cable | | | | | | | | Tw. Pr. | |
|--|-----------|-------|-------|------|-------|-------|--------|-------|------|------|------|------|------|------|-------|---------|------|
| | NBS | NBS | NBS | NBS | BWG | BWG | BWG | B&S | B&S | B&S | B&S | B&S | B&S | B&S | B&S | AWG | AWG |
| Size | 8 | 10 | 12 | 14 | 10 | 12 | 14 | 10 | 12 | 13 | 16 | 19 | 20 | 22 | 24 | 14 | 17 |
| Kind of Wire | H.C. | H.C. | H.C. | H.C. | Iron | Iron | Iron | C.W. | C.W. | Cop. | Cop. | Cop. | Cop. | Cop. | Cop. | Cop. | C.W. |
| Diameter in Inches... | .160 | .128 | .104 | .080 | .134 | .109 | .083 | .102 | .081 | .072 | .051 | .036 | .031 | .025 | .020 | .064 | .045 |
| Area in Circular Mils. | 25600 | 16500 | 10816 | 6400 | 17956 | 11881 | 6889 | 10404 | 6561 | 5178 | 2580 | 1290 | 1022 | 642 | 404 | 4110 | 2050 |
| Resistance Ohms per Loop Mi. | 4.02 | 6.68 | 10.12 | 17.1 | 44.08 | 66.6 | 114.88 | 27.00 | 42.8 | 22 | 44 | 87 | 117 | 171 | 271 | 26.6 | 182 |
| Breaking Load (Lbs.) | 1280 | 828 | 528 | 337 | 722 | 476 | 277 | 800 | 520 | | | | | | | | |
| Attenuation in D.B. Per Circuit Mile | .030 | .051 | .075 | .12 | .265 | .303 | | .157 | .24 | .52 | .75 | 1.12 | 1.35 | 1.81 | 2.1 | .80 | 1.70 |
| Weight in Lbs. Per Single Mile | 420 | 264 | 166 | 105 | 258 | 170 | 99 | 154 | 96 | | | | | | | | |
| Equiv. 22 Ga. Conductors | | | | | | | | | | 8 | 4 | 2 | .. | 1 | .6285 | | |

Map of Standard Loading Zones, U. S. A.



Courtesy U. S. Bureau of Standards



DESK SET CORDS

HANDSET CORDS

SWITCHBOARD CORDS

8

Cords

NEOPRENE COVERED

BRAID COVERED

TERMINALS

Index for this section on reverse side



Index for Section Eight

| Page | Item |
|-------------|---|
| 151 . . . | Neoprene and Braid Construction |
| 152 . . . | Fittings |
| 153 . . . | Replacement Listing Desk Stand Cords |
| 154 . . . | Desk Stand Cords |
| 155 . . . | Desk Stand Cords Handset Cords |
| 156 . . . | Handset Cords |
| 157 . . . | Switchboard Cords Extensicord |

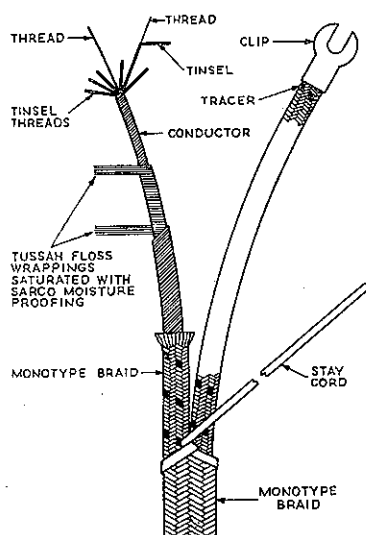
AUTOMATIC  ELECTRIC

Monotype Telephone and Switchboard Cords

Braid

The high quality of Monotype Braid Cords has made them the leader in their field. Monotype Braid Cords have the standard tinsel construction with Tussah floss insulation. The insulation is saturated with highly efficacious Sarco moisture proofing. This protection plus the closely woven outer braid produces a cord that is not injured by humid climates or accidental immersion.

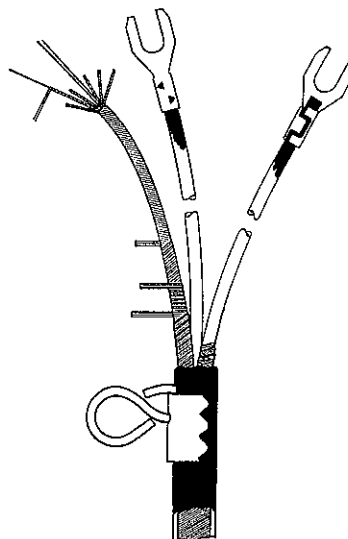
Telephone cords are furnished with either brown or black outer braid. Switchboard cords are furnished in white, red or green. White is the standard color; red or green are designated by adding "R" or "G" to the catalog number.



Neoprene

The advantage of the Neoprene cords is primarily in their long life, which is many times that of the braid. Neoprene is a plastic insulation that does not crack or dry out under excessive heat or sunlight. It is extremely pliable and will not break or crack under continual bending and straightening. The Neoprene cord is also moisture and water proof and it is resistant to most acids and oils.

The construction of the Neoprene cord is similar to the braid in that it uses the standard tinsel conductors. The conductors are covered with a colored rubber covering and have a Neoprene jacket overall. Neoprene cords are furnished in black.



Here's Why Monotype Cords Are Better

Monotype Cords Resist Kinking

In the telephone cords, the conductors are laid straight, not twisted. Twist the cord in any direction and the conductors wind together. Release it, and it straightens out again. The conductors do not separate, and permanent kinks cannot form.

In the switchboard cords the conductors are twisted, with the necessary filler, to make a round cross-section. The assembly is covered with a silk-smooth braid, and glazed. This construction also prevents kinks and snarls, as it assures smooth action of the cord weights.

Monotype Cords Are Always Quiet

Noise in cords is caused by separation and breaking of the tinsel strands comprising the conductors. In Monotype Cords the tinsel is wound on a cotton thread, in such a manner that the cotton takes all mechanical

strain. The construction, as described above, also provides a maximum of flexibility, and eliminates kinking. The conductors bend, instead of separating and breaking, so they do not develop noises.

Monotype Cords Are High Quality

Automatic Electric Monotype telephone and switchboard cords are manufactured to the same close tolerances as the other Automatic equipment. Highest quality material, skilled craftsmen and years of research and development in the field as well as in the laboratory are bound together to bring you the finest telephone cords available.

When you use Monotype telephone and switchboard cords (whether the braid or Neoprene type) you are assured of long life and exceptionally satisfactory service.

Monotype Cords—Cont.

Space does not permit us to show all the Monotype cords. Please ask for information on any cords you may need.

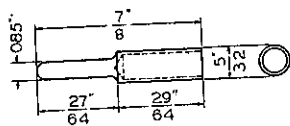
On the following pages we have listed the more common trims of Monotype Cords. We recommend the use of these stock designs wherever possible.

NOTE: In accordance with the practice of most cord manufacturers, Monotype telephone cord lengths are measured overall including the longest trims at both ends. All Monotype switchboard cords are measured from the butt at the plug end to, and including, the longest trim at the switchboard end.

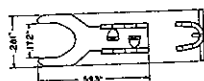
EXTENSICORD: The new convenient, stretchable handset cord for greater convenience will be found on Page 157.

Fittings Used on Monotype Cords

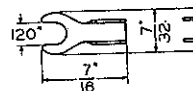
(All fittings, except Test Clips, shown approximately actual size)



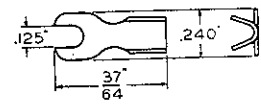
WA-14



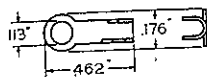
WA-15



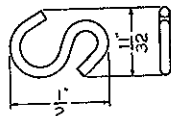
WA-20



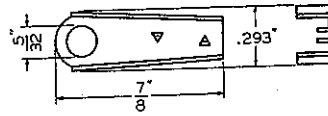
WA-22



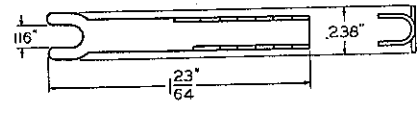
WA-24



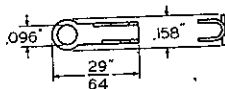
WA-26



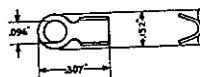
WA-27



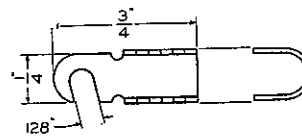
WA-28



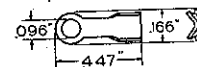
WA-29



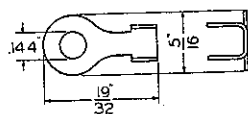
WA-30



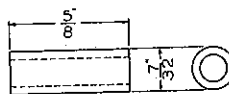
WA-32



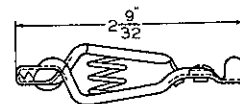
WA-33



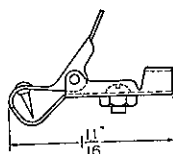
WA-34



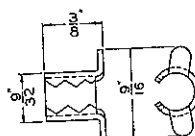
WA-41
SOFT RUBBER SLEEVE



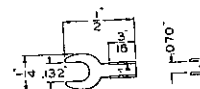
UNIVERSAL
TEST CLIP



FRANKEL
TEST CLIP



WA-98



WA-97

For Kellogg Switchboard and Supply Co. Equipment

| | |
|---|-------------|
| For 301-TO Switchboard Cord—18" long..... | Order DS-30 |
| For 301-TO Switchboard Cord—24" long..... | Order DS-31 |
| For 301-TO Switchboard Cord—36" long..... | Order DS-32 |
| For 301-TO Switchboard Cord—48" long..... | Order DS-33 |
| For 301-TO Switchboard Cord—60" long..... | Order DS-34 |
| For 301-TO Switchboard Cord—72" long..... | Order DS-35 |
| For 301-TO Switchboard Cord—84" long..... | Order DS-36 |
| For 309-TO Switchboard Cord—60" long..... | Order DS-27 |
| For 309-TO Switchboard Cord—72" long..... | Order DS-24 |
| For 309-TO Switchboard Cord—84" long..... | Order DS-25 |
| For 309-TO Switchboard Cord—48" long..... | Order DS-28 |
| For 1000 Series Telephone..... | Order AD-69 |
| For 100 Series Telephone..... | Order AD-70 |
| For 46-C Handset..... | Order AH-39 |

For Stromberg-Carlson Equipment

| | |
|---|-------------|
| For S-32-K Switchboard Cord—36" long..... | Order DS-50 |
| For S-32-K Switchboard Cord—60" long..... | Order DS-51 |
| For S-32-K Switchboard Cord—72" long..... | Order DS-52 |
| For S-32-K Switchboard Cord—84" long..... | Order DS-53 |
| For C-3-B Hand Unit Cord..... | Order AH-11 |
| For MC-3B Hand Unit Cord..... | Order AH-11 |
| For 1248 Telephone—78" Long..... | Order AD-66 |
| For 1242 Telephone—78" Long..... | Order AD-67 |
| For 1242 Telephone—78" Long..... | Order AD-68 |
| For 46-C Handset..... | Order AH-37 |
| For 46-C Handset..... | Order AH-38 |

For Western Electric Company Equipment

| | |
|--|-------------|
| For S3B Switchboard Cord—75" long..... | Order DS-61 |
| For S3B Switchboard Cord—48" long..... | Order DS-62 |
| For S3B Switchboard Cord—60" long..... | Order DS-63 |
| For S3B Switchboard Cord—96" long..... | Order DS-64 |
| For 448 Switchboard Cord—75" long..... | Order DS-61 |
| For 448 Switchboard Cord—48" long..... | Order DS-62 |
| For 448 Switchboard Cord—60" long..... | Order DS-63 |
| For 448 Switchboard Cord—96" long..... | Order DS-64 |
| For 302-305 Telephone 2 Conductor..... | Order AD-71 |
| For 302-305 Telephone 3 Conductor..... | Order AD-72 |
| For F-1-AW Handset..... | Order AH-40 |

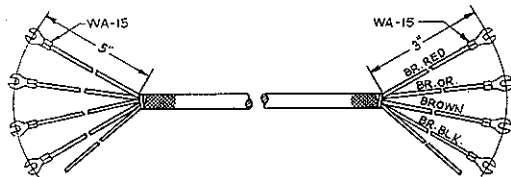
For Monarch Equipment

| | |
|--|-------------|
| For MC-5442 Switchboard Cord—48" long..... | Order DS-10 |
| For MC-5443 Switchboard Cord—60" long..... | Order DS-12 |
| For MC-5444 Switchboard Cord—72" long..... | Order DS-13 |
| For MC-54229 Switchboard Cord—48" long..... | Order DS-16 |
| For MC-54230 Switchboard Cord—60" long..... | Order DS-17 |
| For MC-54231 Switchboard Cord—72" long..... | Order DS-18 |
| For MC-54232 Switchboard Cord—84" long..... | Order DS-19 |
| For D-540270 Switchboard Cord—20" long..... | Order DS-21 |
| For MC-540271 Switchboard Cord—36" long..... | Order DS-22 |
| For D-540272 Switchboard Cord—66" long..... | Order DS-23 |
| For D-540273 Switchboard Cord—72" long..... | Order DS-24 |
| For D-540274 Switchboard Cord—84" long..... | Order DS-25 |
| For D-540275 Switchboard Cord—96" long..... | Order DS-26 |
| For D-540276 Switchboard Cord—60" long..... | Order DS-27 |
| For D-541299 Switchboard Cord—48" long..... | Order DS-28 |
| For D-541596 Switchboard Cord—42" long..... | Order DS-29 |
| For D-540271 Switchboard Cord—36" long..... | Order DS-22 |
| For D-540048 Switchboard Cord—78" long..... | Order DS-20 |
| For MC-54260 Desk Stand Cord..... | Order AD-10 |

For Automatic Electric Company Equipment

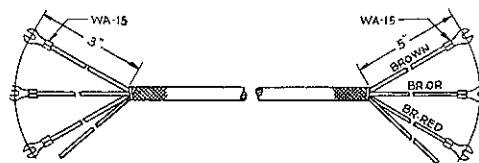
| | |
|---|-------------|
| For D-542511-A Desk Stand Cord..... | Order AD-10 |
| For D-541844 Desk Stand Cord..... | Order AD-10 |
| For D-542275 Desk Stand Cord..... | Order AD-10 |
| For D-542273 Desk Stand Cord..... | Order AD-13 |
| For D-542510-A Desk Stand Cord..... | Order AD-13 |
| For D-542229 Hand Unit Cord..... | Order AH-10 |
| For D-542507-A Hand Unit Cord..... | Order AH-10 |
| For D-542271 Hand Unit Cord..... | Order AH-11 |
| For D-542509-A Hand Unit Cord..... | Order AH-11 |
| For Type 40 Monophone 3 Conductor..... | Order AD-73 |
| For Type 40 Monophone 2 Conductor..... | Order AD-18 |
| For Type 40 Monophone 3 Conductor..... | Order AD-57 |
| For Type 40 Monophone 5 Conductor..... | Order AD-64 |
| For Type 40 Monophone 4 Conductor..... | Order AD-63 |
| For Type 1-A Monophone 3 Conductor..... | Order AD-76 |
| For Type 1-A Monophone 4 Conductor..... | Order AD-75 |
| For Type 41 Handset 3 Conductor..... | Order AH-27 |
| For 10 and 12 Handset..... | Order AH-11 |
| For CD-351053 Handset..... | Order AH-42 |
| For Type 38 Handset..... | Order AH-43 |

Monotype Desk Set Cords



Replaces Auto. Elec. Co.'s Nos. D-542273 and D-542510-A, used on Type 21 Telephones with 3-winding induction coils and Type 1-A, 5-A and 9 Monophones.

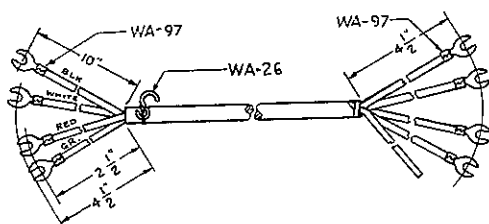
| Cat. No. | Description | Overall Length, In. |
|----------|------------------------------|---------------------|
| AD-13 | Four-Conductor Desk Set Cord | 72 |



Replaces Auto. Elec. Co.'s Nos. D-541844 and D-542275 and Amer. Elec. No. MC-54260 used on Type 200 desk stand. Also replaces D-452511-A used on Type 11A and 15A Monophones and Type 21 desk stands with 2-winding induction coil.

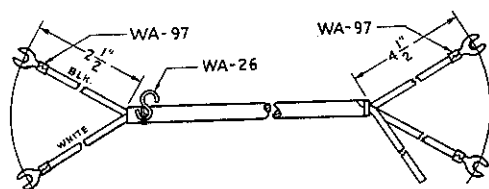
| Cat. No. | Description | Overall Length, In. |
|----------|-------------------------------|---------------------|
| AD-10 | Three-Conductor Desk Set Cord | 72 |

Monotype Desk Set Cords—Cont.



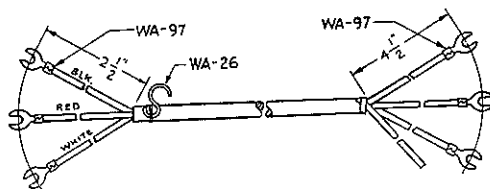
Desk set cord. 4 conductor for Stromberg Carlson 1248 telephone replaces Stromberg Carlson WD-4-J. Neoprene.

| Cat. No. | Description | Overall Length, In. |
|----------|---------------------------|---------------------|
| AD-66 | 4 Conductor Desk Set Cord | 72 |



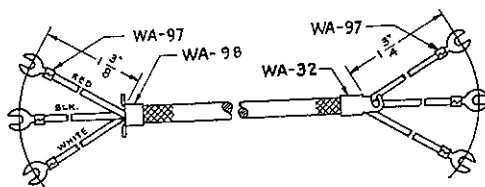
Desk set cord. 2 conductor for Stromberg Carlson 1242 telephone. Neoprene.

| Cat. No. | Description | Overall Length, In. |
|----------|---------------------------|---------------------|
| AD-67 | 2 Conductor Desk Set Cord | 78 |



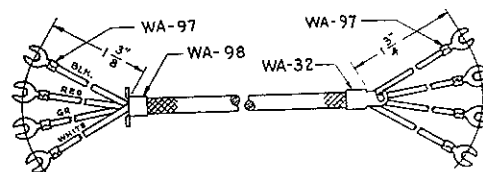
Desk set cord. 3 conductor for Stromberg Carlson 1242 telephone. Replaces Stromberg Carlson WD-3-J. Neoprene.

| Cat. No. | Description | Overall Length, In. |
|----------|---------------------------|---------------------|
| AD-68 | 3 Conductor Desk Set Cord | 72 |



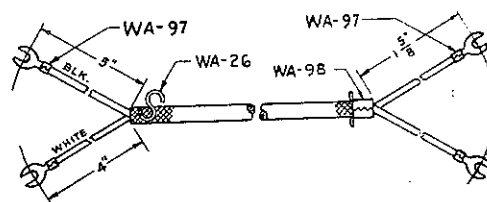
Desk set cord. 3 conductor replaces Kellogg 769 MFP Type 3004 for 1000 series handset telephone. Neoprene.

| Cat. No. | Description | Overall Length, In. |
|----------|---------------------------|---------------------|
| AD-69 | 3 Conductor Desk Set Cord | 71 3/4 |



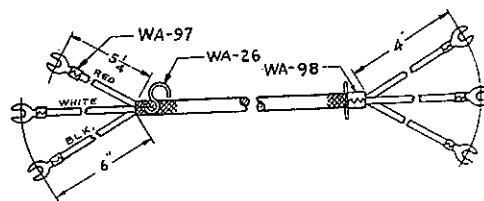
Desk set cord. 4 conductor replaces Kellogg No. 771-MFP Type 3020 for 1000 series handset telephone. Neoprene.

| Cat. No. | Description | Overall Length, In. |
|----------|---------------------------|---------------------|
| AD-70 | 4 Conductor Desk Set Cord | 71 3/4 |



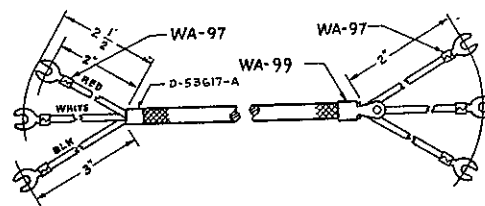
Desk set cord. 2 conductor for Western Electric Co. Type 302-305 telephone. Replaces Western Electric Co. D-2-D. Neoprene.

| Cat. No. | Description | Overall Length, In. |
|----------|---------------------------|---------------------|
| AD-71 | 2 Conductor Desk Set Cord | 65 3/8 |



Desk set cord. 3 conductor for Western Electric Co. Type 302-305 telephone. Replaces Western Electric Co. D-3-AL. Neoprene.

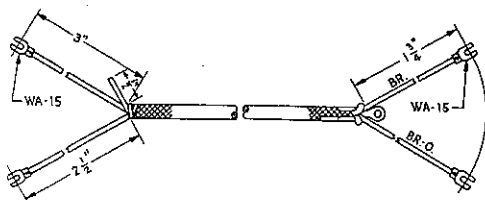
| Cat. No. | Description | Overall Length, In. |
|----------|---------------------------|---------------------|
| AD-72 | 3 Conductor Desk Set Cord | 86 |



Desk set cord. 3 conductor for Automatic Electric Type 40 Monophone. Neoprene.

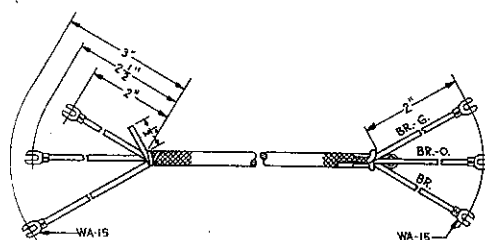
| Cat. No. | Description | Overall Length, In. |
|----------|---------------------------|---------------------|
| AD-73 | 3 Conductor Desk Set Cord | 72 |

Monotype Desk Set Cords—Cont'd.



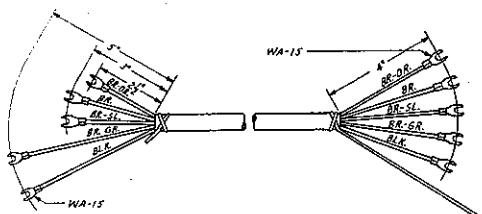
Desk Set Cord for Automatic Electric Type 40 Monophone, metallic ring.

| Cat. No. | Description | Overall Length, In. |
|----------|-----------------------------|---------------------|
| AD-18 | Two-Conductor Desk Set Cord | 72 |



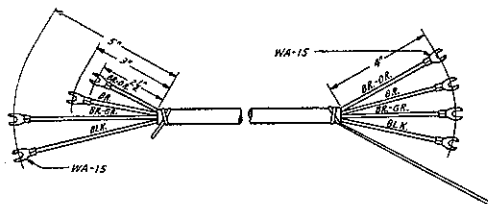
Desk Set Cord for Automatic Electric Type 40 Monophone, ground ring.

| Cat. No. | Description | Overall Length, In. |
|----------|-------------------------------|---------------------|
| AD-57 | Three-Conductor Desk Set Cord | 72 |



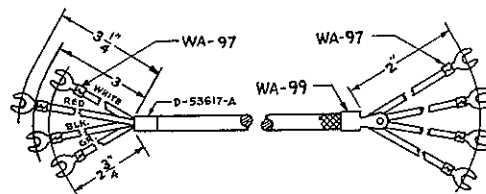
Used with A. E. Type 40 Magneto Monophone convertible to common battery, ground ring.

| Cat. No. | Description | Overall Length, In. |
|----------|------------------------------|---------------------|
| AD-64 | Five-Conductor Desk Set Cord | 72 |



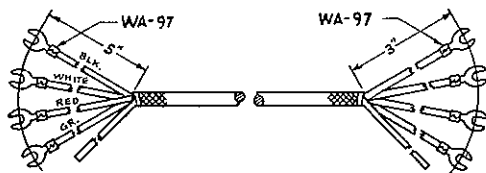
Used with A. E. Type 40 Magneto Monophone convertible to common battery, metallic ring.

| Cat. No. | Description | Overall Length, In. |
|----------|------------------------------|---------------------|
| AD-63 | Four-Conductor Desk Set Cord | 72 |



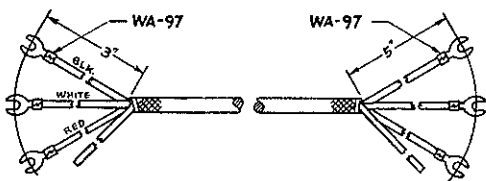
Desk set cord. 4 conductor for Automatic Electric Type 40 Monophone. Neoprene.

| Cat. No. | Description | Overall Length, In. |
|----------|------------------------------|---------------------|
| AD-74 | Four-Conductor Desk Set Cord | 72 |



Desk set cord. 4 conductor for Automatic Electric Type 1A Monophone. Neoprene.

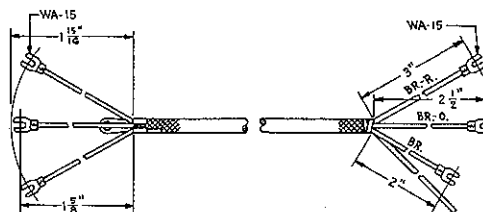
| Cat. No. | Description | Overall Length, In. |
|----------|------------------------------|---------------------|
| AD-75 | Four-Conductor Desk Set Cord | 72 |



Desk set cord. 3 conductor for Automatic Electric Type 1A Monophone. Neoprene.

| Cat. No. | Description | Overall Length, In. |
|----------|-------------------------------|---------------------|
| AD-76 | Three Conductor Desk Set Cord | 72 |

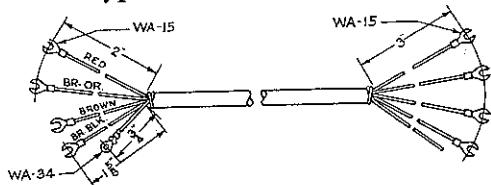
Monotype Handset Cords



Handset cord for Automatic Electric Type 41 Monophone.

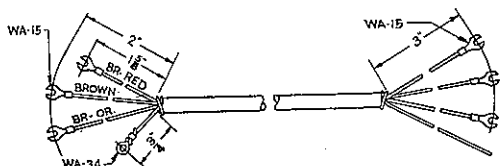
| Cat. No. | Description | Overall Length, In. |
|----------|------------------------------|---------------------|
| AH-27 | Three-Conductor Handset Cord | 53 |

Monotype Handset Cords—Cont.



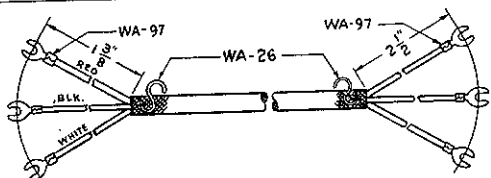
Replaces Automatic Electric No. D-542229 and D-542507-A.

| Cat. No. | Description | Overall Length, In. |
|----------|-----------------------------|---------------------|
| AH-10 | Four-Conductor Handset Cord | 53 |



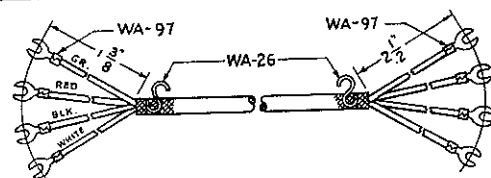
Replaces Automatic Electric Nos. D-542271 and D-542509-A and S-C No. C-3-B and MC-3B used with No. 10 and 12 handsets.

| Cat. No. | Description | Overall Length, In. |
|----------|------------------------------|---------------------|
| AH-11 | Three-Conductor Handset Cord | 53 |



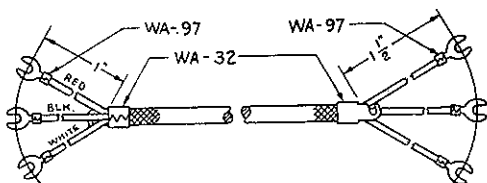
Handset cord. 3 conductor for Stromberg Carlson 46-C handset. Neoprene.

| Cat. No. | Description | Overall Length, In. |
|----------|------------------------------|---------------------|
| AH-37 | Three-Conductor Handset Cord | 54 |



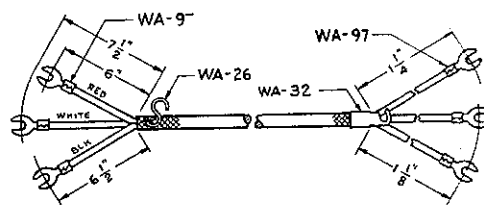
Handset cord. 4 conductor for Stromberg Carlson handset. Neoprene.

| Cat. No. | Description | Overall Length, In. |
|----------|-----------------------------|---------------------|
| AH-38 | Four-Conductor Handset Cord | 54 |



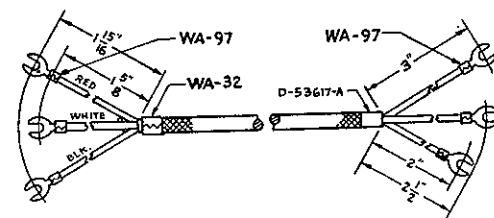
Handset cord for Kellogg No. 46-C. Replaces Kellogg 770 MFP Type 3000. Neoprene.

| Cat. No. | Description | Overall Length, In. |
|----------|------------------------------|---------------------|
| AH-39 | Three-Conductor Handset Cord | 48 |



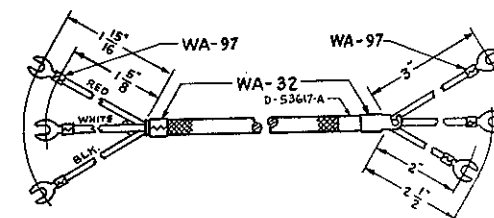
Handset cord for Western Electric Co. F-1-AW. Replaces Western Electric Co. H3C-9. Neoprene.

| Cat. No. | Description | Overall Length, In. |
|----------|------------------------------|---------------------|
| AH-40 | Three-Conductor Handset Cord | 54½ |



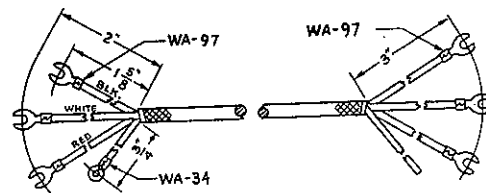
Handset cord. 3 conductor for Automatic Electric Type 41 handset. Neoprene.

| Cat. No. | Description | Overall Length, In. |
|----------|------------------------------|---------------------|
| AH-41 | Three-Conductor Handset Cord | 53 |



Handset cord. 3 conductor for Automatic Electric Type 41 handset for use on paystations. Neoprene.

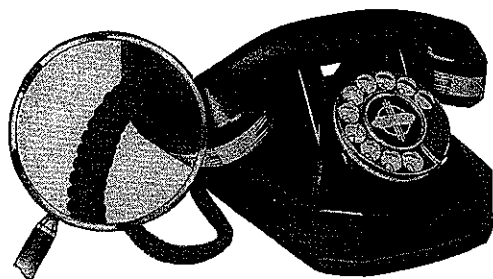
| Cat. No. | Description | Overall Length, In. |
|----------|------------------------------|---------------------|
| AH-42 | Three-Conductor Handset Cord | 53 |



Handset cord. 3 conductor for Automatic Electric Type 38 handset. Neoprene.

| Cat. No. | Description | Overall Length, In. |
|----------|------------------------------|---------------------|
| AH-43 | Three-Conductor Handset Cord | 53 |

The Extensicord



Here is a handset cord that actually s-t-r-e-t-c-h-e-s! It is normally only 32 inches long, and settles down close to the telephone when not in use. But when the handset is lifted, Extensicord stretches easily in a straight line, to almost twice its normal length. Thus, it permits the handset user to stand, sit down, or move about with exceptional freedom. When the handset is replaced, the cord returns to its normal shortened form—no kinking, twisting, or knotting, or getting

snailed with other objects on the desk or table. Telephone subscribers welcome the convenience provided by this unique cord.

Cat. No. AH-29—Cord for Type 41 Monophone Handset—Black

Has 3 conductors, each covered with black braid. Used on Monophone Types 40, 50, 43, 44, 47.

Cat. No. AH-21—Cord for Type 38 Monophone Handset—Black

Has 3 conductors covered with black braid. Use on earlier types of Monophones using the Type 38 handset.

Cat. No. AH-22—For W.E. No. E1B Handset—Brown Cord

Replaces W.E. Co's No. H3B.

Cat. No. AH-23—For Kellogg No. F27 Handset—Brown Cord

Replaces Kellogg's No. F673-G.

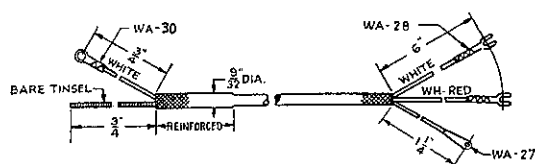
Cat. No. AH-31—For W.E. Co. No. F1 Handset—Brown Cord

Replaces W.E. Co's No. H309

Cat. No. AH-32—For Leich Handset—Brown Cord

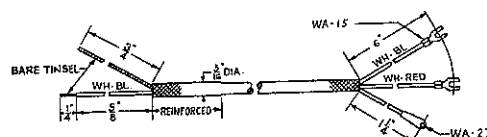
Cat. No. AH-33—For S.-C. Handset—Brown Cord

Monotype Switchboard Cords



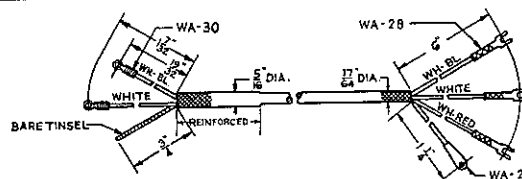
Replaces W. E. Co.'s Nos. S3B and 448, used on W. E. Plug No. 110. White furnished unless otherwise specified.

| Cat. No. | Description | Length, In. |
|----------|----------------------------------|-------------|
| DS-62 | Three-Conductor Switchboard Cord | 48 |
| DS-63 | Three-Conductor Switchboard Cord | 60 |
| DS-61 | Three-Conductor Switchboard Cord | 75 |
| DS-64 | Three-Conductor Switchboard Cord | 96 |



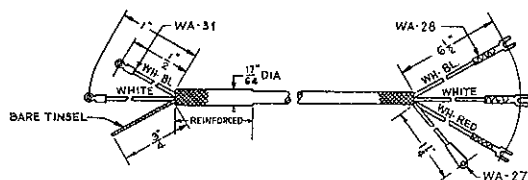
Replaces Amer. Elec. Co.'s Nos. MC-5442, -3 and -4, used on MC-5702 and MC-5743 plugs. Fits Plug K-43. White furnished unless otherwise specified.

| Cat. No. | Description | Length, In. |
|----------|--------------------------------|-------------|
| DS-10 | Two-Conductor Switchboard Cord | 48 |
| DS-12 | Two-Conductor Switchboard Cord | 60 |
| DS-13 | Two-Conductor Switchboard Cord | 72 |



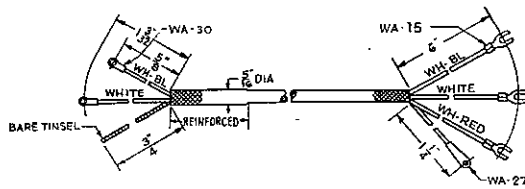
Replaces Kellogg's No. 309-TO and Amer. Elec. Nos. D-540048, D-541299 and D-540270, -1 -2, -3, -4, -5 and -6. Used on Kellogg 12, 13, 74, 106, 152, and 202 plugs. Fits Auto. Elec. Co's D-5752 and D-5753 plugs. White furnished unless otherwise specified.

| Cat. No. | Description | Length, In. |
|----------|----------------------------------|-------------|
| DS-21 | Three-Conductor Switchboard Cord | 20 |
| DS-22 | Three-Conductor Switchboard Cord | 36 |
| DS-29 | Three-Conductor Switchboard Cord | 42 |
| DS-28 | Three-Conductor Switchboard Cord | 48 |
| DS-27 | Three-Conductor Switchboard Cord | 60 |
| DS-23 | Three-Conductor Switchboard Cord | 66 |
| DS-24 | Three-Conductor Switchboard Cord | 72 |
| DS-20 | Three-Conductor Switchboard Cord | 78 |
| DS-25 | Three-Conductor Switchboard Cord | 84 |
| DS-26 | Three-Conductor Switchboard Cord | 96 |



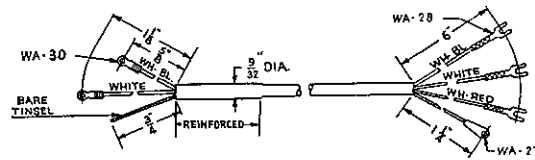
Replaces S.-C. Co.'s No. S-32-K, used on S.-C. Plugs Nos. 53X, 54G, 54N, 55, and 55N. White furnished unless otherwise specified.

| Cat. No. | Description | Length, In. |
|----------|----------------------------------|-------------|
| DS-50 | Three-Conductor Switchboard Cord | 36 |
| DS-51 | Three-Conductor Switchboard Cord | 60 |
| DS-52 | Three-Conductor Switchboard Cord | 72 |
| DS-53 | Three-Conductor Switchboard Cord | 84 |



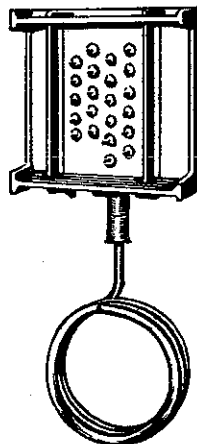
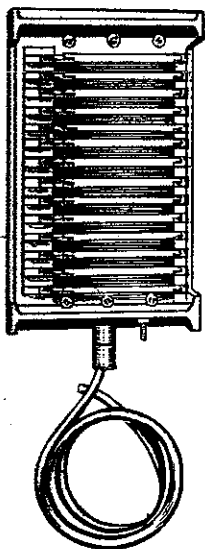
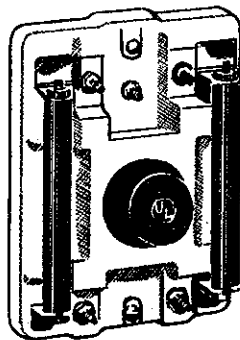
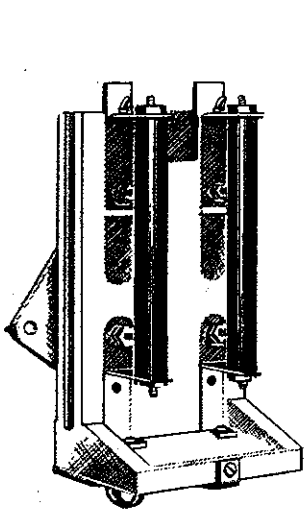
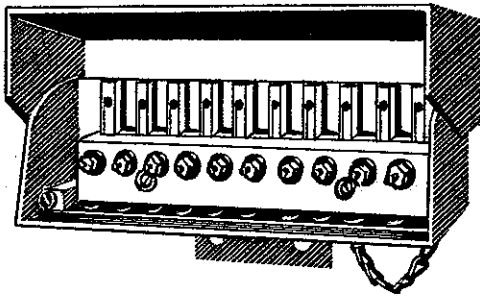
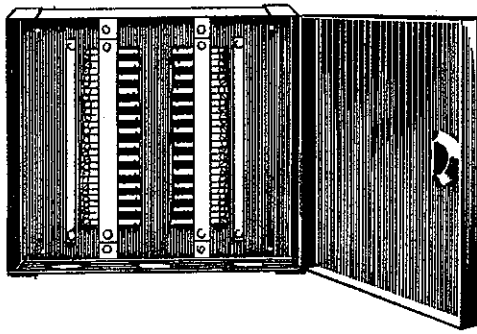
Replaces Amer. Elec. Co.'s Nos. MC-54229, -30, -31, and -32, used on Amer. Elec. Plug No. MC-5735. Fits Plugs K-35, K-55 and K-56. White furnished unless otherwise specified.

| <i>Cat. No.</i> | <i>Description</i> | <i>Length, In.</i> |
|-----------------|----------------------------------|--------------------|
| DS-16 | Three-Conductor Switchboard Cord | 48 |
| DS-17 | Three-Conductor Switchboard Cord | 60 |
| DS-18 | Three-Conductor Switchboard Cord | 72 |
| DS-19 | Three-Conductor Switchboard Cord | 84 |



Replaces Kellogg's No. 301-TO, used on Kellogg Plugs Nos. 3, 42, 70, 109, and 138. White furnished unless otherwise specified.

| <i>Cat. No.</i> | <i>Description</i> | <i>Length, In.</i> |
|-----------------|--------------------------------|--------------------|
| DS-30 | Two-Conductor Switchboard Cord | 18 |
| DS-31 | Two-Conductor Switchboard Cord | 24 |
| DS-32 | Two-Conductor Switchboard Cord | 36 |
| DS-33 | Two-Conductor Switchboard Cord | 48 |
| DS-34 | Two-Conductor Switchboard Cord | 60 |
| DS-35 | Two-Conductor Switchboard Cord | 72 |
| DS-36 | Two-Conductor Switchboard Cord | 84 |



PROTECTORS

LIGHTNING ARRESTERS

ORCHARD BLOCKS

9

Terminals and Protectors

CABLE TERMINALS

TERMINAL STRIPS

BUILDING TERMINALS

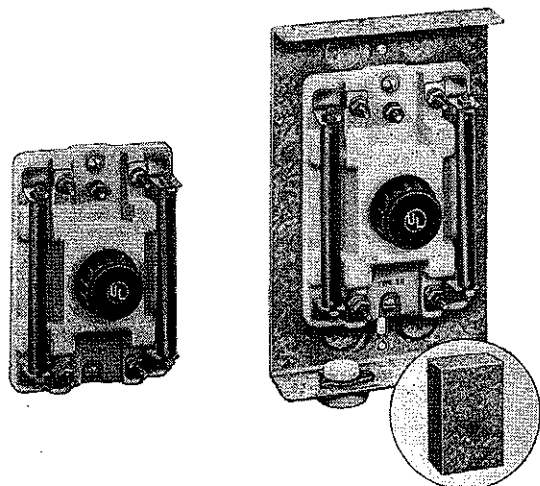
Index  on reverse side

Index for Section Nine

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| 161 . . . | Cable Terminals | | Office |
| | Arresters | 164 . . . | Connecting Blocks |
| 162 . . . | Discharge Blocks | | Protectors Central |
| | Arrester Carbons | | Office |
| | Terminal Strips | 165 . . . | Distributing Frames |
| | Building Terminals | | |
| | Fanning Strips | | |

AUTOMATIC  ELECTRIC

Automatic Electric Type 20 Protector

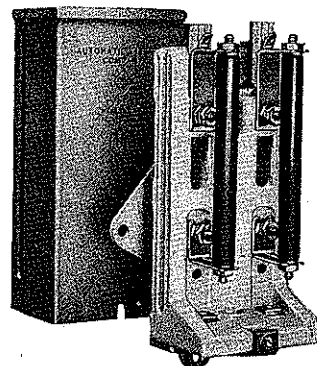


The Type 20 is the best substation protection you can get, for either indoor or outdoor installation. Its base is made of extra-heavy, one-piece porcelain; $3\frac{3}{4}$ in. by $5\frac{1}{2}$ in. The porcelain base is molded with ample spacing between terminals, and with heavy walls between the discharge blocks and fuses and terminals. Placing the discharge blocks in the geometric center of the protector provides great mechanical strength and increases the effective dielectric strength to a point seldom, if ever before, reached in a substation protector. Two positive-grounding discharge blocks insure full and permanent protection from every type of dangerous potential. Their self-grounding discharge surfaces and careful manufacturing tolerances give users full protection. The blocks have an automatic resetting action to avoid the expense of resetting the block after discharge. Regularly equipped with two Type 21, fibre, nutted fuses.

For outdoor use, the Type 20-A is mounted on a metal base-plate and furnished with a heavy-gauge metal cover, $5\frac{1}{8}$ in. by 8 in.; this assembly is known as Type 20. The cover is welded for strength and hot-dip galvanized for protection against rust and weather. Both Type 20 and Type 20-A protectors are listed by Underwriters' Laboratories.

| Cat No. | Type | Fuse Rating | Wt., Lbs. |
|---------|-----------------------|-------------|----------------|
| SB-91 | 20 Outdoor Protector | 7 amp. | $4\frac{3}{4}$ |
| SB-88 | 20-A Indoor Protector | 7 amp. | $1\frac{1}{4}$ |

Automatic Electric Type 15 Protector



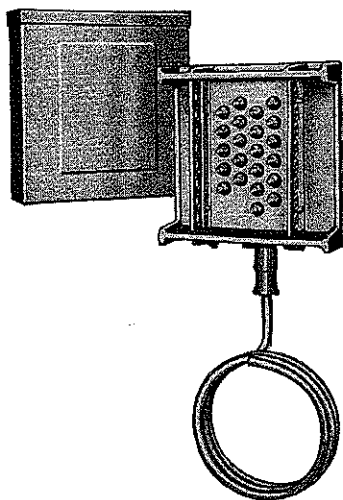
A substation protector now adopted by an increasingly large number of telephone companies as standard, because it offers ideal protection whether installed outdoors or indoors. Costs but little more than ordinary indoor protectors. Eliminates "no-one-home" difficulties. Saves money because of quick installation, long life and economical maintenance.

Easily installed—the four-point bracket assures firm mounting on almost any type of surface. Convenient screw-holes provide for quick, effortless installation. Designed with all-metal weatherproof cover and mounting bracket. Size: 4 in. x $7\frac{1}{4}$ in. White glazed-porcelain base is formed to permit easy access to all terminals. Ample separation of terminals and increased protection is provided by bringing line wires in through base of block and direct to bottom terminals while instrument wires and ground wire are brought up channeled-back of face plate and in through holes immediately beneath proper terminals.

Regularly equipped with Type 21 fiber, nutted fuses and self-clearing discharge blocks with .004 inch air gaps and carbons. Listed by Underwriters if equipped with discharge blocks having .004 inch gaps. Fuse ratings shown are approved power ratings.

| Cat. No. | Description | Fuse Rating | Wt., Lbs. |
|----------|------------------------------|-------------|-----------|
| SA-80 | Type 15 Substation Protector | 7 amp. | 3 |

Automatic Electric Type 60-A Unprotected Cable Terminal



A modern light-weight cable terminal for connecting substation drops to lead-covered cables. Can be mounted on poles or buildings. The mounting bracket is detachable and is installed first; the terminal is then hung on it.

The cable can be run from either top or bottom—the sliding cover fits either end. The cable enters the connecting chamber through a lead nipple to which it is soldered, making a strong, moisture-proof joint.

The face-plate is heavy, glazed porcelain, with terminals, nuts and washers tightly fitted to make a watertight assembly. Each terminal is set in a raised boss and the creepage distance between terminals is further increased by use of oversize insulating washers under the terminal screws.

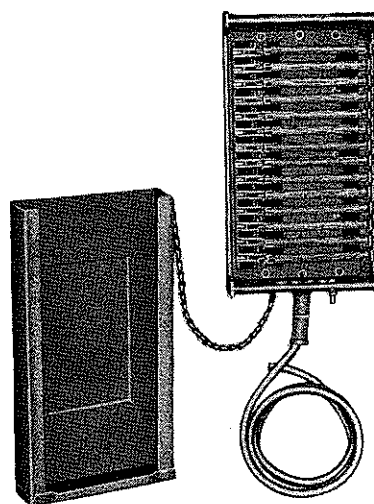
Molded rubber shutters protect wires from the metal edges of the housing; they have knockouts molded in, to be knocked out as necessary; wire openings are thus shielded against entrance of dust and insects. Fanning strips are provided along both sides of the face plate.

The cover of the Type 60-A cable terminal is formed of heavy sheet zinc and is chained to the housing of the terminal. A handy chart is enclosed in the cover for recording drop connections.

Terminals are furnished with a six-foot, 22-gauge cable stub.

| Cat. No. | Capacity | Wt., Lbs. |
|----------|----------|-----------|
| SA-51 | 11-Pair | 14 |
| SA-53 | 16-Pair | 17 |
| SA-55 | 26-Pair | 21 |

Automatic Electric Type 40 Protected Cable Terminal



This compact, small capacity cable terminal is arranged for wall or pole mounting and meets the wide need for a dependable, yet inexpensive means of distributing a small number of cable pairs. It is a very useful unit for terminating cable on the wall of a building to be served and running jumpers direct to the terminal; this practice is becoming popular because it eliminates the use of drops.

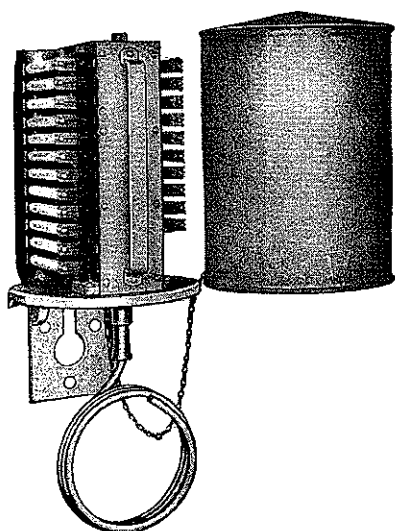
The Type 40 terminal is equipped with a reversible cover so that the cable may be led in from top or bottom. The mounting bracket is detachable and installation is a simple, one-man job; the bracket is installed first and the terminal then hung on it. A brass chain is provided between the cover and the terminal so that the cover can be removed and allowed to hang out of the way when making connections to the terminal.

Each pair of protectors consists of two 3-ampere (power rating) Type 17 wood fuses and two positive-grounding discharge blocks with .0055" air gaps. The fuses and discharge blocks are held firmly in place by separate spring tension; either can be quickly removed without disturbing the other.

Furnished complete with fuses, discharge blocks and with or without a six-foot 22-gauge cable stub. A bell-shaped guard protects the stub at entrance to the terminal. Width is 7¼ inches; height, (not including stub) is 15 inches.

| Cat. No. | Capacity | Type | Wt., Lbs. |
|----------|----------|--------------|-----------|
| SA-34 | 7 Pair | Without Stub | 20 |
| SA-35 | 7 Pair | With Stub | 24 |

Automatic Electric Type 35 Protected Cable Terminal



This type of protected terminal has for many years been the standard unit for terminating and protecting 11 pair, 16 pair and 26 pair cable.

As illustrated, the base and frame, on which the terminating and protective equipment is mounted, is a rigid, durable casting, heavily galvanized. The hood is sheet steel, also heavily galvanized. Easily mounted to poles, these terminals provide a strong, compact weatherproof installation for years of trouble-free service.

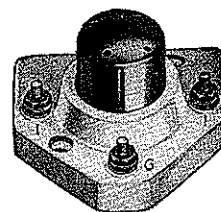
The cable is terminated in a cast aluminum core-box, which is airtight when sealed with compound. The jumper wires are brought in through a protective fibre strip in the base. The fuse clips and springs and the terminating screws, studs and washers are all made of non-ferrous alloys. Separate spring tension holds fuses and discharge blocks; either can be quickly removed without disturbing the other.

Each pair of protectors consists of two 3-ampere (power rating) Type 17 wood fuses and two positive-grounding discharge blocks with .0055" air gaps. Shipped complete with fuses and discharge blocks.

Furnished with or without a six-foot cable stub. A bell-shaped guard is provided to protect cable sheath at entrance of terminal.

| Cat. No. | No. of Pairs | Type | Wt., Lbs. |
|----------|--------------|--------------|-----------|
| SA-38 | 11 | Without Stub | 21 |
| SA-39 | 11 | With Stub | 24 |
| SA-40 | 16 | Without Stub | 25 |
| SA-41 | 16 | With Stub | 28 |
| SA-42 | 26 | Without Stub | 32 |
| SA-43 | 26 | With Stub | 36 |

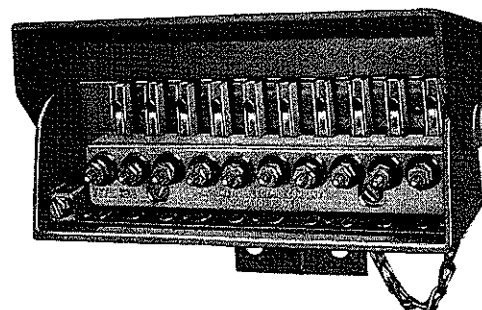
Automatic Electric Type 16 Arrester



This compact, inexpensive arrester provides adequate sub-station protection against lightning where crosses with electric circuits are not likely to occur. It consists of two positive-grounding discharge blocks with .004 inch air gaps mounted in a recess in a porcelain base and covered with a dust-tight screw cap.

| Cat. No. | Dimensions, Inches | Wt., Lbs. |
|----------|-----------------------|-----------|
| SA-57 | 3 1/4 x 3 1/2 x 2 1/4 | 1 |

Automatic Electric Type 19-A Arrester



A weatherproof lightning arrester with 10-wire capacity, for cross-arm mounting. Offers dependable protection from lightning entering cable from subscribers' drop-wires or open-wire leads. Or, can be used to reduce excessive fuse operation from lightning, and resulting outages on long-distance circuits, by cutting in on connections between long lines and protected cable terminals.

Designed for use on crossarms, out of lineman's way, or on poles or flat surfaces. Equipped with light, strong, hot-galvanized, weatherproof housing. Easy to handle and install. Hinged cover stays in open position or can be lifted off if desired.

Equipment includes 10 self-clearing discharge blocks with .0055 inch air gaps and 10 carbons.

| Cat. No. | Wt., Lbs. |
|----------|-----------|
| SA-91 | 5 |

Self-Grounding Discharge Blocks

Positive discharge blocks offer positive and assured protection against high voltages. Designed so that air gap will not burn away, and protection is permanent. Have automatic resetting action.

| Cat. No. | Air Gap | Color of Ends | Wt. per 100, Lbs. |
|----------|---------|---------------|-------------------|
| SA-24 | .004" | Black | 1 |
| SA-84 | .0055" | Blue | 1 |

Non-Grounding Discharge Blocks

Non-grounding discharge blocks provide adequate protection for ordinary lightning discharges. Made of porcelain with carbon unit recessed to provide the proper air gap. Used with protectors and cable terminals using $\frac{3}{8}$ by $1\frac{1}{4}$ inch carbon blocks.

| Cat. No. | Type | Air Gap | Wt. Per 100, Lbs. |
|----------|------|---------|-------------------|
| SA-25 | 2106 | .004" | 1 |
| SA-85 | 2106 | .0055" | 1 |

Arrester Carbons

| Cat. No. | Description | Dimensions, In. |
|----------|----------------|--|
| SA-22 | Plain Carbon | $1\frac{1}{2}$ long, $\frac{3}{8}$ wide, $\frac{5}{16}$ high |
| SA-23 | Grooved Carbon | $1\frac{1}{4}$ long, $\frac{3}{8}$ wide, $\frac{5}{16}$ high |

Type L Terminal Strips



Twin screw binding posts with one soldering terminal mounted on molded plastic with maple back strip.

| Capacity Pr. | Length, In. | Wt., Lbs. |
|--------------|-------------|-----------|
| 5½ | 9½ | ½ |
| 8 | 12⅝ | ¾ |
| 11 | 17 | 1 |
| 13 | 18⅞ | 1¼ |
| 16 | 23¼ | 1½ |
| 26 | 35¾ | 2½ |

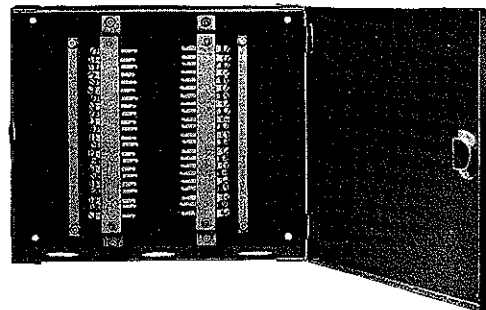
Type T Terminal Strips



Soldering terminals embedded in phenolic retaining strips and mounted on phenolic base.

Made with 1, 2, 3 or 4 rows of terminals with 20 or 26 terminals per row.

Automatic Electric Type 75 Building Terminals



Standard 4-inch deep boxes with numerous knock-outs provided at top and bottom. Surface mounting box is shown—flush type can also be supplied. Terminal strips have screw binding posts for distributing wires and soldering terminals for cable wires.

| Cat. No. | No. of Pairs | Width, Inches | Height, Inches | Wt., Lbs. |
|----------|--------------|---------------|----------------|-----------|
| SB-10 | 11 | 5½ | 10 | 7 |
| SB-12 | 16 | 5½ | 12 | 8 |
| SB-14 | 26 | 11 | 13¾ | 14 |
| SB-16 | 52 | 11 | 19¾ | 17¾ |
| SB-17 | 104 | 11 | 40 | 34 |
| SA-90 | 208 | 24 | 40 | 125 |



Type 75 Terminal Strips Only

| Cat. No. | No. of Pairs | Dimensions, In. | Wt., Lbs. |
|----------|--------------|---|-----------|
| SB-20 | 11 | $9\frac{1}{4} \times 1\frac{3}{4} \times 1\frac{3}{4}$ | ½ |
| SB-21 | 13 | $10\frac{1}{2} \times 1\frac{3}{4} \times 1\frac{3}{4}$ | ¾ |
| SB-22 | 16 | $12\frac{5}{8} \times 1\frac{3}{4} \times 1\frac{3}{4}$ | ¾ |
| SB-23 | 26 | $19\frac{1}{2} \times 1\frac{3}{4} \times 1\frac{3}{4}$ | 1 |
| SB-24 | 52 | $37\frac{1}{2} \times 1\frac{3}{4} \times 1\frac{3}{4}$ | 2½ |

Type 75 Fanning Strips Only

| Cat. No. | Description | Dimensions, In. | Wt., Lbs. |
|----------|---------------------|--|-----------|
| SB-26 | for 11 pr. Terminal | $7\frac{3}{4} \times \frac{1}{2} \times 1\frac{1}{2}$ | ⅛ |
| SB-27 | for 13 pr. Terminal | $9 \times \frac{1}{2} \times 1\frac{1}{2}$ | ⅛ |
| SB-28 | for 16 pr. Terminal | $10\frac{7}{8} \times \frac{1}{2} \times 1\frac{1}{2}$ | ⅛ |

Note: For 26 pr. Terminals use two No. SB-27 strips.
For 52 pr. Terminals use four No. SB-27 strips.

Protector Fuses

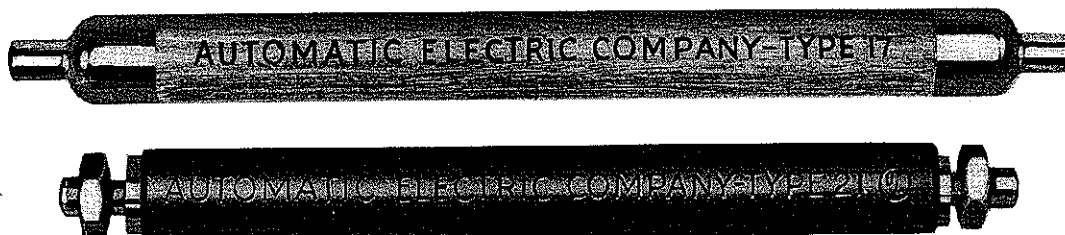
A Word About Ratings

There are two commonly used methods of rating fuses for telephone, telegraph and signaling service. "Power" rating means a fuse will carry the rated current for an indefinite period, without undue heating, but will blow within five minutes on 150% of rated current. It must also meet certain other require-

ments. "Telephone" rating means a fuse will "blow" at the rated current. All Automatic Electric fuses are marked with "power" ratings.

"Underwriters Approved" Fiber Fuses

Type 21 fiber fuse is listed under the Re-Examination Service of Underwriters' Laboratories, Inc. Rating marked on this fuse is "power" rating.



Type 17

Length shoulder to shoulder, $4\frac{3}{4}$ inches; tip diameter $\frac{13}{64}$ inch. Interchangeable with Reliable Electric Company's No. 27 and Cook Electric Company's No. A-7.

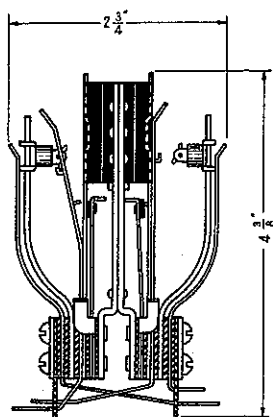
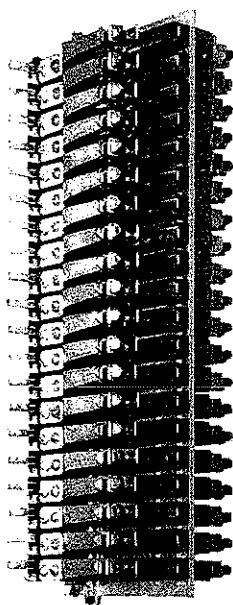
| Cat. No. | Description | Rating Amperes | Wt. per 100, Lbs. |
|----------|-------------|-------------------|----------------------|
| SA-60 | Wood | 3 | 7 |

Type 21

Length, shoulder to shoulder, $4\frac{1}{32}$ inches. Interchangeable with Western Electric Company's No. 11C, Reliable Electric No. 55 and Cook Electric No. 52.

| Cat. No. | Description | Rating Amperes | Wt. per 100, Lbs. |
|----------|-------------|-------------------|----------------------|
| SA-92 | | 7 | 8 |

Type 675 Central Office Protectors



Cross-section drawing showing construction and spring arrangement. Note that the heat coil on the right is in operated position. To reset, the coil is removed, turned and replaced.

This central office protector is a heat coil and carbon block type for protection against lightning, sneak

current, and crosses with light and power circuits. The pairs are mounted on $\frac{1}{2}$ inch centers.

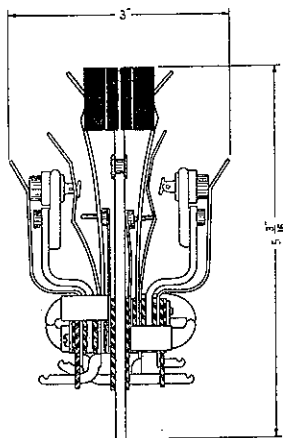
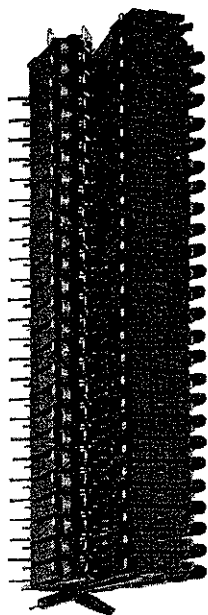
In operation, this protector opens the circuit, grounds the line and operates an alarm signal. The heat coils are of the trigger type. When operated, they are removed, turned and replaced. No soldering is necessary.

The springs are of ample strength to keep the lightning arrester carbons under compression at all times. A test plug is provided for testing the circuit through or around the heat coils.

Protector pairs on $\frac{1}{2}$ inch centers. Includes $4\frac{1}{2}$ ohm heat coils and carbon blocks with .005" celluloid dielectrics. With $7\frac{1}{2}$ ohm heat coils, or Type 2105 self-clearing discharge blocks on special order. Other optional equipment listed below.

| Cat. No. | Description | Heat Coils |
|----------|---|---------------------|
| SB-67 | 20 pr. Type 675 Protector | $4\frac{1}{2}$ ohms |
| SB-69 | 10 pr. Type 675 Protector | $4\frac{1}{2}$ ohms |
| SA-98 | 21 pr. Type 675 Protector | |
| SA-99 | 22 pr. Type 675 Protector | |
| SB-71 | 50 pr. Type 675 Protector | $4\frac{1}{2}$ ohms |
| SB-73 | 51 pr. Type 675 Protector | $4\frac{1}{2}$ ohms |
| SB-75 | $4\frac{1}{2}$ ohm Heat Coils for Type 675 Protectors | |
| SB-77 | Carbon and Dielectric, Comp. | |
| SB-78 | Dummy Heat Coil—Conducting | |
| SB-79 | Dummy Heat Coil—Non-Conducting | |
| SB-80 | Test Shoe | |

Type 676 Central Office Protectors



The heat coil on the right in cross-section view is in operated position. To reset, the coil is removed, turned around and replaced. No soldering is necessary.

A heat coil and carbon block central office protector that provides excellent protection against sneak currents, lightning and direct crosses with supply circuits. It features a quick opening heat coil that requires no resoldering and that operates repeatedly.

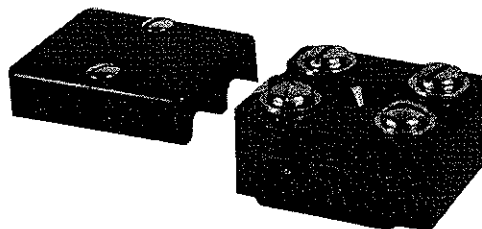
The protectors are mounted on $\frac{3}{8}$ " centers—a compact arrangement that permits mounting a large number of pairs in a small space. As shown, above, this protector is supplied in 13 and 25 pair groups.

The heat coil consists of heating element and trigger held by a fusible material. When subjected to abnormal current, the fusible material melts—thus releasing the trigger which grounds the circuit toward the trouble and operates an alarm circuit. To reset, the repair man removes the heat coil (which, in the interval, has cooled), turns it around so that the trigger engages the hook in the trip spring and the coil is then ready to operate again.

Testing of outside lines and switchboard equipment may be accomplished without unsoldering jumpers or wires or disturbing the protector. Dummy heat coils of a conducting type may be substituted for regular heat coils for making convenient testing arrangements for inter-office trunks and other circuits that do not need protection. Non-conducting dummy heat coils can be used on spare protectors to prevent operation of alarm circuit.

| Cat. No. | Description |
|------------|--|
| SB-61..... | 25 pair Type 676 Protectors |
| SB-62..... | 13 pair Type 676 Protectors |
| SB-81..... | Carbons and Dielectric, Comp. |
| SB-82..... | 2.7-ohm Heat Coil |
| SB-64..... | Dummy Heat Coil (Conductor Type) |
| SB-65..... | Dummy Heat Coil (Non-conductor Type) |
| SB-66..... | Test Shoe for plugging into protectors |

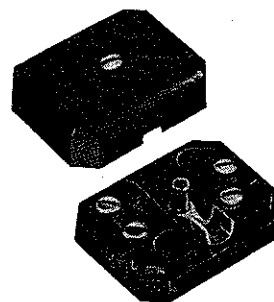
Connecting Blocks



Interlocking connection blocks have every feature needed to save installation time. Tongue and groove construction provides excellent feature for alignment in multiple installations. Insulating covers have partitions between each pair of connections to prevent shorts. Cover is attached by two brass screws. Base and cover are made of molded bakelite.

| Cat. No. | Type | Wt. per 100, Lbs. |
|----------|--------------|-------------------|
| S-2598 | 41 (2-point) | 5 |
| S-2585 | 42 (3-point) | 7 |

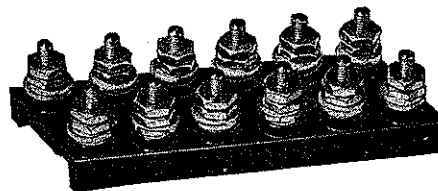
Telephone Connecting Blocks



Especially designed to connect telephones to lines. Cover and base are made of tough plastic. Cover has non-losable screw, turning into brass stud. Removable tie cord clip takes the strain off the cord terminals. Terminal designations are molded into base.

| Cat. No. | Type | Wt. per 100, Lbs. |
|----------|--------|-------------------|
| AV-19 | 1 Pair | 6 |
| AV-20 | 2 Pair | 8 |

Type K Connecting Blocks



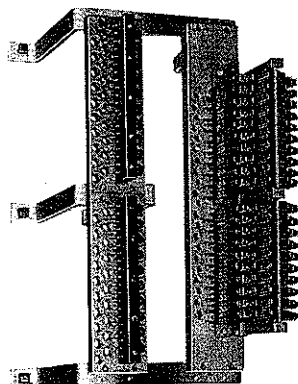
Made of a single piece of moulded bakelite $1\frac{1}{4}$ inches wide. Studs are mounted on bosses moulded into the face of the block. Furnished in 2, 4, 6, 8, 10, 12, 14, or 16 terminal pairs.

Distributing Frames

The Automatic Electric line includes distributing frames to meet all requirements. They are arranged for wall or floor mounting and in "A" or "B" types. The "A" types have the protectors on the switchboard side while the "B" types have the protectors on the incoming line side. Both types are arranged to accommodate $\frac{1}{2}$ " or $\frac{3}{8}$ " protectors.

Estimates on distributing frames to meet specific requirements will be furnished without obligation. When writing, give the type of frame wanted, the number and type of protectors, the number and type of terminals and the dimensions and a rough drawing of the room in which frame is to be mounted.

Wall Type



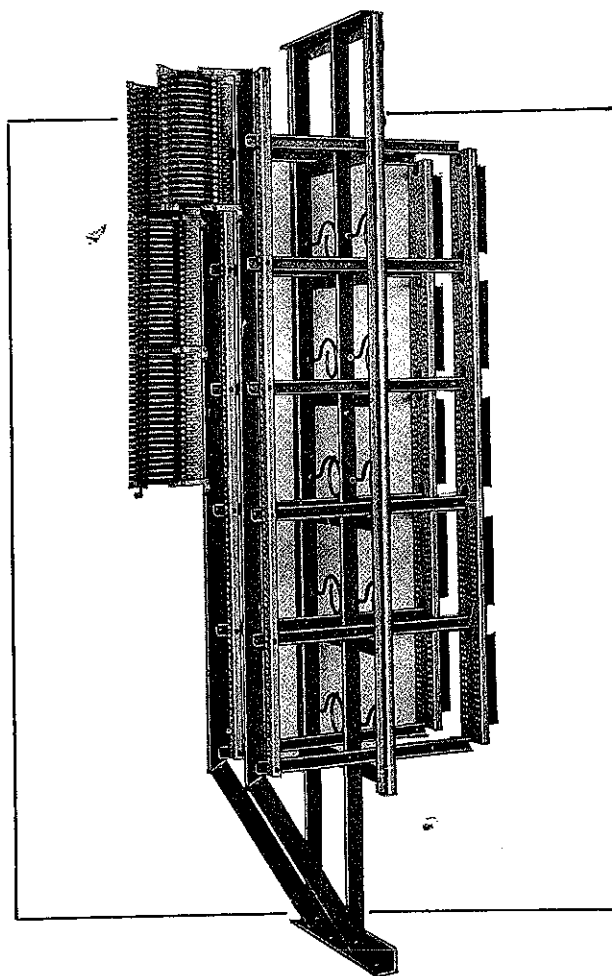
Wall type frame shown is perfectly adapted for use in exchanges requiring protection up to about 80 lines. It accommodates one or more Type B, 2 x 20 terminal blocks and 10-pair Type 675 protector units or terminal blocks as desired. Frame is steel, aluminum finished, and fanning strip is maple.

Furnished complete with mounting parts for protectors and terminal blocks as ordered, and with lag screws for fastening to wall. Dimensions—width, 10 $\frac{1}{2}$ inches; height, 1-foot, 5 inches; depth 12 $\frac{3}{4}$ inches.

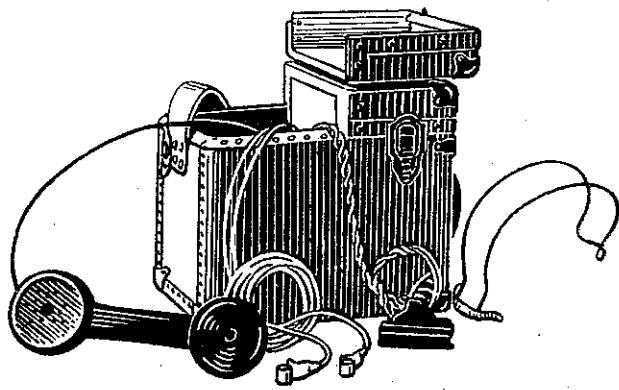
| Cat. No. | Description |
|----------|--|
| SA-63 | With 20 Pairs Prots., and 2 Term. Blocks |
| SA-64 | With 10 Pairs Prots., and 1 Term. Block |
| SA-67 | Frame with Protector Fanning Strip (No protectors or terminals) |

Note: Larger size wall frames, for requirements up to 200 lines, are available. Estimates will be gladly furnished without obligation. Give number and type of protectors and terminal blocks desired.

Floor Type



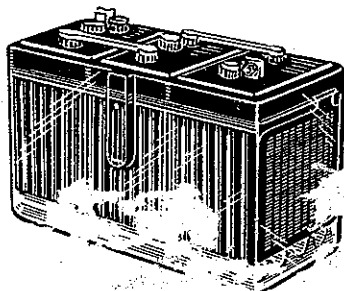
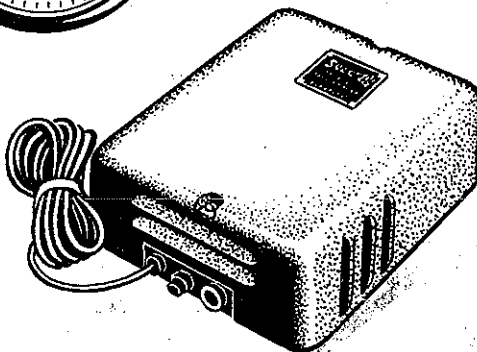
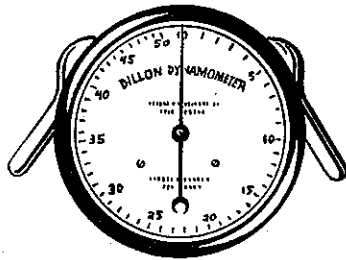
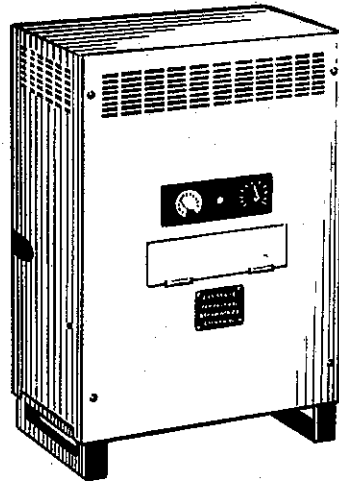
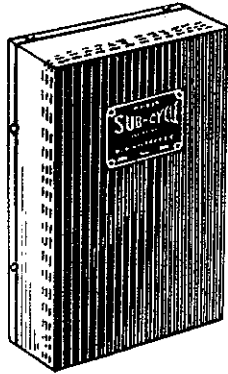
A Typical Main Distributing Frame with a capacity of 200 pairs of Protectors (80 equipped) and 250 Line Cable Terminals.



WEST TEST SET

CONVOTROL

SUB-CYCLE EQUIPMENT



10 Power and Testing

BATTERIES

CONVOTROL

DYNAMOMETER

POWER SUPPLY

TEST SETS AND EQUIPMENT

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AUTOMATIC  ELECTRIC

Storage Batteries

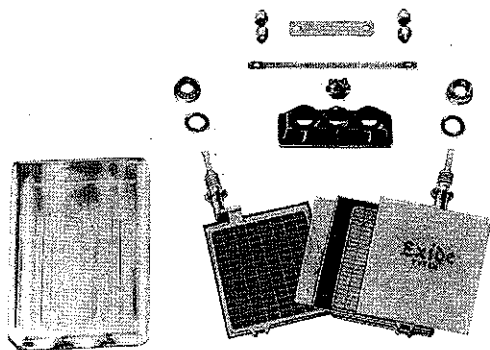
In selecting the proper storage battery for a telephone installation, the purchaser should consider the requirements of his particular exchange and the ratio of cost to potential life of the battery that will meet these requirements. Generally the life of a battery is determined by two factors: type of plates, and method of charging.

There are two general types of plates—Planté and Faure. Long life is generally conceded to the Planté type while the Faure type usually has lower unit capacity cost. The Planté positive plate consists of a lead antimony alloy grid, perforated with openings into which the pure lead buttons of active metal are forced.

The heavy Permanized negative plate is constructed of a lead antimony grid or framework of interlocking rib and bar design holding the active material locked in place by the horizontal bars.

The Faure, or pasted plate is formed by the mechanical pasting of the active material into the open spaces of the grid-shaped, lead-antimony sheet. The following listings of storage batteries are of the sealed glass jar type which completely confine the spray within the cells, eliminating the need for special compartments, trays or battery rooms. Sealed glass jar type batteries are shipped complete and fully charged, ready for immediate service.

Exide Batteries

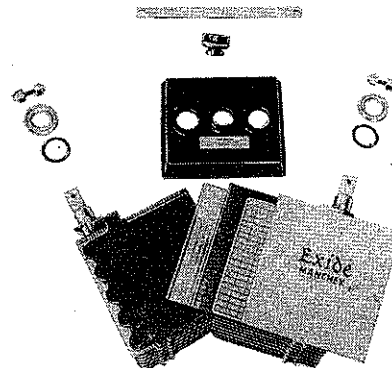


Exide-Tyxtex Types DOE, EOE and FOE

Exide pasted plate batteries are assembled in clear molded glass jars with the elements resting upon ribs in the bottom. Except for small size (DOE-A), all types have burned ring post construction with copper inserts in the posts to improve their conductivity. These cells are shipped assembled, sealed, charged and filled with electrolyte. Information on racks will be furnished on request.

Single Cell Units

| Type and Size | Amp. Hr. Cap. at 8-Hr. Rate to 1.75 Final Volts | Approximate Dimensions, In. | | | Wt., Lbs. |
|---------------|---|-----------------------------|----------|---------|-----------|
| | | Length | Width | Height | |
| DOE-5A | 50 | 3- 1/16 | 7-13/16 | 12-5/8 | 27 |
| DOE-7A | 75 | 3- 7/8 | 7-13/16 | 12-5/8 | 33 |
| DOE-9A | 100 | 4-11/16 | 7-13/16 | 12-5/8 | 39 |
| DOE-11 | 125 | 5- 1/2 | 7-13/16 | 12-1/2 | 47 |
| DOE-13 | 150 | 6- 5/16 | 7-13/16 | 12-1/2 | 55 |
| DOE-15 | 175 | 7- 1/8 | 7-13/16 | 12-1/2 | 61 |
| EOE-13 | 240 | 6- 1/8 | 9-15/16 | 15-1/4 | 91 |
| EOE-15 | 280 | 6- 7/8 | 9-15/16 | 15-1/4 | 105 |
| EOE-17 | 320 | 7- 3/4 | 9-15/16 | 15-1/4 | 116 |
| EOE-19 | 360 | 8- 5/8 | 9-15/16 | 15-1/4 | 125 |
| EOE-29 | 560 | 12- 1/8 | 9-15/16 | 15-1/4 | 176 |
| FOE-17 | 608 | 8 | 13- 5/16 | 19-9/16 | 210 |
| FOE-19 | 684 | 8- 7/8 | 13- 5/16 | 19-9/16 | 229 |
| FOE-29 | 1064 | 12- 3/8 | 13- 5/16 | 19-9/16 | 336 |



Exide-Manchex Types DME, EME, and FME

Except for the three smallest sizes (DME-A), all types have burned ring seal post construction with copper inserts in the posts to improve their conductivity. All types have wood and slotted plastic separators. Bolt connectors, lead plated copper intercell connectors, and lugs are furnished with two cells or more. Each cell is a unit not requiring crates. Information on racks for these cells will be furnished upon request.

Single Cell Units

| Type and Size | Amp. Hrs. Cap. at 8 Hour Rate to 1.75 Final Volts | Approximate Dimensions, In. | | | Wt., Lbs. |
|---------------|---|-----------------------------|----------|---------|-----------|
| | | Length | Width | Height | |
| DME-5A | 40 | 3- 1/16 | 7-13/16 | 12-5/8 | 29 |
| DME-7A | 60 | 3- 7/8 | 7-13/16 | 12-5/8 | 35 |
| DME-9A | 80 | 4-11/16 | 7-13/16 | 12-5/8 | 42 |
| DME-11 | 100 | 5- 1/2 | 7-13/16 | 12-1/2 | 50 |
| DME-13 | 120 | 6- 5/16 | 7-13/16 | 12-1/2 | 59 |
| DME-15 | 140 | 7- 1/8 | 7-13/16 | 12-1/2 | 66 |
| DME-17 | 160 | 7-15/16 | 7-13/16 | 12-1/2 | 73 |
| EME-11 | 200 | 6- 1/8 | 9-15/16 | 15-1/4 | 96 |
| EME-13 | 240 | 6- 7/8 | 9-15/16 | 15-1/4 | 113 |
| EME-15 | 280 | 7- 3/4 | 9-15/16 | 15-1/4 | 126 |
| EME-17 | 320 | 8- 5/8 | 9-15/16 | 15-1/4 | 138 |
| EME-21 | 400 | 10- 3/8 | 9-15/16 | 15-1/4 | 165 |
| EME-25 | 480 | 12- 1/8 | 9-15/16 | 15-1/4 | 191 |
| FME-15 | 560 | 8 | 13- 5/16 | 19-9/16 | 234 |
| FME-17 | 640 | 8- 7/8 | 13- 5/16 | 19-9/16 | 259 |
| FME-21 | 800 | 10- 5/8 | 13- 5/16 | 19-9/16 | 308 |
| FME-25 | 960 | 12- 3/8 | 13- 5/16 | 19-9/16 | 373 |

Multi-Cell Units

BTMH-2, CTMH-2, ETMH-2 and PTMH-2

Batteries are assembled in wood crates of from 4 to 8 cells in single row. Inter cell connectors are burned to the posts. Batteries are shipped ready for service.

| Type and Size | Cap. in Amp. Hrs. at 8-Hr. Rate to 1.75 Final Volts | No. of Cells Per Unit | Approximate Dimensions, In. | | | Wt., Lbs. |
|---------------|---|-----------------------|-----------------------------|----------|--------|-----------|
| | | | Length | Width | Hgt. | |
| BTMH-2 | 6 | 4 | 10- 3/16 | 4-15/16 | 10 1/8 | 30 |
| | | 5 | 12- 9/16 | 4-15/16 | 10 1/8 | 37 |
| | | 6 | 14- 7/8 | 4-15/16 | 10 1/8 | 44 |
| | | 7 | 17- 3/16 | 4-15/16 | 10 1/8 | 53 |
| | | 8 | 19- 9/16 | 4-15/16 | 10 1/8 | 61 |
| CTMH-2 | 12 | 4 | 11- 1/4 | 7- 1/2 | 12 1/8 | 59 |
| | | 5 | 13- 7/8 | 7- 1/2 | 12 1/8 | 73 |
| | | 6 | 16- 1/2 | 7- 1/2 | 12 1/8 | 87 |
| | | 7 | 19- 1/16 | 7- 1/2 | 12 1/8 | 102 |
| | | 8 | 21-11/16 | 7- 1/2 | 12 1/8 | 115 |
| PTMH-2 | 24 | 4 | 14- 3/16 | 8 | 16 7/8 | 95 |
| | | 5 | 17- 1/8 | 8 | 16 7/8 | 117 |
| | | 6 | 20- 1/16 | 8 | 16 7/8 | 140 |
| | | 7 | 23 | 8 | 16 7/8 | 162 |
| | | 8 | 25-15/16 | 8 | 16 7/8 | 184 |
| ETMH-2 | 36 | 4 | 15- 7/16 | 10- 9/16 | 16 5/8 | 137 |
| | | 5 | 18- 1/16 | 10- 9/16 | 16 5/8 | 168 |
| | | 6 | 21-15/16 | 10- 9/16 | 16 5/8 | 201 |
| | | 7 | 25- 3/16 | 10- 9/16 | 16 5/8 | 233 |
| | | 8 | 28- 7/16 | 10- 9/16 | 16 5/8 | 266 |

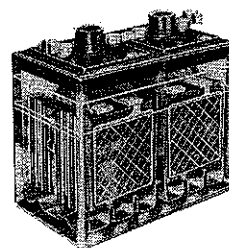
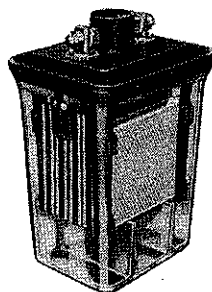
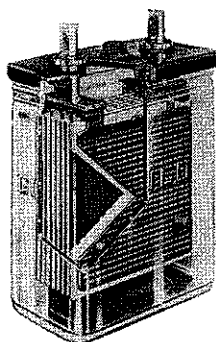
Multi-Unit

KZHGR and LXGH Pasted Plate Type

The elements are made of pasted type plates, assembled with both wood and Vitrex glass separators, in strong, multi-compartment molded glass containers. Each unit has one cell equipped with pilot balls to give an indication of the state of charge. Each unit is furnished with spray proof, easy-to-remove vent plugs. The units are shipped assembled ready for service. Inter-unit connectors will be furnished when 2 or more units are ordered (Specify whether end to end or side to side connectors are wanted). A thermometer, hydrometer syringe, and 2 connector bolt wrenches will be supplied with shipments on orders for batteries of 60 or more cells.

| Type and Size | Cap. in Amp. Hrs. at 8-Hr. Rate to 1.75 Final Volts | No. of Cells Per Unit | Approximate Dimensions, In. | | | Wt., Lbs. |
|---------------|---|-----------------------|-----------------------------|--------|---------|-----------|
| | | | Length | Width | Height | |
| 3-KZHGR-7 | 25 | 3 | 9- 1/4 | 5-9/32 | 8-11/16 | 41 |
| 2-LXGH-7 | 50 | 2 | 6- 3/8 | 7-1/2 | 10- 1/4 | 40 |
| 3-LXGH-7 | 50 | 3 | 9- 7/32 | 7-1/2 | 10- 1/4 | 58 |
| 2-LXGH-13 | 100 | 2 | 9- 3/4 | 7-1/2 | 10- 1/4 | 68 |
| 3-LXGH-13 | 100 | 3 | 14-13/32 | 7-1/2 | 10- 1/4 | 102 |

Gould Batteries



All Gould cells are assembled in glass jars with hard rubber covers. The Planté type is of Gould dual suspension construction. This features projections which rest on opposite top edges of the jar to support the weight of the element, and hard rubber channels resting on the lug ends of the plates of one group to support the free ends of the plates of the group of opposite polarity. The Floté type utilizes the "supported element" design, the plates resting on ribs molded into the bottom of the jar.

PLANTE' TYPE — Gould Planté cells contain elements of Planté pure lead positive and pasted negative groups insulated with white cedar separators. The positive plates are formed from pure lead blanks

formed from the pure lead plate itself. This type of Gould battery should be selected where long life and minimum maintenance are the primary considerations.

FLOTE' — Floté batteries are assembled in "Steel Glass" jars featuring element supporting ribs in the bottom of the jar. Elements are held firmly in place by corner and side locks consisting of tapered hard rubber wedges. The positive plates are of Floté construction, featuring heavy grids of a pattern designed to lock the active material firmly in place. These batteries have built in charge indicators, which show the state of charge at a glance. This type of Gould battery should be selected where long life and high capacity are required and only minimum space is available.

Gould Plante'—Types DP, EP, FP

These cells are shipped completely assembled and charged, supplied with inter-cell, inter-row and terminal connectors.

Single Cell Units

| Type and Size | Amp. Hrs. Cap., 8-Hr. Rate, 1.75 Volts | Approximate Dimensions, In. | | | Wt., Lbs. |
|---------------|--|-----------------------------|--------|----------|--------------|
| | | Length | Width | Height | |
| DP-5 | 40 | 4-15/16 | 8-1/16 | 12- 1/2 | 32 |
| DP-7 | 60 | 5-13/16 | 8-1/16 | 12- 1/2 | 38 |
| DP-9 | 80 | 6-13/16 | 8-1/16 | 12- 1/2 | 45 |
| EP-5 | 80 | 5 | 10 | 16- 1/8 | 55 |
| EP-7 | 120 | 5- 7/8 | 10 | 16- 1/8 | 70 |
| EP-9 | 160 | 6- 3/4 | 10 | 16- 1/8 | 85 |
| EP-11 | 200 | 9- 1/4 | 10-1/8 | 16-13/16 | 120 |
| EP-13 | 240 | 9- 1/4 | 10-1/8 | 16-13/16 | 130 |
| EP-15 | 280 | 13- 1/4 | 10-1/4 | 18- 9/16 | 155 |
| EP-17 | 320 | 13- 1/4 | 10-1/4 | 18- 9/16 | 165 |
| EP-19 | 360 | 13- 1/4 | 10-1/4 | 18- 9/16 | 175 |
| EP-21 | 400 | 13- 1/4 | 10-1/4 | 18- 9/16 | 185 |
| FP-9 | 320 | 8- 7/8 | 13-7/8 | 20- 7/8 | 205 |
| FP-11 | 400 | 8- 7/8 | 13-7/8 | 20- 7/8 | 220 |
| FP-13 | 480 | 10- 1/4 | 13-3/4 | 20- 7/8 | 245 |
| FP-15 | 560 | 12- 3/8 | 14 | 20- 7/8 | 275 |
| FP-17 | 640 | 12- 3/8 | 14 | 20- 7/8 | 300 |
| FP-19 | 720 | 14- 3/4 | 14 | 20- 7/8 | 340 |
| FP-21 | 800 | 14- 3/4 | 14 | 20- 7/8 | 355 |

Gould Small Glass Jar Batteries

These small glass jar batteries may be used for inter-communication systems, operators transmitter batteries, manual and dial PBX, central office No. 2 battery service, etc.

Gould Plante'—Types WPE-3, XPE-3 & YPE-3

Single cells — assembled in multi-cell wood trays.

| Type and Size | Capacity in Ampere Hours, 8-Hour Rate, 1.75 Volts | Approximate Dimensions, In. | | | Wt., Lbs. |
|---------------|--|-----------------------------|--------|----------|--------------|
| | | Length | Width | Height | |
| WPE-3 | 9.2 | 2-3/16 | 4-5/16 | 8- 3/4 | 7 |
| XPE-3 | 20 | 2-1/2 | 6-3/4 | 10-13/16 | 15 |
| YPE-3 | 28 | 2-1/2 | 6-3/4 | 15- 9/16 | 23 |

Gould Flote'—Types DF, EF, and FF

These suspended element type batteries are shipped charged and sealed with all necessary inter-cell, inter-row and terminal connectors ready for service.

Single Cell Units

| Type and Size | Amp. Hrs. Cap., 8-Hr. Rate, 1.75 Volts | Approximate Dimensions, In. | | | Wt., Lbs. |
|---------------|--|-----------------------------|---------|--------|--------------|
| | | Length | Width | Height | |
| DF-5 | 48 | 5-13/16 | 8-15/16 | 13 1/4 | 43 |
| DF-7 | 72 | 6-11/16 | 8-15/16 | 13 1/4 | 51 |
| DF-9 | 96 | 6- 9/16 | 8-15/16 | 13 1/4 | 60 |
| EF-7 | 144 | 7 | 11- 3/8 | 16 1/8 | 84 |
| EF-9 | 192 | 7- 7/8 | 11- 3/8 | 16 1/8 | 100 |
| EF-11 | 240 | 8- 3/4 | 11- 3/8 | 16 1/8 | 115 |
| EF-13 | 288 | 9- 5/8 | 11- 3/8 | 16 1/8 | 136 |
| FF-9 | 384 | 8- 1/4 | 14- 1/2 | 19 1/4 | 149 |
| FF-11 | 480 | 9- 1/8 | 14- 1/2 | 19 1/4 | 170 |
| FF-13 | 576 | 10 | 14- 1/2 | 19 3/8 | 202 |
| FF-15 | 672 | 10- 7/8 | 14- 1/2 | 19 3/8 | 223 |
| FF-17 | 768 | 12- 5/8 | 14- 1/2 | 19 3/8 | 270 |
| FF-23 | 1056 | 15- 1/4 | 14- 1/2 | 19 3/8 | 345 |

Gould Floté

Gould Flote'—Types BF, CF, PF, and RT

These batteries are available in multi-cell glass jar units, two, three and four-cell containers as specified below. Smaller units may be trayed as required.

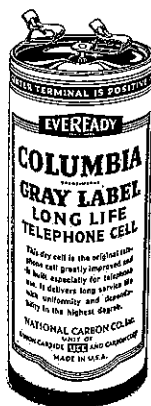
| Type and Size | Capacity in Ampere Hours, 8-Hour Rate, 1.75 Volts | Number Compartments in Containers | Number Cells in Unit | Approximate Dimensions, In. | | | Wt., Lbs. |
|---------------|--|---|----------------------------|-----------------------------|---------|--------|--------------|
| | | | | Length | Width | Height | |
| BFI-54 | 15 | 2 | 2 | 3- 1/8 | 8-5/8 | 8 | 20 |
| BF-94 | 30 | 2 | 2 | 5- 1/4 | 9 | 8 | 24 |
| CF-52 | 10 | 1 | 1 | 2- 5/8 | 3-5/8 | 7 3/4 | 8 |
| CF-54 | 10 | 2 | 2 | 2-13/16 | 7-1/4 | 7 3/4 | 12 |
| PF-92 | 20 | 1 | 1 | 4- 5/8 | 3-5/8 | 7 3/4 | 13 |
| PF-96 | 20 | 3 | 3 | 4- 5/8 | 10-7/16 | 7 3/4 | 29 |
| RT-74 | 50 | 2 | 2 | 5- 5/8 | 7-1/2 | 10 1/4 | 48 |
| RT-76 | 50 | 3 | 3 | 8- 1/8 | 7-1/2 | 10 1/4 | 65 |
| RT-78 | 50 | 4 | 4 | 10- 5/8 | 7-1/4 | 10 3/8 | 80 |
| RT-134 | 100 | 2 | 2 | 9- 7/16 | 7-1/2 | 10 1/4 | 69 |
| RT-136 | 100 | 3 | 3 | 13-13/16 | 7-1/2 | 10 1/4 | 97 |

Telephone Battery

A telephone battery designed to be installed by the subscriber, who withdraws old battery and inserts new, saving trip for service man.

Two sizes as listed below. S-2375 is used in place of two No. 6 dry cells; S-2376 is used in place of three No. 6 cells. Standard package is 10.

| Cat. No. | Type | Voltage | Size, In. | Wt., per Pkg., Lbs. |
|----------|------|-----------------|---|------------------------|
| S-2375 | 386C | 3 | 3 $\frac{7}{8}$ x2 $\frac{5}{8}$ x5 $\frac{3}{8}$ | 29 |
| S-2376 | 489C | 4 $\frac{1}{2}$ | 3 $\frac{7}{8}$ x3 $\frac{7}{8}$ x5 $\frac{3}{8}$ | 43 |

Columbia Gray Label Dry Cell

The Gray Label Long-Life is especially designed for telephone work, with long-life, as the name implies, in light drain service. Round jackets only, equipped with Fahnestock spring terminals unless specifically ordered otherwise.

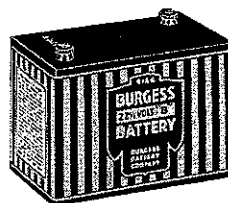
Standard package is 12 cells to carton. On domestic orders for 48 or more, transportation charges are prepaid. Orders less than 48 are F.O.B. shipping point.

| Cat. No. | Type | Size, In. | Wt. per Pkg., Lbs. |
|----------|------|-----------------------------------|-----------------------|
| S-2373 | 6 | 2 $\frac{5}{8}$ x 6 $\frac{5}{8}$ | 26 |

Flashlight Batteries

Leak-proof flashlight batteries designed for general industrial use. Standard size, known for long life. They will give dependable service under all average conditions.

| Cat. No. | Type | Size, In. | Wt., Lbs. |
|----------|------|-----------------|-----------|
| S-2389 | 2LP | 2-27/64x1-21/64 | 1/4 |

22 $\frac{1}{2}$ V. "B" Battery

Equipped with screw terminals. Dimensions are 3 inches x 3 $\frac{3}{4}$ inches x 2 $\frac{1}{2}$ inches.

| Cat. No. | Wt., Lbs. |
|----------|-----------|
| S-2387 | 1 |

45 V. "B" Battery

General purpose heavy duty, 45 volt "B" battery. Equipped with spring clips for easier testing. Taps at minus, plus 22 $\frac{1}{2}$ and plus 45 volts. Dimensions are 8 inches x 4 inches x 7 inches.

| Cat. No. | Wt., Lbs. |
|----------|-----------|
| S-2393 | 11 |

Ray-O-Vac Dry Cell

A very popular dry cell manufactured especially for telephone and light drain service. Has internal protective coating which prolongs life of the cell and reduces shelf deterioration to a minimum. Furnished with spring clips.

Standard package is 25 dry cells. On domestic orders for 50 or more transportation charges are paid. Domestic orders of less than 50 are shipped F.O.B. nearest shipping point.

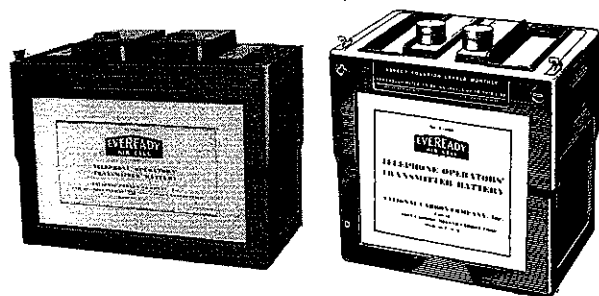
| Cat. No. | Type | Size, In. | Wt. per Pkg., Lbs. |
|----------|------|--------------------|-----------------------|
| S-2374 | 6 | 2 $\frac{1}{2}$ x6 | 58 |

Lantern Battery

Eveready six-volt dry cell used extensively for electric lanterns, emergency truck signals, etc. Small, compact and powerful with a long service life.

| Cat. No. | Type | Size, In. | Wt., Lbs. |
|----------|------|---|-----------------|
| S-2382 | 409 | 3 $\frac{11}{16}$ x2 $\frac{11}{16}$ x2 $\frac{11}{16}$ | 1 $\frac{1}{2}$ |

Eveready Operator's Transmitter Battery



Air-depolarized constant-voltage primary batteries especially made as a source of power for operators' transmitters. Designed not only to have long life but also to provide sustained voltage so as to insure high-quality transmission at all times.

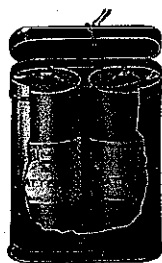
Furnished in two sizes as shown. Two S-2378 batteries connected in series provide current at never over five volts and never below four. One S-2378 battery and one S-2377 connected in series will supply current at 3.75 maximum to three volts minimum.

Rated at 600 ampere hour capacity. When installed in switchboards of modern design, drawing approximately 100 milliamperes, these batteries will supply 6000 talking hours of peak transmission.

Fahnestock clip terminals. Shipped dry and are activated by merely filling with ordinary drinking water. No chemicals and no assembling necessary. No attention or service required except to add a few ounces of water occasionally.

| Cat. No. | Voltage | Amp. Hour Capacity | Dimensions Inches | Wt., Lbs. |
|----------|---------|--------------------|------------------------|-----------|
| S-2378 | 2.50 | 600 | 9 1/8 x 6 5/8 x 10 3/8 | 24 |
| S-2377 | 1.25 | 300 | 5 1/4 x 6 5/8 x 10 3/8 | 13 |

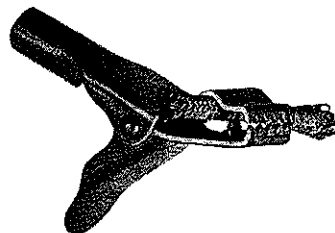
Battery Boxes



These battery boxes provide a neat and convenient means of mounting dry cells and protecting them from injury. May be hung on the wall or alongside of desk, placed on the floor or wherever needed. Made of sheet metal black japanned and lined with insulating material.

| Number | Capacity | Wt., Lbs. |
|--------|-------------------|-----------|
| S-3007 | 2 No. 6 Dry Cells | 1 1/4 |
| S-3008 | 3 No. 6 Dry Cells | 1 1/2 |

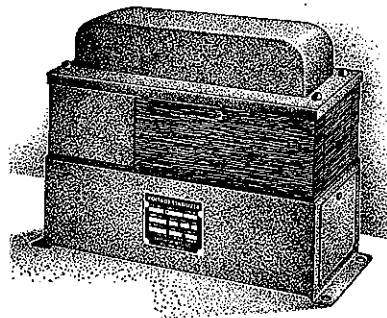
Frankel Test Clips



Used for making low tension test connections in the middle of an insulated wire without removing insulation. Flat jaw has needle like points in jaws that pierce insulation. When clips are removed insulation closes the small hole made by the pin. Jaw spread is 3/8 inch. Dull nickel finish.

| Cat. No. | Type | Connection | Wt., per 100, Lbs. |
|----------|------|--------------|--------------------|
| S-3633 | 2421 | Solder | 2 1/4 |
| S-3638 | 2434 | Thumb Screw | 2 1/2 |
| S-3644 | 2442 | Nut and Bolt | 2 1/2 |

Raytheon Voltage Stabilizer

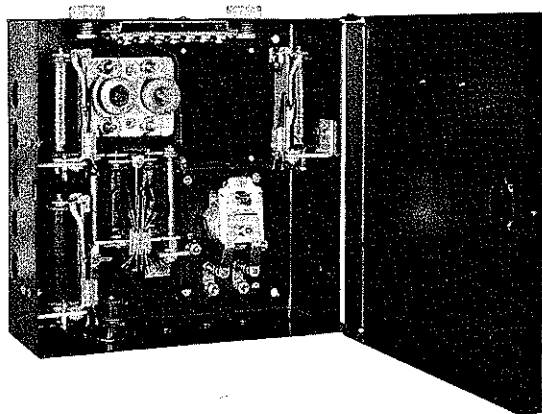


The Raytheon Voltage Stabilizer is a completely automatic transformer which will deliver smooth, constant voltage to an electrical device even though the line voltage may vary from 95 to 130 volts. The Raytheon Voltage Stabilizer is essential on any device which depends on constant voltage for correct operation.

Input, 95 to 130 volts, 60 cycles, 1-phase
Output, 115 volts plus or minus 1/2 %

| Model | Capacity, Watts | Length | Width | Height | Wt., Lbs. |
|---------|-----------------|---------|----------|---------|-----------|
| VR-6110 | 15 | 5-3/4 | 2-11/16 | 3- 1/2 | 4 |
| VR-6111 | 30 | 7-1/2 | 3- 3/8 | 4- 1/8 | 5 |
| VR-6112 | 60 | 7-1/2 | 3- 3/8 | 4-13/16 | 8 |
| VR-6113 | 120 | 7-1/2 | 3- 3/8 | 5-15/16 | 14 |
| VR-6114 | 250 | 12-3/8 | 5 | 7- 5/8 | 25 |
| VR-6115 | 500 | 12-3/8 | 5 | 9- 1/8 | 45 |
| VR-6116 | 1000 | 14-1/16 | 13- 3/16 | 9- 5/8 | 92 |
| VR-7B | 2000 | 16-3/8 | 14- 7/8 | 12- 3/8 | 200 |

Autelco Charge Control Units



There are several types, engineered to meet varying requirements, designed for continuous control of the operation of storage batteries. Available for 11 or 12 cell batteries, or 23 to 26 cell batteries, and for use with either a DC Charging Resistance, a rectifier or a motor generator.

Fully automatic in operation, they are controlled by the operation of relays. They can also be arranged for control by key dial, or similar means.

Autelco Charge Control Units are designed to meet specific requirements. Our engineering department will be glad to make recommendations for your particular needs. Simply write for information stating number and capacity of cells, type and capacity of charging facilities and voltage limits of equipment to be served.

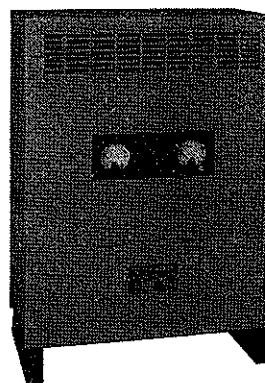
Dry Plate Rectifiers

A small unfiltered rectifier designed to operate on 115-150 volt, 60 cycle AC circuits. Furnishes direct current at 12 volts potential. The charging rate is adjustable from 0 to 1.5 amperes.

Whenever it is used for charging batteries serving telephone systems, the filter unit listed below should also be used for the purpose of preventing rectifier noise from reaching the telephone lines. Rectifier and filter unit are each contained in a steel outlet box 10 by 10 by four inches.

| Cat. No. | Description |
|------------|---------------------|
| PA-51..... | Dry Plate Rectifier |
| PA-52..... | Filter Unit |

Type 48 Battery Eliminator



The Type 48 Battery Eliminator is a self-regulating eliminator which provides precise voltage regulation, efficient filtering and the all-load stability of a storage battery. It delivers voltage that's constant within 4%, up to 150% of the rated load, giving you the reserve power for overload periods that a battery would ordinarily provide.

The Type 48 automatically compensates for all varying the D. C. battery circuit, and the Tone Alterator, in a-c line voltage within 10%.

There are no internal tap changes to make. Its unique phase shift circuit, combining the best features of single and three-phase rectification, produces fast voltage regulation and filtering that's three times more efficient than is possible with single phase alone.

Available in either cabinet or panel models.

Cabinet Models

| 115-V Input Cat. No. | 230-V Input Cat. No. | Capacity Amps. | Volts | Dimensions Width | Height | Wt., Lbs. |
|----------------------------|----------------------------|-------------------|-------|---------------------|--------|--------------|
| PE-81 | PE-82 | 3 | 25 | 14 | 15 | 80 |
| PE-83 | PE-84 | 6 | 25 | 16 | 23½ | 130 |
| PE-85 | PE-86 | 3 | 50 | 16 | 23½ | 110 |
| PE-87 | PE-88 | 6 | 50 | 18 | 28½ | 170 |

Panel Models

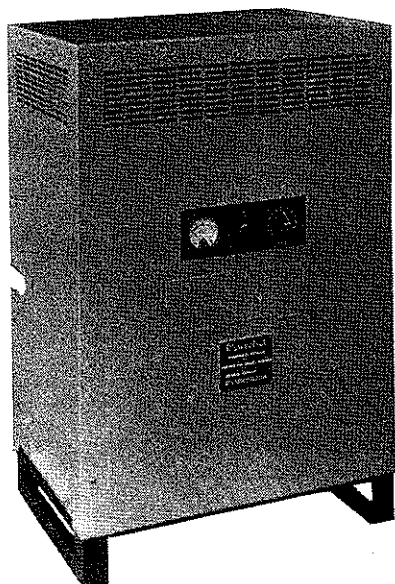
| 115-V Input Cat. No. | 230-V Input Cat. No. | Capacity Amps. | Volts | Dimensions Width | Height | Wt., Lbs. |
|----------------------------|----------------------------|-------------------|-------|---------------------|--------|--------------|
| PE-89 | PE-90 | 3 | 25 | 26 | 10 | 75 |
| PE-91 | PE-92 | 6 | 25 | 38½ | 11 | 125 |

Type 45 Battery Eliminator

The Type 45 Battery Eliminator provides superior service for any intercommunicating system of the automatic, manual or pushbutton type. Output capacity is 12 volts, 1.5 amps. Has specifically designed, self-contained filter which eliminates every trace of A-C hum. Dimensions are 10¾ in. by 10¼ in. by 4¼ in.

| Cat. No. | Type | Wt., Lbs. |
|----------|----------------------------------|-----------|
| PE-10 | 45 (Without Ringing Transformer) | 17 |
| PA-69 | 45 (With Ringing Transformer) | 20 |

Automatic Electric Convotrol



A fully automatic rectifier, designed specifically for charging storage batteries of telephone systems. To operate merely set the pointer to the proper floating voltage and snap the switch to "on". Subsequent operation is automatic; output current automatically assumes the value necessary to meet load conditions and replace battery losses. Output voltage is automatically self-regulating to a value within 1 volt of the selected voltage regardless of variations up to $\pm 10\%$ input voltage. No taps or adjustments of any kind are required other than the setting of the pointer. DC ammeter on the control panel indicates the total output current of the charger. Frame and cabinet are constructed for floor, wall or shelf mounting.

The Type 46 Constant-Current Battery Charger can be used in conjunction with the Convotrol for increased output.

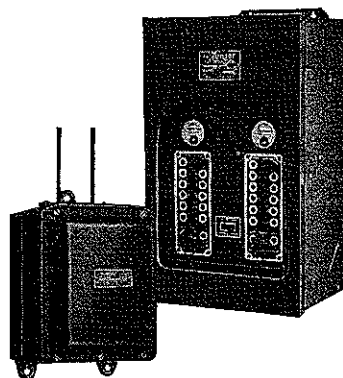
| Cat. No. | Cat. No. | Ampere | Wt., Lbs. |
|----------|----------|--------|-----------|
| 115-V | 230-V | | |
| PA-82 | PA-86 | 3 | 160 |
| PA-83 | PA-87 | 6 | 250 |
| PA-84 | PA-88 | 12 | 365 |

Type 44 Battery Charger

The Type 44 Battery Charger is used for charging storage battery of 1, 2 or 3 cells having a capacity of 16 ampere hours or less, or as a trickle charger when the continuous load is from 0.01 to 1.5 amperes. Operates on either 115 or 230 volts, AC, 50 or 60 cycle. Dimensions are $10\frac{3}{4}$ in. wide, $10\frac{1}{4}$ in. high and $4\frac{1}{4}$ in. deep.

| Cat. No. | Ampere | Wt., Lbs. |
|----------|--------|-----------|
| PA-81 | 1.5 | 25 |

G-E Tungar Rectifiers and Bulbs



Three types of full wave rectifiers, for telephone exchanges using either 24 or 48-volt batteries. All types are equipped with efficient filter reactance to insure quiet operation so that batteries may be charged while they are connected to telephone circuits.

The No. 244708 is the smallest outfit. It is intended for trickle charging on small P.B.X.'s. Charging rate can be adjusted from .3 to .5 amperes.

The 1-3 ampere outfits are suitable for P.B.X.'s and smaller offices or wherever a full-wave, filtered output up to 3 amperes is required. The front panels are equipped with ammeters to indicate the rate and rheostats to control it. Terminal boards located just inside the doors contain six sets of secondary taps and permit adjustments for operation on 9 to 24 cells of battery.

| Cat. No. | Type | Capacity Amp. | Input | Output | Dimensions Inches |
|----------|---------|---------------|---------------|----------|-------------------|
| S-3321 | 244708 | .3-.5 | 115-V., 60 c. | 30 V. | 10x 6x 7 |
| S-3322 | 3049455 | 1-3 | 115-V., 60 c. | 19-52 V. | 17x12x15 |
| S-3323 | 3049457 | 1-3 | 230-V., 60 c. | 19-52 V. | 17x12x15 |

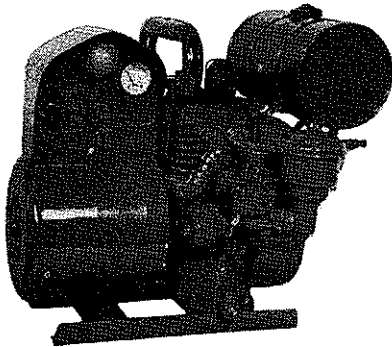
Renewal Bulbs

| Cat. No. | Type | Used with Rectifiers |
|----------|--------|---|
| S-3206 | 199698 | No. 244708; also 261187, 3049316, and 261678. |
| S-3208 | 12X825 | No.'s 3049455 and -7; also -6 and -8. |
| S-3200 | 189048 | No.'s 6RB4B2, and -4; 6RB29Y1 and -2; and 6RB19Y1 and -2. |
| S-3202 | 189049 | No.'s 6RB6B3, -6 and -7; 6RB4B2, -6 and 8; 206759 and -60; 19971; 3049295; and 6RB23B4. |
| S-3210 | 206501 | No.'s 204170; 206757 and -8; 260352; and 312669. |

Portable Electric Generators

These portable electric plants were developed according to telephone specifications and have been proven in the field under actual operating conditions. They are compact, light-weight units that are easy to handle and economical to use and they have a built in sturdiness and stamina that insures continuous operation regardless of weather conditions.

1250 Watt Generator Set



The 1250 watt portable electric gasoline engine generator set is powered by a Briggs and Stratton Model 8 F.B. single cylinder, air cooled engine. The engine is equipped with a rope starter, mechanical flyball type governor, float feed type carburetor, radio shielded ignition and a one gallon fuel tank. A handle is located over the engine cylinder head for ease in carrying and handling. The generator is 1250 watts, 110-125 volt DC at 3400-3500 RPM. The control box contains 4 twist-tight receptacles, a flush mounted volt meter, one 12 ampere single pole circuit breaker and a 15 watt mill type pilot lamp. The unit is mounted on aluminum angle skids to prevent creeping when in use.

| | |
|-----------------|------------------|
| <i>Cat. No.</i> | <i>Wt., Lbs.</i> |
| S-4426 | 90 |

825 Watt Generator Set

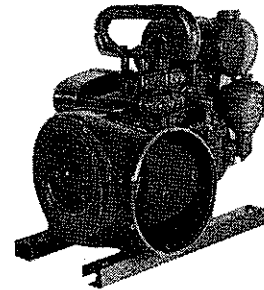
The 825 watt portable electric gasoline engine generator set is powered with a Briggs and Stratton model NP, single cylinder engine. The engine is equipped with a mechanical flyball type governor, float feed type carburetor, one-gallon capacity fuel tank and radio shielded ignition. A carrying handle is located over the cylinder head. Generator is 825 watt, 110-125 Volt DC, 2600-2800 RPM. Control box consists of 4 twist tight receptacles, one flush mounted voltmeter, a 7½ ampere single pole circuit breaker and a 15 watt mill type pilot lamp. The unit is mounted on springs and aluminum angle skids to prevent creeping.

| | |
|-----------------|------------------|
| <i>Cat. No.</i> | <i>Wt., Lbs.</i> |
| S-4428 | 84 |

Manhole Ventilating Blowers

Two types of manhole ventilating blowers are used to clear manholes of foul air and gas. The electric driven blower is used with an external power supply such as a portable generator. The gasoline powered blower is a self-contained unit.

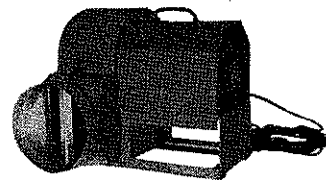
Gasoline Driven Ventilating Blower



The gasoline driven blower weighs 45 lbs. and is 17" long, 16" wide and 17" high. The engine is a four cycle, air cooled, single cylinder Briggs and Stratton with a rope starter and one-gallon fuel tank. Blower housing is made of 16 gauge aluminum with the air intake protected by a wire screen. The discharge tube is designed for use with an eight inch hose (listed below). Complete unit is mounted on a spring base.

| | |
|-----------------|------------------|
| <i>Cat. No.</i> | <i>Wt., Lbs.</i> |
| S-2706 | 45 |

Electric Driven Ventilating Blower



This ventilating blower is driven with a ¼ HP, 110-120 volt DC weather proof electric motor. The motor has a 16 gauge, two-conductor, rubber covered, 18 foot cord with a twist tight cap. The motor has an off-on switch. The blower is the same as the blower on the gasoline driven ventilator.

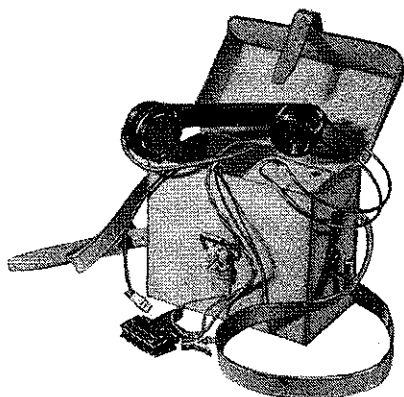
| | |
|-----------------|------------------|
| <i>Cat. No.</i> | <i>Wt., Lbs.</i> |
| S-2708 | 45 |

Spiratube Air Hose

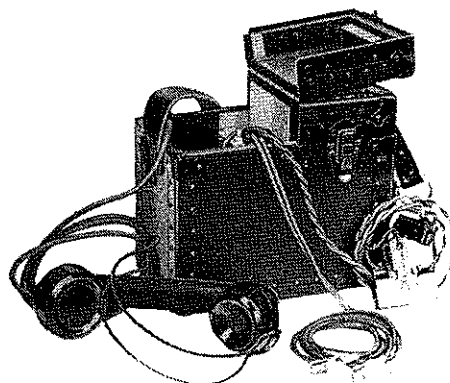
Flexible hose for delivering the fresh air from the blower to the manhole. Consists of 15 foot section of 8" hose, Flexfast clamp for securing Spiratube to blower, and a Spiratote for carrying and storing Spiratube.

| | |
|-----------------|------------------|
| <i>Cat. No.</i> | <i>Wt., Lbs.</i> |
| S-2710 | 15 |

The West Test Set



Leather Case



Fibre Case

The West Test Set is a complete portable line-testing unit and telephone for the man out on the job. It is simple and reliable, and with it even an inexperienced operator, unaided, can quickly locate any of the following faults:

- | | |
|---------------------|-----------------------------|
| 1. Grounds | 7. Poor ground rods |
| 2. Shorts | 8. Swinging contacts |
| 3. Opens | 9. Short-circuited windings |
| 4. Crosses | 10. Tree grounds |
| 5. "High" joints | 11. Leaky house wiring |
| 6. Faulty arresters | 12. Faults in twisted pairs |

It operates without regard to the presence of bridged inductive windings of comparatively low resistance, such as ringer, repeating, or relay coils.

A compact, convenient hand telephone is an outstanding feature of the West Test Set. The hand unit is light and flexible and can be folded for carrying within the case. A special headband is provided to hold it in place for those tests that require the use of both hands. The telephone can be used on common battery lines without wasting dry cell energy.

The many advantages of the West Test Set have made it the world's most widely used lineman's set. It is made of standard telephone parts. A magneto-generator, test lamp and level key are mounted in the case, and a pair of test clips, a finder coil, and the handset are removed from the case when making tests.

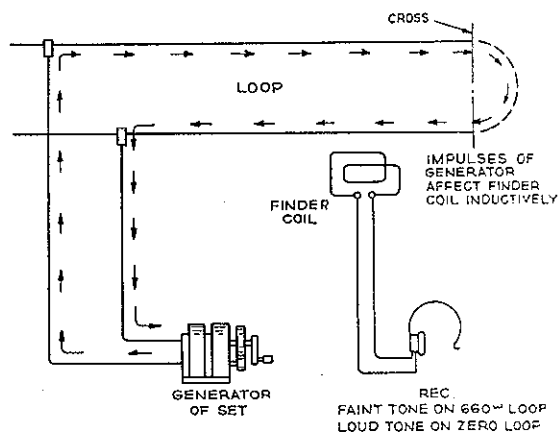
No buzzer, vibrator, or battery is used for supplying the test tone. The tone is produced by a commutator spring which is timed to discharge the capacity peaks from a condenser at regular intervals. Through the two test clips (see diagram), it passes over the line, and since the circuit is completed only

at the fault it flows only in that direction. The tone is therefore induced into the finder coil when the coil is placed on the line *between the test clips and the fault*. The volume of the tone heard in the receiver is dependent on the distance to the fault, and with a little experience the tester learns to estimate the distance with surprising accuracy.

The test clips are provided with needle points, to permit testing on insulated wire. The finder coil is fastened to a spring clip which is easily clamped over the line being tested.

If the resistance of the circuit loop through the fault does not exceed 600 ohms, the tone test may be supplemented by a lamp test. For this test, the lever key is operated, closing the circuit to the test lamp. The lamp will then glow when the generator is operated, and its brilliance will indicate the distance to the fault. This test may be used to locate even momentary shorts, such as swinging lines.

The handset (illustrated) and three flashlight batteries mounted in the case, are used only for telephone

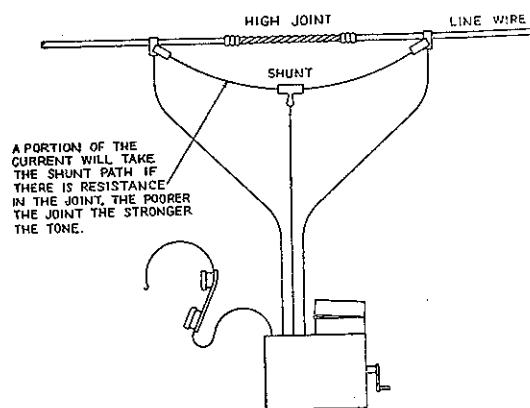


Theoretical Operating Principle

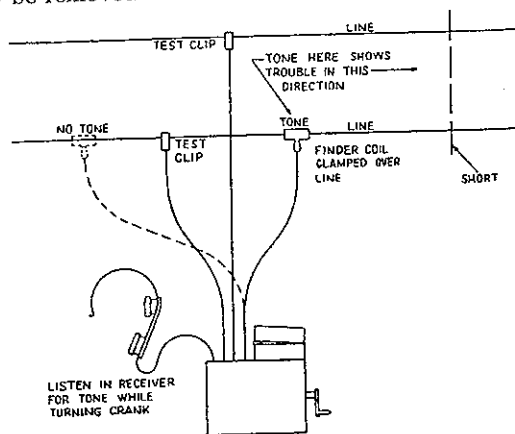
communication. This is provided by operating the lever key in the proper direction. High-efficiency circuits are used, the same as in standard magneto telephones. Transmission is excellent, and ringing signals carry distinctly over long and heavily-loaded lines.

cords. It contains two rheostats controlled by dials which are calibrated to indicate directly the resistance being tested. Maximum measuring capacity is 1000 ohms, which is more than ample for ground-testing purposes.

The operation of the West Ground Tester is based on the well-known induction balance principle. While the generator crank is being turned, the rheostats are adjusted until no tone, or a minimum of tone, is heard in the receiver. The sum of the rheostat dial readings is then the resistance of the circuit being measured.



Method of Locating High-Resistance Joints



Method of Testing for a Short-Circuit

Ground tests with the West Test Set give an indication of the ground, but no measurement of its actual resistance. To provide such a measurement, the West Ground Tester may be used with it. This tester is designed to mount in the cover of the set, and connections between the two units are made by means of

| <i>Cat. No.</i> | <i>Description</i> |
|-----------------|---|
| TA-21..... | West Test Set (in Leather Case) |
| TA-20..... | West Test Set (in Fibre Case) |
| TA-22..... | West Ground Tester |
| TA-23..... | West Test Set, complete with West Ground Tester |
| DZ-10..... | Test Lamp |
| DZ-11..... | Resistance Coil |
| AQ-15..... | Crank |
| AT-14..... | Condensers |
| AU-25..... | Induction Coil |
| AF-38..... | Transmitter Mouthpiece |
| AF-39..... | Receiver Ear Cap |
| DZ-12..... | Key |
| DZ-13..... | Head Band |
| TA-24..... | Finder Coil |
| TA-25..... | Clips |
| TA-26..... | Handset Cord |
| TA-27..... | Finder Coil Cord |
| TA-28..... | Tester Clip Cord |
| TA-29..... | Handset with Cord, no Headband |
| DZ-14..... | Key Handle |

Shallcross Transmission Testing Equipment

Designed and built by Shallcross for measuring transmission losses in lines, switchboard circuits, apparatus and other such equipment. Units may also be used for testing comparative measurements of capacity of condensers, inductance of coils, and tests for the balance of repeating coils and relays. They are convenient yet inexpensive.

These instruments give the wire chief a handy means of making tests of the switchboard and main frame, testing cord circuits, picking up cable pairs and checking subscribers' lines. Especially helpful in improving transmission qualities of rural lines.

No. 690 Transtester

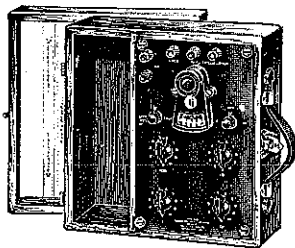


The Transtester (or Decibel Meter) is a sensitive rectifier type instrument calibrated from ten decibels through zero to six decibels. Mounted on bakelite panel, provided with metal binding posts for connections to line. Additional posts provide connections for

audible monitoring by means of telephone receiver. Space is provided so switchboard jacks may be mounted on panel to expedite testing circuits terminating in telephone plugs. The jacks must be ordered specially. Entire panel is mounted in sturdy wood case.

| | |
|-----------------|------------------|
| <i>Cat. No.</i> | <i>Wt., Lbs.</i> |
| 690 | 3 |

Fault Location Bridge



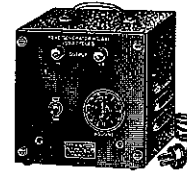
Special instrument designed for three types of measurement—Wheatstone Bridge, Murray Loop or Varley Loop. Can be used as standard Wheatstone Bridge for measuring resistance from one ohm to 11.1 megohms. Murray Loop tests will

locate grounds, crosses, opens, shorts, and inductive crosses or split pairs accurately. Varley Loop tests will locate grounds, crosses or short.

Easy to use, makes a job of locating faults inexpensive. Well constructed, housed in wooden box, has convenient handle.

| | |
|-----------------|------------------|
| <i>Cat. No.</i> | <i>Wt., Lbs.</i> |
| 628 | 7 |

No. 691 Tone Generator



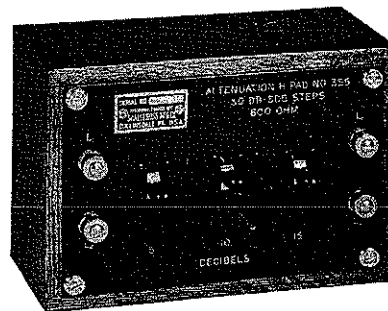
The Tone Generator (1000-cycle oscillator) is a constant frequency vacuum-tube oscillator for 110-115-120 volt, AC-DC operation. Continuous output, variable from five to 18 decibels, may be reduced by "H" pads (Shallcross Attenuation Box No. 355) connected across output terminals.

Designed for 1000-cycle impedance ranges from 500 to 600 ohms. Higher impedance may be built up by adding resistance at each end to make up difference. For tests involving 1000-cycle impedance below 600 ohms an impedance matching transformer is required at each end.

Housed in black metal case with handle, complete with tubes and six-foot heavy duty cord. Output terminals are metal binding posts. Space provided for switchboard jacks to expedite testing of circuits which terminate in switchboard plugs. Jacks mounted on special order.

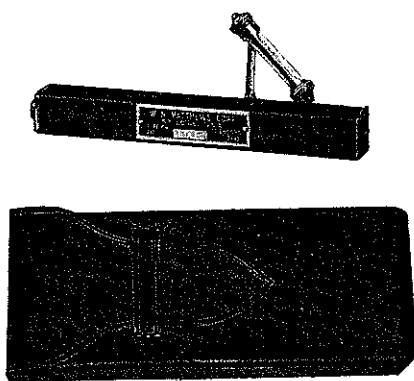
| | |
|-----------------|------------------|
| <i>Cat. No.</i> | <i>Wt., Lbs.</i> |
| 691A | 5 |

No. 355 Attenuation Box



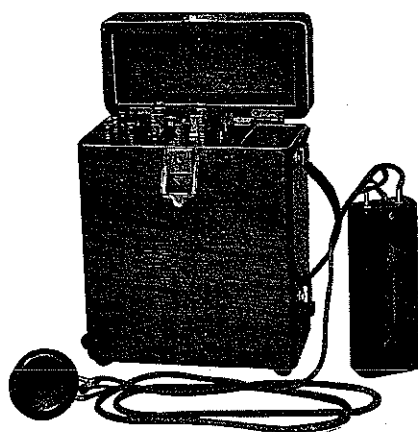
Gives a total of 30 decibels which may be inserted in steps of five decibels by three lever type keys. Input and output impedances are equal since the Attenuation Box is an "H" pad and characteristic impedance is 600 ohms.

| | |
|-----------------|------------------|
| <i>Cat. No.</i> | <i>Wt., Lbs.</i> |
| 355 | 2 |

Matthews Teleheight

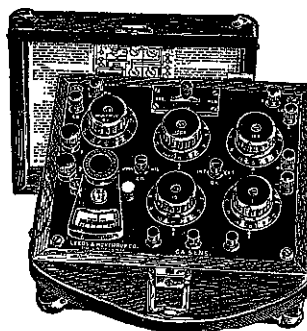
A handy instrument for quickly and accurately measuring the height of trees, poles, buildings, wires or other objects. No moving parts—no complicated figuring. Just sight the instrument until bubble and line cross (per instructions), measure your distance from object and add your height to it. Sum will equal height of object measured. Leather case included.

| | |
|--------------|----------|
| Cat. No. | Wt., Oz. |
| S-7459 | 8 |

Matthews Woodpecker Telefault

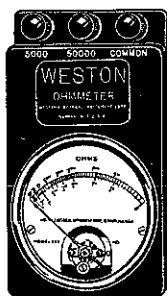
A simple self-contained instrument that will accurately locate water in cables, shorts of all kinds in cables, crosses, grounds, split pairs, etc. It uses only one dry cell. Its tone is like that of a woodpecker on a pole and cannot be confused with other noises. Can be used for locating trouble on open wire circuits as well as on cable circuits. (Furnished without batteries.)

| | |
|--------------|-----------|
| Cat. No. | Wt., Lbs. |
| S-6777 | 15 |

Type U Test Set

When a line or cable must be cleared in a hurry, trouble-shooters and linemen appreciate the speed, flexibility and accuracy of the L. and N. Type U Test Set. A specialized Wheatstone bridge, self-contained and portable, it is used to identify faulty wires in a cable, to locate grounds, shorts and crosses by the Murray, Varley, Hilborn and other loop tests, to locate opens by capacitance methods, and to measure conductor resistance. Embodying features recommended by telephone engineers, this test set is designed for easy use in the field. Switches, dials and binding posts are so placed that a man wearing gloves can manipulate them easily. Large knobs with knurled grips permit the dials to be turned easily in either direction. A positive click-stop defines position of brushes on studs. Switch contacts are enclosed. Cam and lock-down switches adapt the bridge circuits for resistance measurements or loop tests. Large figures on the slanting dials are easy to read from almost any working distance or angle. The set is housed in a stout oak case, with metal protecting corners and a removable lid. Case size: $8\frac{3}{4}'' \times 7\frac{3}{8}'' \times 5\frac{3}{4}''$.

| | |
|--------------|-----------|
| Cat. No. | Wt., Lbs. |
| S-6779 | 8 |

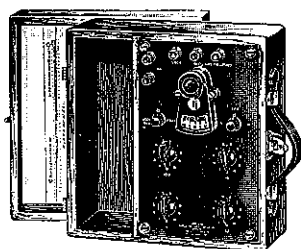
Weston Circuit Tester

A small portable instrument especially designed for the resistance and continuity method of checking circuits. It is calibrated with a double range and readings are available from 0-5000 and 0-50,000 ohms. A 1.5V. No. 2 unit-cell battery is mounted inside the case and adjustment for variation in battery voltage is made through a magnetic shunt available for adjustment outside the case — a method that insures high accuracy at all times as it in no way alters the internal resistance of the instrument.

Furnished as illustrated with battery and test leads. Dimensions of set as shown are $5'' \times 2\frac{7}{8}'' \times 1\frac{7}{8}''$ ($125 \times 73 \times 47.6$ mm.).

| | | |
|----------|--------------|---------------|
| Cat. No. | Type | Wt., Lbs. |
| S-5580 | 689-1E | 1 |
| S-3300 | Leather Case | $\frac{1}{4}$ |

Cableman's Fault Location Bridge



Special Wheatstone bridge designed to measure resistance from 0.1 to 1111 ohms. For use of wire chiefs, linemen, cablemen, maintenance men in accurately determining (within few feet) location of grounds or crosses on telephone or telegraph lines or cables by Varley Loop method.

Requires no special skill, simplifies location of faults to minimum. Eliminates necessity for calculations. Chart in lid gives all answers.

Sturdily constructed, housed in wooden box, provided with convenient handle. Can also be used as conventional Wheatstone Bridge.

| Cat. No. | Wt., Lbs. |
|----------|-----------|
| 627 | 6 |

Pocket Meters

These pocket ammeters, voltmeters and voltammeters are built in a wide range of capacities to cover every current measuring requirement. All these meters have correct scale calibrations, are durable, have clearly marked dials, and nickel finish.

Ammeter



For testing dry cells. Reading from 0 to 35 amperes.

| Cat. No. | Diameter, In. | Wt., Lbs. |
|----------|---------------|-----------|
| S-2003 | 2 1/4 | 1/4 |

Voltmeter



For D.C. voltage and testing storage batteries. Reading from 0 to 10 volts.

| Cat. No. | Diameter, In. | Wt., Lbs. |
|----------|---------------|-----------|
| S-7678 | 2 1/4 | 1/4 |

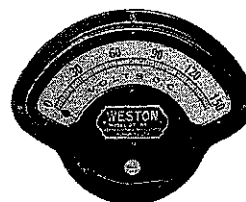
Voltammeter



For D.C. voltage and testing dry cells or storage batteries. Reading 0 to 35 amperes and 0 to 10 volts.

| Cat. No. | Diameter, In. | Wt., Lbs. |
|----------|---------------|-----------|
| S-7680 | 2 1/4 | 1/4 |

Voltmeters and Ammeters



We can furnish every type of meter required in telephone work. If possible give model number, range or ranges, dimensions and resistance. Following are inexpensive units generally employed in telephone work.

The Model 269 meters are fan shaped, as illustrated, and are of the surface type with back connections. The dimensions are 5 5/8" wide, 1 1/2" deep, 4 7/8" high with a scale length of 4". The voltmeters have a resistance of approximately 100 ohms per volt.

The Models 271 are the same type and shape as the Models 269 but larger. The dimensions are 7 7/8" wide, 1 3/4" deep and 6 1/4" high with a scale length of 6 inches. The voltmeters have a resistance of approximately 100 ohms per volt.

The Models 301 are the round flush-mounting type with a diameter of 3 1/4" and a scale length of 2 2/3". The voltmeters have a resistance of approximately 1000 ohms per volt.

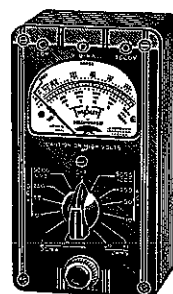
Voltmeters

| Cat. No. | Description | Scale Volts | Wt., Lbs. |
|----------|---------------------|-------------|-----------|
| S-7681 | Model 269 Voltmeter | 0-80 | 1 1/2 |
| S-7682 | Model 271 Voltmeter | 0-80 | 4 |
| S-7683 | Model 301 Voltmeter | 0-80 | 1/2 |

Ammeters

| Cat. No. | Description | Scale Amps. | Wt., Lbs. |
|----------|-------------------|-------------|-----------|
| S-2002 | Model 269 Ammeter | 50-0-50 | 1 1/2 |
| S-2004 | Model 271 Ammeter | 200-0-200 | 4 |
| S-2005 | Model 301 Ammeter | 10-0-10 | 1/2 |

Volt-Ohm-Milliammeter



Precision-built instrument with greater scale readability. Three-inch guaranteed movement with black and red scale markings. Banana-type jacks provide lower jack contact resistance and trouble-free plug-in connections. Special resistors make for greater stability on voltage ranges. Molded black case is 3-1/16 x 5 7/8 x 2-9/16 inches. 1.5 Volt, plug-in type self-contained battery. 50 inch test

leads with clips and plugs. Ranges are:

D. C. Volts 0-10-50-250-1000-5000, 1000 Ohm/Volt
A. C. Volts 0-10-50-250-1000-5000, 1000 Ohm/Volt
D.C. MA: 0-10-100-500, at 250 Millivolts
Ohms: 0-2000-400,000 (12-2400 Center Scale)

| Cat. No. | Wt., Lbs. |
|--|-----------|
| S-7685 Volt Ohm-Milliammeter, Model 666-HH | 1 1/2 |
| S-3290 Black Leather Carrying Case with Strap Handle | 1/2 |

The Telohm



For testing and locating telephone and switchboard trouble, shorts, grounds, high resistance, and open circuits in coils of all kinds, also partially shorted coils, high resistance transmitters, cutouts in receiver, desk stand and switchboard cords, hook-switch contacts, etc.

Equipped with a Weston 0-3 Volt Direct Reading Ohmmeter, 0-10,000 ohm scale, with glass protector mounted in a solid black walnut case that fits the pocket and is easy to carry. Employs two standard flashlight type dry cells. The binding posts are arranged for loop, spade or straight tips.

Furnished complete with battery, "on-and-off" battery switch, cords and test clips.

| Cat. No. | Dimensions, In. | Wt., Lbs. |
|----------|-------------------|-----------|
| S-7460 | 1 5/8 x 3 1/2 x 6 | 1 1/4 |

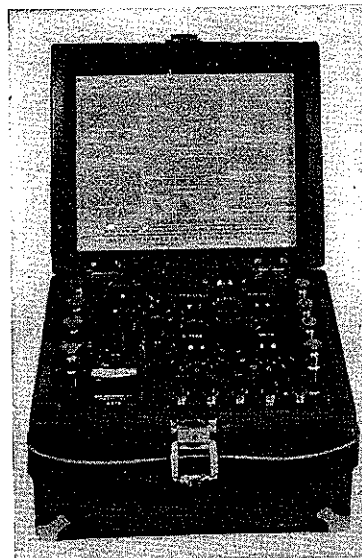
Telohm Carrying Case



Leather carrying case made especially for the Telohm. Fits snugly and has detachable adjustable shoulder strap for convenient carrying. Also a snap fastener for hooking to linemen's belt. Prevents injury to Telohm and keeps it handy at the same time. Can be used without removing from case by means of cut-out for dial face.

| Cat. No. | Wt., Lbs. |
|----------|-----------|
| S-3297 | 1/2 |

"Queen" Portable Wheatstone Bridge



A complete set of the portable dial decade type. All switches and contacts are mounted beneath the plate.

Single dial control of ratio arms has seven multiplying values: 0.001, 0.01, 0.1, 1, 10, 100 and 1000. Rheostat has four decades 10(1+10+100+1000).

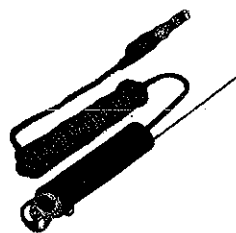
Suspension type galvanometer with clamp to protect when being carried. Two step protective resistance guards against excessive unbalance. A lever key arranges bridge circuit connections for resistance measurements, or for Murray or Varley loop tests.

Switches are provided for disconnecting the galvanometer and battery when locating opens or measuring protective ground resistance in which a telephone receiver and a buzzer current are used to balance the bridge.

All equipment is contained in a durable oak case, equipped with leather carrying handle and substantial lock. Directions and diagram of the set are contained in lid, with transparent celluloid covering. Flashlight type batteries are used and they can quickly and easily be replaced.

| Cat. No. | Type | Dimensions, In. | Wt., Lbs. |
|----------|--------|-------------------|-----------|
| S-6765 | E-3108 | 9 3/8 x 7 7/8 x 6 | 24 |

Pocket Test Lamp

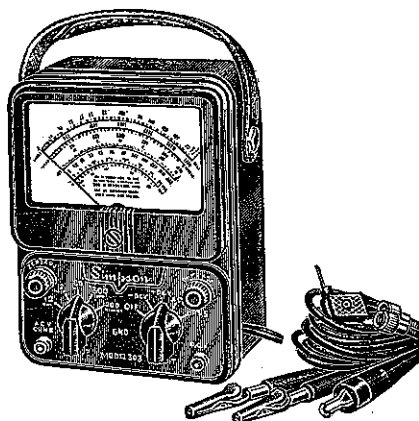


Consists of 5/8-inch fibre tubing 2 1/2-inches long equipped with lamp socket and perforated lamp guard, lamp, brass wire prod which projects three inches from tube and six ft. cord terminating in a flat test clip to fit over relay springs, switch jacks or similar flat terminals or contacts.

Ordinarily furnished with 48-volt switchboard lamp which will glow through a resistance of 2500 ohms. Lamps of other voltages ranging from six to 60 volts can be supplied as specified.

| Cat. No. | Wt., Lbs. |
|----------|-----------|
| TE-88 | 1/4 |

Simpson Model T 303 Vacuum Tube Volt-Ohmmeter



The Simpson T 303 is used for measurement of signals, speech side bands, oscillator outputs, etc. on carrier systems in terms of "DBM". Specifications are as follows:

DC Voltage: Ranges—1.2, 12, 60, 300, 1200.

AC Voltage: Ranges—1.2, 12, 60, 300, 1200.

Ohms: Ranges—1000 (10 ohm center), 100,000 (1000 ohm center), 1 megohm (10,000 ohm center), 10 megohms (100,000 ohm center), 1000 megohms (10 megohm center).

Line Voltage: 105-125 V. 50-60 Cycles.

Size 5¼" x 7" x 3⅛".

| Cat. No. | Description | Wt., Lbs. |
|----------|------------------------------|-----------|
| S-7686 | Model T 303 in standard case | 4 |
| S-7688 | Model T 303 in roll top case | 4 |

Queen Cable Test Set

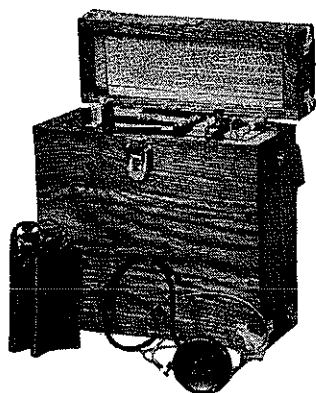


A simple, self-contained, portable testing set for locating crosses, grounds, split pairs, etc. Employs finder coil principle using cable sheath. Arranged to provide trouble tone. Results depend only on the ability of the user to "listen" and involve no mathematical formulae. Particularly suited for use in conjunction with a Wheatstone bridge to obtain more exact location of trouble.

Furnished complete with exploring coil and telephone receiver. Contained in oak carrying case, fitted with leather handle.

| Cat. No. | Type | Wt., Lbs. |
|----------|--------|-----------|
| S-6767 | E-3118 | 8½ |

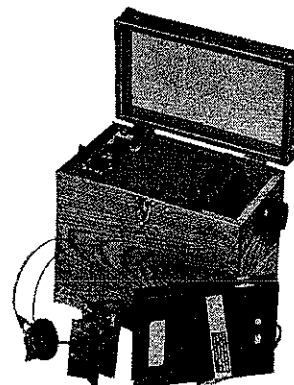
Stewart Cable Tester



A new, improved unit that will locate shorts, crosses, grounds and wet spots. As the exploring coil does not pick up trouble tone on sheath, it is also useful in locating high resistance water leaks. Operates on two dry cells. Centers on large or small cable. New, small-sized reinforced case.

| Cat. No. | Model | Wt., Lbs. |
|----------|-------|-----------|
| S-6774 | L | 16 |

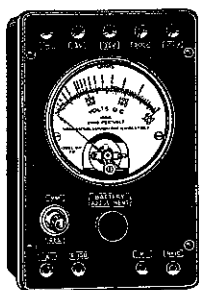
Stewart Cable Tester and Locator



Combines all the features of the Stewart Cable Tester on locating shorts, crosses, grounds and wet spots and is equipped with the neutral exploring coil for this work. Also, will tell exactly where a cable is buried in the ground. Equipped with light to tell when all connections are correct.

| Cat. No. | Model | Wt., Lbs. |
|----------|-------|-----------|
| S-6773 | A | 24 |

Weston Volt-Ohmmeters



A pocket size instrument with a useful selection of voltage and resistance ranges. Has voltage range of 600-300-30-3—all 1,000 ohms per volt. Resistance ranges are 1,000,000 - 100,000 - 10,000 - 1,000, full scale.

Voltage ranges are brought out to pin jacks. Toggle switch connects meter in circuit as voltmeter or ohmmeter. A self-contained 4½ volt battery provides the necessary potential. Variation in battery voltage is compensated for by short circuiting the resistance pin jacks of any range and adjusting pointer to zero ohms by turning the battery adjustment knob.

Dimensions are 5-33/64 by 3-45/64 by 2-9/16 inches (140 x 94 x 64 mm.) Furnished complete with test leads and battery.

| Cat. No. | Description | Approx. Weight, Lbs. |
|----------|---------------------------------|----------------------|
| S-7684 | Type 3C—Model 564 Volt—Ohmmeter | 1¾ |

Universal Test Clips



27



45



85



82

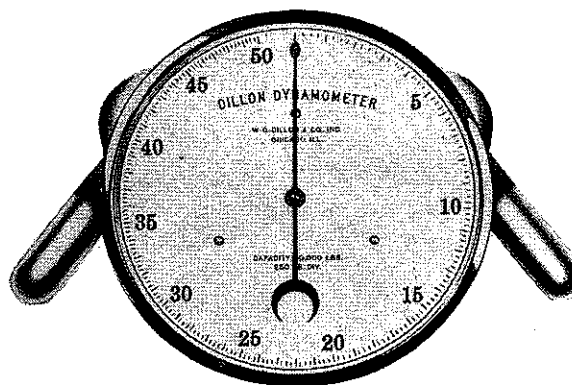
For making quick, positive temporary connections. Screw or lug connections. Strong channel construction throughout. Jaws are designed with strong spring for firm hold and narrow nose which permits working in confined space. Polarity indications: + for positive, plain for negative. Wt., is 3 lbs. per 100.

| Cat. No. | Type | Lgth., In. | Jaw Opening, In. | Finish |
|----------|------|------------|---------------------|----------------|
| S-3620 | 27 | 2 7/8 | 5/8 | Cadmium Plated |
| S-3624 | 45 | 1 1/2 | 3/8 | Cadmium Plated |
| S-3628 | 82 | 2 | 1/2 (Needle Type) | Cadmium Plated |
| S-3630 | 85 | 2 3/8 | Wide-Crocodile Type | Natural-Steel |
| S-3622 | 50-C | 2 1/4 | 1/2 | Bronze |

Rubber Insulators for Test Clips

| | |
|--------|---------------------------------------|
| S-4924 | Rubber Insulator For Type 45 Clip |
| S-4926 | Rubber Insulator For Type 85 Clip |
| S-4928 | Rubber Insulator For Type 27 Clip |
| S-4933 | Vinylite Insulator For Type 50-C Clip |

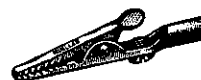
Dillon Dynamometers



Prevention of trouble is obtained only by strict adherence to the manufacturer's prescribed tensions for varying temperatures. Excessive strain, or sag are equally injurious for wires and strand. Dillon Dynamometers were created specifically for this purpose. Dillon Dynamometers are light weight, portable and extremely accurate. Easy to use on pole or ground without cutting wire. Available in 12 different capacities with a 5 inch dial on the first nine sizes and a ten-inch dial on the three largest sizes. 10 inch dial can be furnished on first nine sizes at additional cost. Weight 14 lbs.

| Capacity, Lbs. | Pound Divisions |
|----------------|-----------------|
| 0-500 | 2½ |
| 0-1000 | 5 |
| 0-2500 | 25 |
| 0-3500 | 25 |
| 0-5000 | 25 |
| 0-7500 | 50 |
| 0-10,000 | 50 |
| 0-15,000 | 100 |
| 0-20,000 | 100 |
| 0-30,000 | 200 |
| 0-40,000 | 200 |
| 0-50,000 | 250 |

Alligator Test Clips

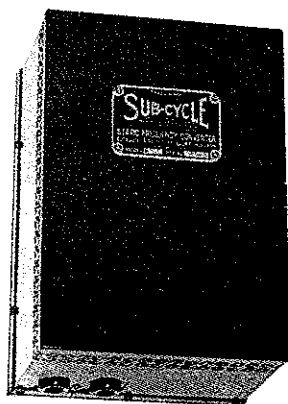


Has slim jaws, fine meshing teeth, round thumb grip. Steel with bright finish. Wt., 2 lbs. per 100.

| Cat. No. | Type | Description |
|----------|-----------|--|
| S-3631 | Type 60S | Screw Connection |
| S-3632 | Type 60HS | Screw Connection with Red and Black Sleeves on End |

SUB-CYCLE

Master Ringing Converter



Subcycle is an exclusive development in an alternating current Power Ringing Converter. It embodies many desirable features, produces a powerful ringing current independent of frequency variations in commercial current.

The Subcycle has no moving parts, vibrators, vacuum tubes, rectifiers (except models SP and CCP), filters, lamps or similar sources of service interruption and service expense. It is quiet and dependable.

Subcycle is regularly furnished with a tone coil for the production of reverting tone. No additional equipment is necessary in offices equipped with condensers for returning tone. It is an ideal converter for all telephone use, providing ample power and requiring no maintenance. Available in six models.

The Sub-Cycles listed below are designed for operation on 105-120 volt, 60-cycle commercial power circuits. For use on higher commercial voltages, a special step-down transformer must be used. Other Sub-Cycle models are available for use on commercial power circuits having frequencies other than 60 cycles. In all cases, when ordering Sub-Cycles, specify commercial power voltage and frequency.

| Cat. No. | Model | Approx. Output Watts | Max. Stations | Wt., Lbs. |
|----------|----------|----------------------|---------------|-----------|
| S-7360 | S-60 | 15-20 | 1600 | 35 |
| S-7361 | SP-60 | 15-20 | 1600 | 36 |
| S-7362 | BX-60 | 15-20 | 1600 | 36 |
| S-7363 | CC-60 | 45 | 4000 | 68 |
| S-7364 | CCP-60 | 45 | 4000 | 70 |
| S-7365 | M-7.5-60 | 7½ | 100 | 18 |

Note: For use in the United States the Subcycle Ringing Converter is manufactured exclusively by Lorain Products Corporation, Lorain, Ohio, under patents controlled by that company. For use in foreign countries it is manufactured exclusively by Automatic Electric Company, Chicago, U.S.A., under foreign patents controlled by the latter company.

Lorain RT-Units



R stands for ringing. T stands for talking. An "RT-Unit" combines in one cabinet both ringing and talking power supply. Designed primarily for P.B.X. and small switchboards, the "RT-Units" are available in four models which provide a choice of either 20 or 30 cycle Sub-cycle ringing converters. Input voltage is 111-117-123 \pm 5%.

RT-UNITS

- Model RT-1** 3½ watts, 20 cycles. Biased-Core self-starting Subcycle. +.87 amp. 14-28V. DC supply for talking. +.5 amp. unfiltered DC for signalling. +10 +1V. and 20 V. +2V. 60 Cycles for signalling.
- Model RT-2** 3½ watt 20 cycle Biased-Core self-starting Subcycle 2 amp. 24 or 34V. DC for talking supply.
- Model RT-3** 3½ watt 30 cycle Biased-Core self-starting Subcycle. All other features same as model RT-1.
- Model RT-4** 3½ watt 30 cycle Biased-Core self-starting Subcycle. All other features similar to Model RT-2.

T-UNITS

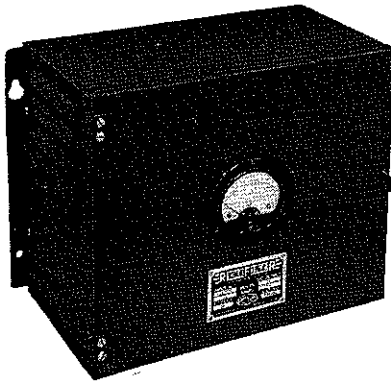
Power supply for talking only.

- Model T-1** .87 amp. 14-28 V. DC for talking
- Model T-2** 2 amp. 24 or 34 V. DC for talking
- Model T-3** .5 amp. 22-30 V. DC for talking
- Model T-4** 1 amp. 40-52 V. DC for talking
- Model T-5** .5 amp. 10-16 V. DC for talking
- Model T-6** 1 amp. 5-8 V. DC for talking

Auxiliary Transformers

Auxiliary transformers for Sub-Cycle are available for use with other commercial voltages.

Raytheon RectiFilter



The Raytheon RectiFilter or "Battery Eliminator" is the modern, economical way to obtain humless D.C. telephone switchboard power directly from an A.C. source, thus saving battery cost and maintenance. Designed especially for PBX's, either automatic or manual, the RectiFilter has also found widespread use in the powering of key equipment, intercommunicating systems and as a battery booster on long lines.

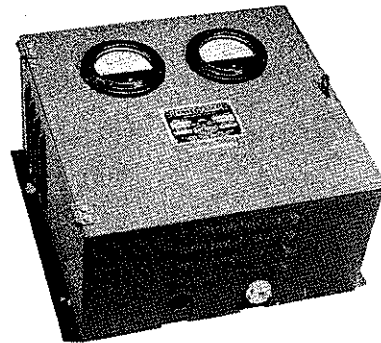
Operating entirely without moving parts, the unit consists of a power transformer, dry disc rectifier element, and retardation coil and condenser for filtering, all mounted in a gray lacquered steel cabinet. A built-in voltmeter is provided.

To assure uniform voltage for the proper operation of telephone systems, the 1.0 ampere and larger sizes of the Raytheon RectiFilter also include an exclusive D.C. voltage stabilizing circuit which insures steady voltage under conditions of changing load. The RectiFilter may also be supplied with a relay which automatically connects to a source of standby power in case of A.C. power failure. Input voltage is 110-125V.

| Cat. No. | DC Output for Talking Volts | DC Output Load Amps. | Full Output Volts | 60 Cycle Output for Ringing, Volts | Wt., Lbs. |
|-------------|-----------------------------------|----------------------------|-------------------------|--|--------------|
| RFR-1057-AR | 4 | .23 | 4 | None | 10 |
| RFR-1024-A | 6 | .5 | 5.5 | 6-12-18-24 AC | 10 |
| RFR-1026-A | 12 | .5 | 11.5 | 6-12-18-24 AC | 11 |
| RFR-1027-A | 24 | .5 | 20 | 6-12-18-24 AC | 13 |
| RFR-1044-G | 24 | 1.0 | 24 | 6-12-18-24 AC | 47 |
| RFR-1043-AR | 24 | 1.5 | 24 | 75-100 AC | 53 |
| RFR-1040-A | 24 | 3.0 | 24 | 24 V. DC | 60 |
| RFR-1041-A | 24 | 4.5 | 24 | 24 V. DC | 107 |
| RFR-1042-A | 24 | 6.0 | 24 | 24 V. DC | 117 |
| RFR-1082-A | 48 | 3.0 | 48 | 48 V. DC | 161 |
| RFR-1079-A | 48 | 4.0 | 48 | 48 V. DC | 180 |
| RFR-1080-A | 48 | 6.0 | 48 | 48 V. DC | 170 |

Change of source relay can be applied on all models.

Raytheon RectiChargeR



The Raytheon RectiChargeR is a completely automatic, "follow-the-load" battery charger for use on systems employing 11/12 or 22/24 cells of battery.

Operating without any moving parts, the RectiChargeR will deliver smooth, humless D.C. power to the batteries directly from an A.C. source. Under normal conditions the RectiChargeR supplies all the D.C. power required by the load, at the same time furnishing the battery with a trickle charge to make up for internal losses. During peak periods, the RectiChargeR and battery together supply the power, and when normal conditions again prevail, the RectiChargeR automatically recharges the battery and then falls off to a trickle charge once again.

An AC stabilizer maintains a constant voltage with line voltage varying from 95 to 130 volts. This is of course vital, as any line changes would normally be reflected through the charger, varying the charging rate to a considerable degree.

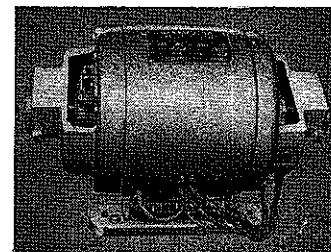
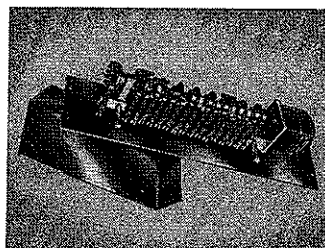
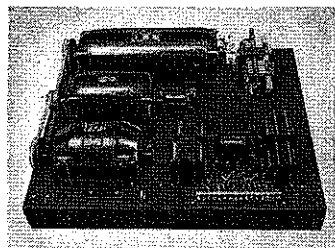
The rugged components of the RectiChargeR will give years of trouble-free service. Furnished in an attractive gray wrinkle finish cabinet, it comes complete ready to install on relay rack or wall.

The Raytheon RectiChargeR operates on 90 to 130 volts, 60 cycle, stabilized frequency single phase.

Recticharger Specifications

| Cat. No. | Batt. Cells | Amps. Cont. | Diam., In. | Wt., Lbs. |
|-----------|----------------|----------------|----------------|--------------|
| RCR-1066 | 11/12 | 1 | 14½ x 7½ x 14½ | 62 |
| RCR-1073 | 11/12 | 2 | 14½ x 9½ x 14½ | 94 |
| RCR-1058 | 11/12 | 3 | 19 x 11 x 21 | 163 |
| RCR-1067 | 11/12 | 6 | 19 x 15¼ x 28 | 233 |
| RCR-1068 | 22/44 | 1 | 14½ x 9½ x 14½ | 93 |
| RCR-1076 | 22/44 | 2 | 19 x 11 x 21 | 173 |
| RCR-1069 | 22/44 | 3 | 19 x 15¼ x 28 | 231 |
| RCR-1070B | 22/44 | 6 | 19 x 15¼ x 28 | 280 |

Holtzer-Cabot Ringing Equipment



The following characteristics are applicable to all types of Holtzer-Cabot Ringing Equipment.

1. All rotaries are equipped with ball bearings.
2. All motor generator sets, whether single or multi-frequency, have the leads brought to a terminal board.
3. All magneto-type generators have insulating transformers to protect them against short circuit. These transformers have multiple taps on the secondary to provide a selection of voltages.
4. Multi-frequency sets with alternating current motor drive are furnished with synchronous motors to hold constant frequency, thus eliminating governors.

DC motors are furnished with governors, which hold the frequency to plus or minus 1/3 cycle.

Single Frequency

Single frequency motor generator sets consisting of magneto type generators flexibly coupled to and mounted on channel iron base with an alternating or a direct current motor drive. The sets are normally rated at 19 cycles output but can, where required, be furnished with a synchronous motor or a governed direct current motor to provide 20 cycles.

These sets are available in the following sizes:

| Watts, Output | Motor |
|---------------|-----------------------------------|
| 25 | 115 or 230 V 60 cy. A. C. 1 phase |
| 50 | 24 or 48 Volt D. C. |
| 100 | 208 or 220 V 60 cy. A. C. 3 phase |

The ringing voltage on the secondary of the transformer is normally 105 Volts at no load; 75 Volts at full load. Taps on the secondary provide a selection of 90-115 and 135 Volts at no load.

Multi-frequency sets are divided into three classifications:

Harmonic—16-2/3 - 25 - 33-1/3 - 50 and 66-2/3 cycles.

Non-multiple—16 or 20-30-42-54 and 66 cycles.

Multiple—20-30-40-50 and 60 cycles.

All classes are available with 25-50-100 and 150 watts output on each frequency or the sets can be arranged to supply more power on one frequency if that is required, e.g. a 25 watt machine can be supplied with a 50 watt generator on 25 cycle and 25 watts on all other frequencies. It is recommended that 3 phase drive motors be used wherever possible. All generators will be magneto type, having no brushes unless coin control is specified. In that case, one of the generators is a double-current unit to provide both alternating and direct current.

Harmonic Frequencies

Machines of this type are available in 25, 50 and 100 watt. They can be side-wall mounted or can be provided with feet on one side.

Harmonic frequency machines can also be furnished with the "in line" construction, but with magneto type generators, which reduces maintenance by eliminating brushes.

Non-Multiple and Multiple Frequencies

All generators are magneto type unless coin control is specified, in which case a double current generator is used. In order to obtain the necessary speeds to provide the non-multiple frequencies, all machines are V-belt driven.

Tone Generators

Two types of tone generators are available: The Commutator type, which develop a tone by interrupting the D. C. battery circuit, and the Tone Alternator, which develops a true alternating current of 500 cycles or 600 cycles modulated by 120 cycles.

Either type of tone can be made an integral part of the single frequency or harmonic type multi-frequency magneto type motor generator sets, or can be supplied as a separate motor driven device mounted on the same base with the non-multiple and multiple frequency sets.

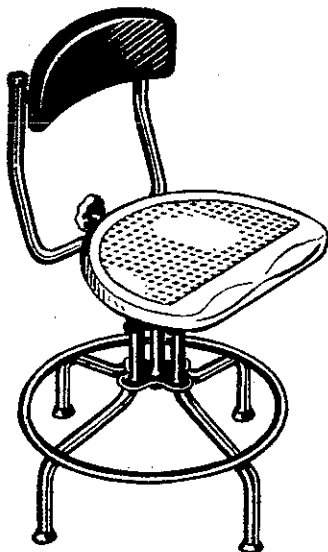
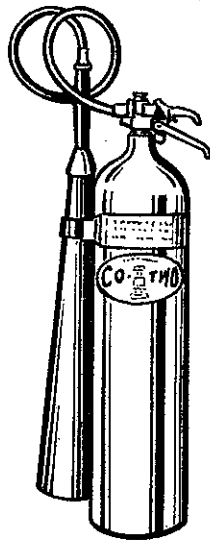
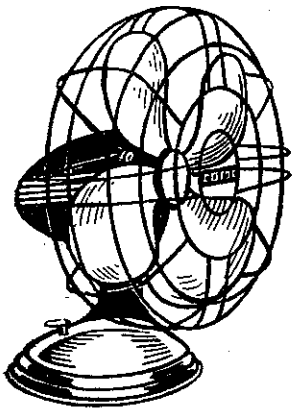
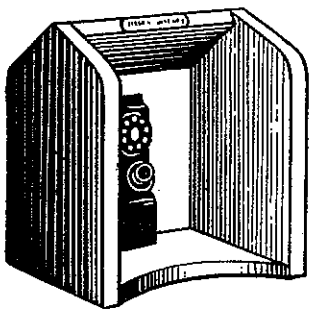
Interrupters

Interrupters are supplied with cut nylon cams and nylon actuators. The interrupter can be made as a part of single or multi-frequency machines or can be supplied as a separate unit with or without tone generator. A small and inexpensive interrupter is available in sizes 1 to 18 circuits. This unit is supplied only with an alternating current motor.

Dynamotors and Inverters

Dynamotors and inverters are available to provide ringing power from a battery source. The usual output is at 80 Volts, 19 cycle, 1 phase, and with unregulated frequency.

Dynamotors can also be provided with 115 Volt, 60 cycle, 1 phase output, which can be used to supply emergency power to operate alternating current equipment in case of failure of the A. C. power supply.



RAY STATIONS

RECORDING DEVICES
TAPES

FANS

EXTINGUISHERS

11

Miscellaneous

RECORDING CHAIRS

BUTZERS

RECORDING TAPE

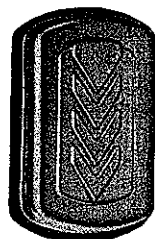
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| | Operator's Chairs | | |

Edwards Bells and Buzzers

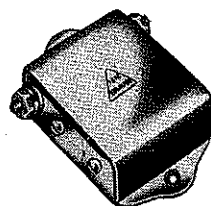


Cadet bells and buzzers are completely covered, fully adjustable and designed for long, efficient service. Both are compact, good looking and have chromium plated covers. They are equipped with phosphor bronze springs, silver contacts and both are arranged for surface or concealed wiring with carefully insulated and concealed binding posts.

Buzzer size is $1\frac{3}{4} \times 2\frac{3}{4}$ inches. Bell is somewhat larger. Both are for standard 6-8 volt, 60 cycle A.C. or 3-6 volt D.C. circuits.

| Cat. No. | Type | Standard Package | Wt., Oz. |
|----------|------------|------------------|----------|
| S-2402 | 720 Bell | 12 | 8 |
| S-3228 | 725 Buzzer | 12 | 3 |

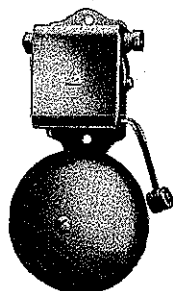
Edwards Lungen Buzzer



For A.C. or D.C. operation. Base is cadmium plated with polished chrome cover. External insulated binding posts, grounded frame. Double adjustment feature. Standard voltage: 6-8 Volts D.C. 8-10 Volts 60 cycles A.C.

| Cat. No. | Size | Dimensions | Wt., Oz. |
|----------|------|--------------------------------------|----------|
| S-3230 | 0 | $1\frac{1}{2} \times 1\frac{5}{8}$ " | 2 |
| S-3232 | 1 | $2\frac{1}{8} \times 1\frac{7}{8}$ " | 4 |

Edwards Lungen Bells



Lungen bells are designed for offices, residences and hospitals where appearance is an important factor. They are exceptionally neat in design with tight fitting covers that are bug and dust proof. Equipped with phosphor bronze springs, double adjustment and pure hard-drawn silver contacts.

Finished in satin-chrome. Designed for standard 8-10 volt, 60 cycle A.C., 6-8 volt D.C. operation.

| Cat. No. | Description | Wt., Oz. |
|----------|--------------------------|----------|
| S-2412 | $2\frac{1}{2}$ Inch Bell | 8 |

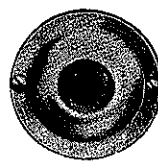
Bakelite Push Button



Extra large button. Improved spring contacts give positive contact. All metal parts are rustproof and thoroughly insulated.

| Cat. No. | Dimensions, Ins. | Wt., Oz. |
|----------|---|----------|
| S-3220 | $1\frac{5}{8} \times 1\frac{1}{8} \times \frac{7}{8}$ | 1 |

Edwards Push Buttons



A



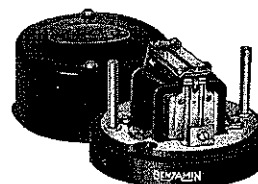
B

(B) White, flat center button for metal push button, $1\frac{3}{4}$ inches across and $11/16$ inches deep. Finished in satin brass with black button. Complete with mounting screws. Terminals accommodate No. 14 wire.

(B) White, flat center button for mounting in $\frac{5}{8}$ inch hole. Spring clip holds button in place. Rim is $3/32$ inch wide.

| Cat. No. | Description | Wt. per Doz., Lbs. |
|----------|---------------------|--------------------|
| S-3224 | Round Brass Button | $\frac{3}{4}$ |
| S-3223 | Flush Type Mounting | $2\frac{1}{2}$ |

Telecode Relays



Benjamin Telecode relays for panel mounting are sensitive, efficient, quick-acting and quiet circuit-closing units which increase the efficiency of telephone signaling. They find a wide application in factories, mines, machine shops, foundries and similar places where noise makes it difficult to hear ordinary telephone bells and loud ringing bells or horns are needed. They do not in any way interfere with the efficiency or operation of telephone system.

Furnished for open circuits with 1000 ohm windings. Closed and locking circuits and other resistances are available on special order.

Panel Mounting Type

| Cat. No. | Type | Wt., Lbs. |
|----------|--------|----------------|
| S-6060 | 8313 P | $2\frac{1}{2}$ |

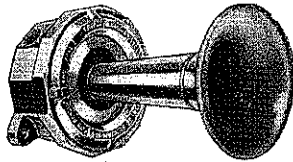
Pressed Steel Box

| Cat. No. | Type | Wt., Lbs. |
|----------|-------------------------|----------------|
| S-6077 | 8315 P | $5\frac{1}{4}$ |
| S-6061 | 8316 P (With condenser) | 6 |

Benjamin Weatherproof Howlers

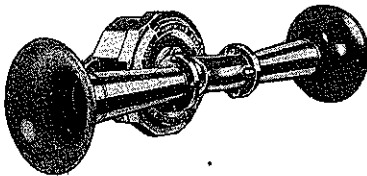
Heavy weatherproof construction with cast aluminum threaded ring and joint sealed by live rubber gasket. Standard finish is baked battleship gray enamel. AC howlers have no contacts. The vibrations follow AC cycles and the pitch is double the frequency used. DC howlers operate on multiple circuits only.

7½-Inch Bell Type Projector



| | |
|-----------------|---------------------------|
| *Series 8546 AC | 12- 24-110-220 volt types |
| Series 8526 DC | 6-110-220-250 volt types |

19½-Inch Double Bell Projector



| | |
|-----------------|---------------------------|
| *Series 8590 AC | 12- 24-110-220 volt types |
| Series 8599 DC | 6-110-220-250 volt types |

Non-Weatherproof Howlers

An excellent signal for industrial and commercial use. Threaded ring construction and plug-in wiring assures quick easy installation.

Specify voltage when ordering.

7½-Inch Bell Type Projector

| | |
|-----------------|---------------------------|
| *Series 8755 AC | 12- 24-110-220 volt types |
| Series 8726 DC | 6-110-220-250 volt types |

19½-Inch Double Bell Projector

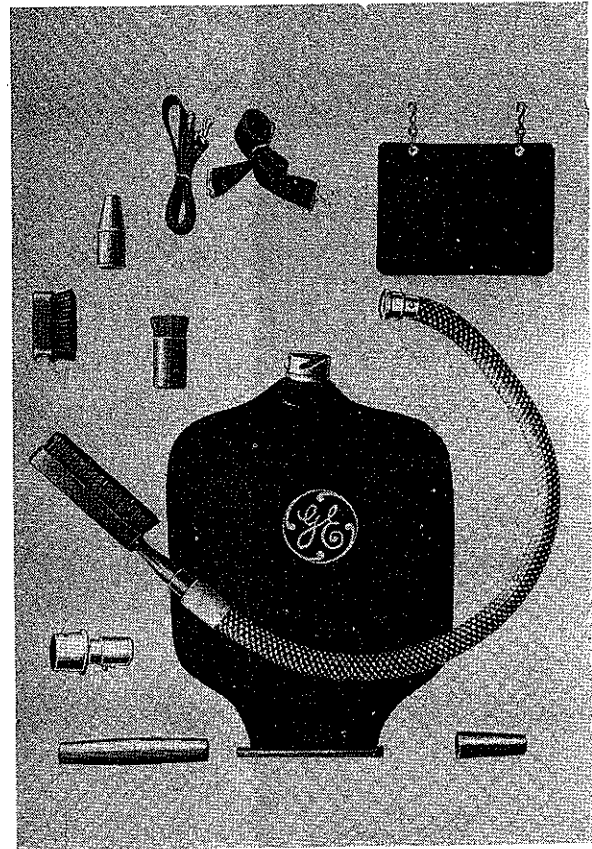
| | |
|-----------------|---------------------------|
| *Series 8795 AC | 12- 24-110-220 volt types |
| Series 8794 DC | 6-110-220-250 volt types |

Projectorless Grill Front

| | |
|-----------------|---------------------------|
| *Series 8741 AC | 12- 24-110-220 volt types |
| Series 8740 DC | 6-110-220-250 volt types |

*All AC Voltages are 60 Cycle. 25 Cycle Furnished on Special Order.

G-E Switchboard Cleaner



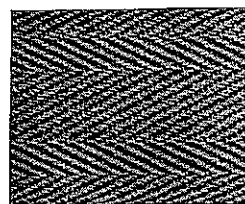
Specially designed non-conductors used and recommended by telephone engineers for cleaning switchboards and other difficult-to-clean electrical equipment. The GE Cleaner is light-weight and easy to handle. Besides cleaning switchboards it can be used for all the ordinary cleaning jobs around the plant — mouldings, sills, frames, etc. Set includes bag, an extension hose, shoulder strap, fiber shield, and various brushes required for intricate inaccessible cleaning tasks. Has 110v. 60 cycle A.C. motor.

Cat. No.

Wt., Lbs.

| | |
|--------|---------|
| S-3548 | 7 |
|--------|---------|

Operator's Neckband Webbing



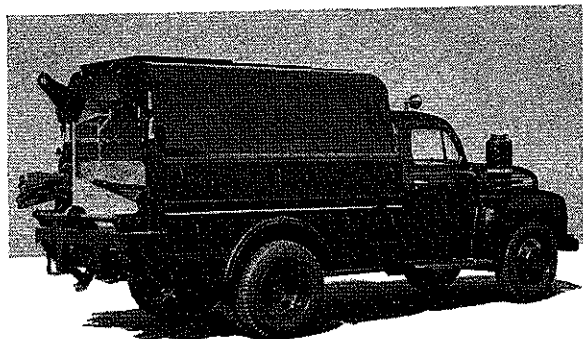
A grey cotton tape 7/8-inch wide for replacing worn or soiled webbing on the neckbands of operator's breast-plate transmitters. Furnished in rolls as follows:

Cat. No.
S-7410

Roll
12 yards

Wt., Oz.
1

Standard Telephone Construction Body – Aluminum or Steel



The Line Construction and Maintenance Body represents a distinctive advance in utility body engineering. It is beautifully balanced, assuring proper weight distribution, and efficiently designed to utilize every inch of space to carry various tools and materials used by line crews.

Light weight, rugged construction and durability are dominant features while other features include a full-vision telescoping roof and large capacity side compartments equipped with single piece wedge-type gravity doors with cam-type locks.

Standard features are: derrick tunnel, tool holder (for handsaws, hacksaws and braces), two bit-holders, axe pocket, two thru-boxes (with provision for cross-cut saws), adjustable material bins, platform extension, supports for rear jacks with safety eyes, 12 swivel-type material hooks and wire rack.

The roof slides forward out of the way when the pole derrick is used and the side compartments will hold all the necessary small hardware and tools. Ladders, pike poles, long shovels and spoons are carried on racks above the compartment. Long saws, pole jacks, cant hooks, digging bars and derrick supports (when furnished) are carried in sections especially arranged for them. All standard items of hardware, all tools and accessories, such as danger flags, snatch blocks, torches, test sets, etc., are accommodated so as to be out of the way, yet conveniently at hand when wanted.

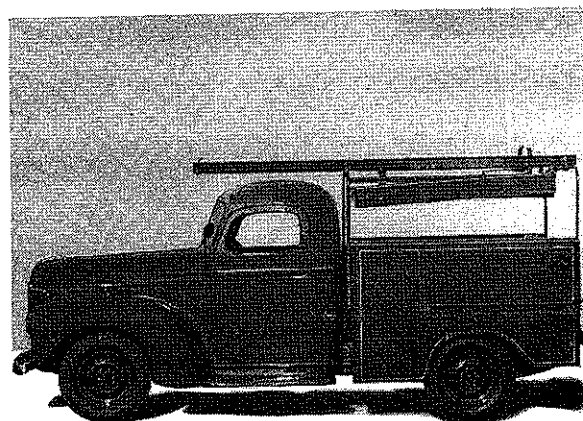
Accessories available include ventilated rubber goods box, sliding type window for cab, sheave bar and wheel, medical kit holder, thermostatic water cask and fittings, cup dispenser, winch line holder and safety hook, winch line, pintle hook, fire extinguisher holders and wire reels.

This body can be mounted on any commercial chassis, new or old, from 1½ to 2½ tons. A convenient method of handling the installation is to make arrangements through the local automobile dealer near you to deliver the chassis to the body plant. The com-

plete job can then be driven away, or an insured carrier can be engaged to drive the truck to any specified destination.

Because of the many variables involved in the fitting out of a construction body it is advisable to ask for a proposal sheet before requesting a quotation. Full information and prices will be furnished to telephone companies without obligation.

Standard Telephone Installation Body Aluminum or Steel



This body was designed to accommodate all the equipment used in rural telephone maintenance and installation; to allow plenty of room for all materials carried and to make them quickly accessible for loading or removal. This was accomplished by extending the body to the fender lines and providing two boxes, 15 inches wide, the full length of the body, with a platform space, 40 inches wide, between. Full length doors open to front compartments. These have provisions for carrying wire, hand lines, and sub-sets and have padded trays for desk stands, test sets, telephone sets and sub-sets, that are securely held in place with elastic straps. The balance of the left side box encloses shelves with adjustable partitions for small hardware and spaces for tool kit and bag. The right hand box has partitions with spaces for wood pins, pole steps, pole brackets, rubber gloves, and similar materials.

The body cross bearers are 12-gauge sheet steel and the entire base is welded electrically. Auto body steel, 20 gauge, is used in all compartment boxes and is properly reinforced where needed. The ends of the side boxes are 16 gauge steel. The floor is a single sheet of 16-gauge steel with rectangular corrugations for greater strength and resistance to jars when carrying heavy materials. Adequate provision is made at

Telephone Installation Body—Cont'd.

openings to protect against water seepage. Lock rods are provided for side compartment doors for protection of material. Side boxes, shelves and partitions are electrically spot welded.

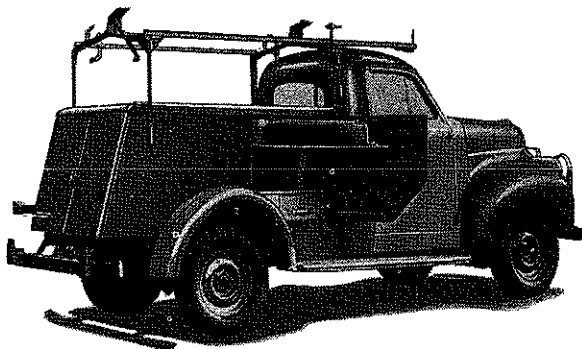
Dimensions

| | |
|-----------------------------------|-----|
| Overall Length, inches..... | 70 |
| Inside width, inches..... | 40 |
| Width of compartment, inches..... | 15 |
| Height at front, inches..... | 43 |
| Height at rear, inches..... | 38¼ |
| Weight pounds (approximate)..... | 650 |

The body can be mounted on your chassis at the plant, or shipped to its destination for mounting. It can be prime coated or finished in your standard colors. Kindly specify the chassis model and wheelbase on your order. We will be glad to answer questions or supply further information on request.

NOTE: Fenders are incorporated in the body and it is not necessary for the purchaser to buy rear fenders from the chassis manufacturer.

Light Installation Body — Aluminum or Steel

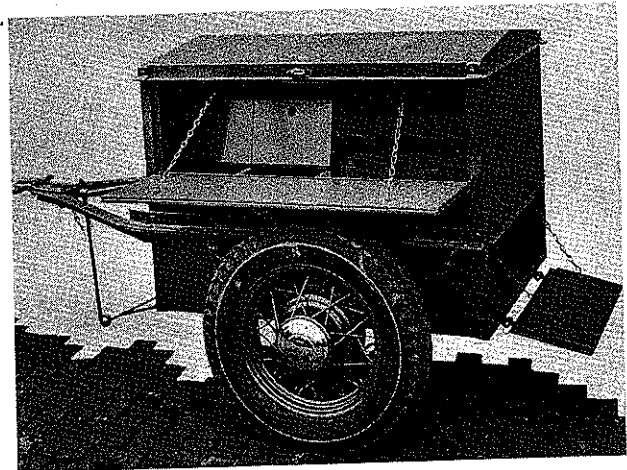


The light Installation Body is a specialized unit widely used by the telephone industry for installation, maintenance and general service. This body is equipped with several trays of various depths and widths and with material drawers having movable partitions. Rear and side doors have strong, keyed locks and the ap-

Light Installation Body—Cont'd.

paratus and material trays are equipped with tray locks so that trays will not move when truck is in motion. A sliding shelf for mounting the payout reel permits easy access to a fully loaded reel and when not in use, the shelf slides in place under the spare tire shelf. Body can be furnished with either overhead or side mounted ladder brackets, and can be prime painted or furnished in your standard color. Can be mounted on your chassis at our factory or can be crated and shipped for mounting at destination. Specify chassis model on your order. Further information for either aluminum or steel bodies furnished on request.

Cable Splicer's Trailer



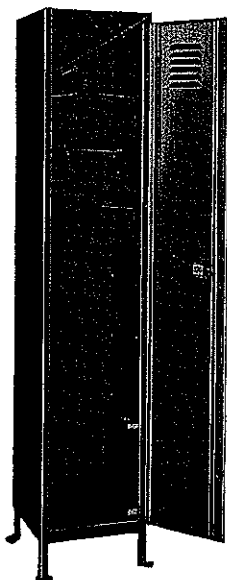
The Cable Splicers' Trailer is equipped with lower compartments at the front and rear, suitable for various equipment and tools. The upper compartment is sub-divided for smaller tools and materials. The side door is 14 inches wide and hinged at the bottom. It is supported by chains and held level when open, forming a work shelf.

All compartments can be locked with one lock. A special frame mounted on top of the trailer can be supplied to carry cable splicers' platforms and ropes. This type of trailer is equipped with a pintle ring. The trailer can be furnished in prime paint or finished to your standard color.

This trailer, designed for cable repair and maintenance, has been found suitable for all types of cable work. It will be found practical for busy streets, narrow alleys and private right of ways, and well adapted to city work where a truck unit is not justified.

The all-metal construction, which provides maximum strength, reduces weight to the minimum.

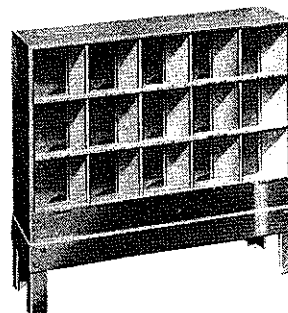
Cord Cabinet



Equipped with seven 6 inch cord hooks and two clips on each side to hold wedge blocks. Finished in green enamel. Fitted with flat key lock, two keys and master key. Dimensions overall—15½x15x78 inches. Shipped completely set up as shown.

| Cat. No. | Wt., Lbs. |
|---------------|-----------|
| EX-1279 | 160 |

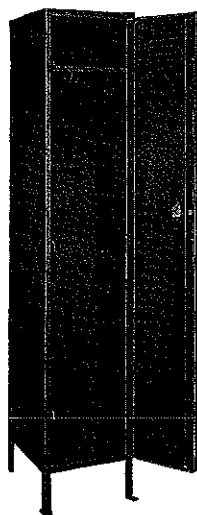
Headset Cabinet



Furnished in 3 sizes, 15 compartment, 30 compartment and 45 compartment. Order one EX-1258-A1 base plus one, two or three EX-1258-A compartment sections. Each section contains 15 compartments with sloping shelves for efficient storage of head sets. Compartment sections are 35¼" x 8¾" x 23". The 45 compartment cabinet consists of three 15 compartment units mounted one above the other. The 30 compartment cabinet consists of two 15 compartment units mounted one above the other. The base is 35¼" x 8¾" x 8¼". Base is extra and must be specified on each order.

| Cat. No. | Type | Wt., Lbs. |
|------------|---------------------|-----------|
| EX-1258-A | Compartment section | 52 |
| EX-1258-A1 | Base | 21 |

Clothes Locker

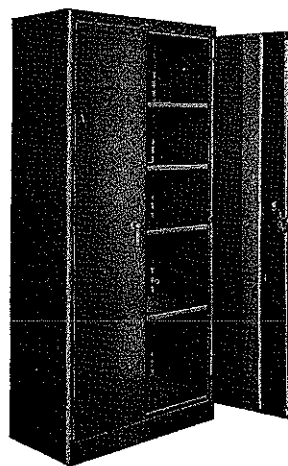


Has won high favor among telephone companies. It is equipped with one shelf, one double prong and four single prong ball pointed, rust-proof coat hooks. Finish is green baked enamel. 15x15x78 inches. Shipped knocked down.

| Cat. No. | Sections | Wt., Lbs. |
|----------|----------|-----------|
| 5052 | 1 | 76 |
| 5052-3 | 3 | 195 |

Steel Cabinets

Double Door Type

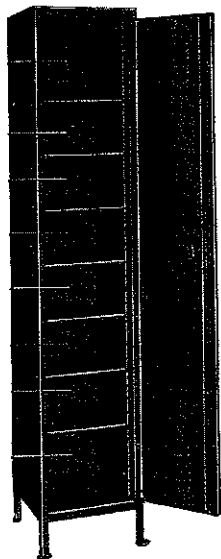


A handy, general utility cabinet widely used in the telephone field for storing printed forms and office supplies. Cabinet corners are rounded for better appearance and greater safety.

Made of steel throughout. Reinforced doors swing wide to give full access to interior. Doors lock at three points, top, bottom and center. Flat key lock is standard.

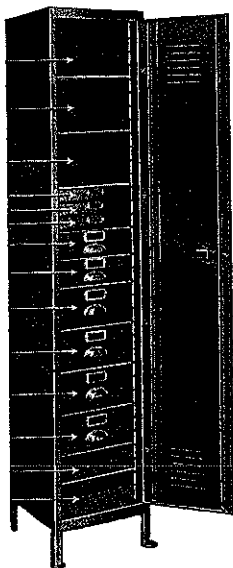
As illustrated, the cabinet is equipped with four shelves which are adjustable on two-inch centers. Finished with heavy coat of green enamel baked on to withstand hard wear. Shipped set up as shown.

| Cat. No. | Size | Wt., Lbs. |
|----------|------------------------------|-----------|
| 1000 | 36" wide, 21" deep, 78" high | 189 |

Wire Chief Material Cabinet

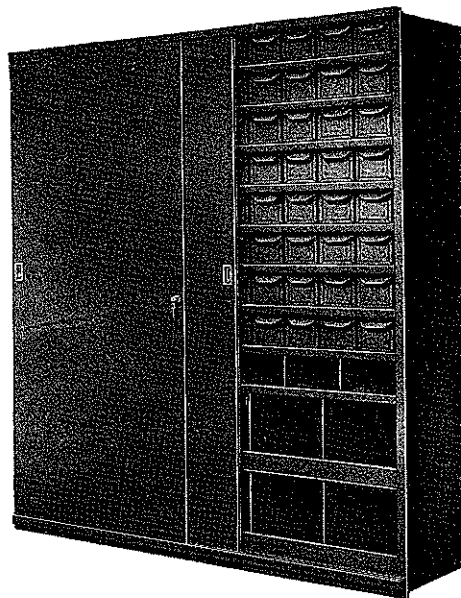
Equipped with seven shelves adjustable on two inch centers. Fitted with flat key lock, two keys and master key. Finished in baked green enamel. Overall Dimensions—15 in. x 15 in. x 78 in. Shipped completely set up as shown.

Cat. No. Wt., Lbs.
EX-1278-8 160

Wire Chief Material Cabinet

The arrangement shown has proven standard for general use but a different interior arrangement can be had to suit individual needs. Write us, giving your requirements in detail. Shelves adjustable on 2 inch centers. Fitted with flat key lock, two keys and master key. Finished in baked green enamel. Overall Dimensions — 15 in. x 15 in. x 78 in. Locker shipped completely set up.

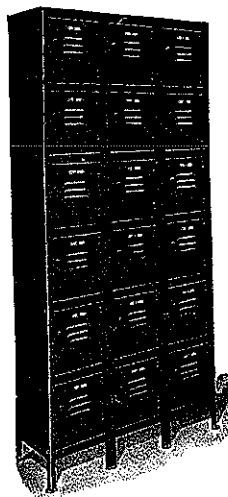
Cat. No. Wt., Lbs.
EX-1278 218

Material Cabinet

Has 48 shelf boxes $5\frac{3}{4}$ " x $17\frac{1}{2}$ " x $4\frac{5}{8}$ ". Each box is equipped with two adjustable dividers. All shelves are adjustable on $1\frac{1}{2}$ " centers with simple studs and clips. No tools required for adjustment. Two bottom shelves are equipped with 3" high bin fronts. Each section has closed base to fill 6" space between floor and bottom shelf. Overall dimensions are 36" x 18" x 84". Finished in green baked-on enamel.

Illustration shows two No. EX-1615-D units equipped with sliding doors. Doors can only be used on two adjacent sections. Sliding doors may be equipped with flat key lock with two keys. When used as above specify one first section and one additional section to make rack assembly.

Cat. No. Wt., Lbs.
EX-1615-D 600
Sliding Doors 130

Tool Locker

Furnished in section as follows:
Section of 6 lockers, 1 Wide — 6 High

Section of 12 lockers, 2 Wide — 6 High

Section of 18 lockers, 3 Wide -- 6 High

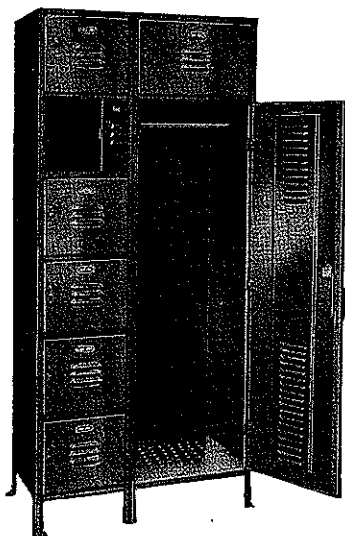
Each locker is 12 in. wide, 15 in. deep and 12 in. high.

Number plates are furnished on each locker. When ordering, state numbering desired.

No. 5342 has padlock attachment. No. 5343 has flat key lock. Shipped knocked down.

Cat. No. Wt., Lbs.
5342 78
5343 78

Hat and Coat Locker



An attractive locker for the small office. The large compartment is fitted with coat rod, no hooks. Letter plates A, B, C, D, E, F, and G, are on door of each small compartment with a number plate on the large door. The locks on all of the small hat compartments are different. The large door automatically locks when closed and can only be opened by lifting a rod in one of the small compartments. The flat key locks are master-keyed. Finish: Green baked enamel. Shipped completely set up as shown.

Overall Dimensions: 36 in. wide, 21 in. deep, 78 in. high.

| | |
|------------|-----------|
| Cat. No. | Wt., Lbs. |
| 5401 | 258 |

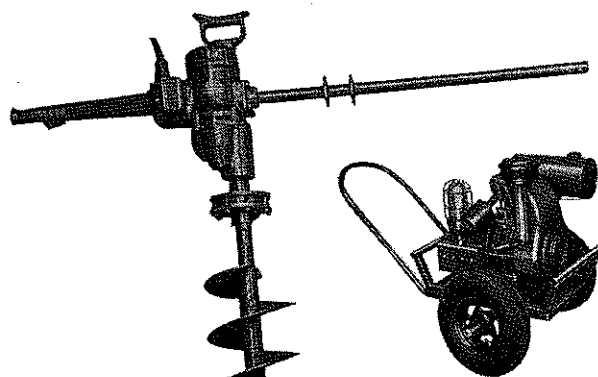
Floor Wax



A water-soluble, self-polishing wax made to special specifications for telephone companies and approved for use in automatic switchroom. May be applied to wood, linoleum or composition floors with a cotton mop—no special equipment is needed. Dries in 15 minutes.

| Cat. No. | Size | Wt. per Can, Lbs. |
|----------|----------|----------------------|
| S-7752 | 1 Gallon | 9 |
| S-7750 | 5 Gallon | 48 |

KA-MO Earth Boring Equipment



KA-MO Drills function efficiently in practically every type of application. They were designed in the field to operate dependably, efficiently, and economically. Their primary applications are digging pole holes, anchor holes and tunneling under sidewalks, railroad crossings, roads, etc. KA-MO Drills can be operated by either electricity or air. The electric type can be carried as far away from the source of power as the length of the line permits. This feature makes it possible to bore holes in many places that are inaccessible to other types of machines. When used horizontally, KA-MO Drills operate in a six ft. ditch. They cut through stumps, roots, etc., drilling about 1 ft. per minute. Drills range in size from three to twenty inches in diameter. They are furnished in easy-to-assemble 4 ft. sections. AC or DC generators can be furnished for electrical use. Write for further information.

Fiber Wire or Cord Cleats



Single or double wire clamps of hard fiber. Naturally insulated, they make admirable cleats for holding wire in place on desks, on plaster or lath walls, or on baseboards or mouldings. Unobtrusive natural color.

| Cat. No. | Description | Wt. per 1000, Lbs. |
|----------|-------------|-----------------------|
| S-3550 | 1-Single | 2½ |
| S-3551 | 2-Double | 2½ |

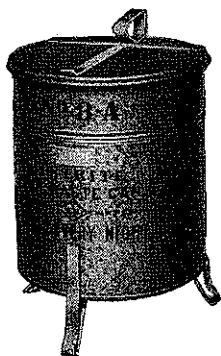
Safety Cans



These cans for the use and storage of gasoline, benzine, kerosene, turpentine, naphtha, and alcohol can help to eliminate the fire hazard from the telephone plant. The safety feature of these cans consists of a spout cap controlled by a non-rusting spring which holds the cap closed tight, preventing leakage or evaporation. Natural grip lever opens spout cap in one operation. Cap closes automatically when grip is removed. If can is exposed to extreme heat, a valve opens to permit excessive pressure to escape. Automatically closes when pressure is relieved. Large nozzles are easy to fill—no special funnels required. Finished in baked red enamel.

| Cat. No. | Capacity | Wt., Lbs. |
|----------|-----------|-----------|
| S-3258 | 1 Gallon | 4 |
| S-3262 | 2 Gallons | 7 |

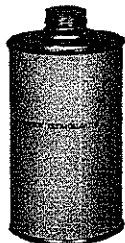
Oily Waste Cans



Portable cans made especially to hold oily waste, rags or other inflammable materials. No springs are used—it opens with foot pressure and closes automatically, leaving both hands free.

| Cat. No. | Dimensions, In. | Capacity, Gal. | Wt., Lbs. |
|----------|-----------------|----------------|-----------|
| S-3252 | 12½x14 | 8 | 15 |
| S-3255 | 15½x17 | 14 | 21 |

Carbon-Tetrachloride Cleaner



A non-inflammable liquid to be used in place of denatured alcohol. Used for cleaning contact points and jacks and for removing paint and printer's ink residue from jack strips. Also cleans typewriter type.

| Cat. No. | Size | Wt., Lbs. |
|----------|----------|-----------|
| S-3292 | 1 Pint | 2 |
| S-3291 | 1 Gallon | 14 |

Dead Oil of Coal Tar



A specification creosote preservative especially prepared for economical treatment of poles and cross arms by the brush or dip methods. Has been used in all parts of the country with uniform success in protecting wood against dry rot and destruction by insects.

It can be applied in the pole yard or the point of construction. The preservative is heated to about 150 to 200 degrees F. (never to boiling point) and all wood parts thoroughly trimmed before treatment. For full butt treatment, two coats of preservative are applied to the entire pole butt to a point 1 foot above the ground line. It should be liberally applied—especially to knotty or sappy parts or seasoning checks. Many telephone companies also apply it to all pole gains and roofs.

To treat standing poles, the ground is removed about one or two feet from around the pole and all dirt and decayed portions are scraped away from the pole. Two coats of preservative are applied to exposed portions up to a point about one foot above the ground line. The second coat should not be applied until the first has been absorbed.

| Cat. No. | Size | Wt., Lbs. |
|----------|----------------|-----------|
| S-5584 | 5 Gallon Can | 50 |
| S-5586 | 55 Gallon Drum | 560 |

Rapid Asphalt Paint



For over fifty years leading electric railways, central stations and telephone companies have used Ruberoid Rapid Asphalt Paint for coating cables, tubing, switchboards, electric signs, battery boxes and fibre conduit joints for protection against moisture, acids, corrosion and deterioration.

Resists high temperature, will not soften under 90°-100° C. Spreads approximately 150 sq. ft. per gallon. Free from coal tar. Color is black.

| Cat. No. | Quantity | Cans per Case | Wt., Lbs. per Can |
|----------|-----------|---------------|-------------------|
| S-5616 | 1 Quart | 10 | 2 |
| S-5617 | 1 Gallon | 6 | 8 |
| S-5618 | 5 Gallons | 1 | 48 |

Doe's Burnishing Pastes

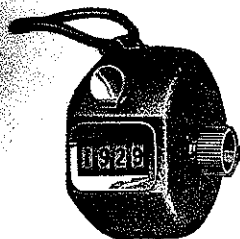


Doe's Plug Polishing Paste and Commutator Burnishing Paste have been widely used in the telephone field for many years.

As illustrated, both are put up in gold lacquered tin boxes containing approximately two ounces.

| Cat. No. | Description | Wt. per Can, Oz. |
|----------|----------------------|------------------|
| S-5642 | Plug Polishing Paste | 3 |
| S-5640 | Commutator Paste | 3 |

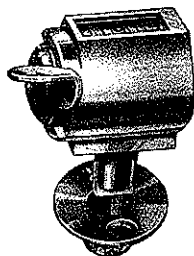
Hand Counter



A hand tally, indispensable for inventory, count of calls, traffic work, etc. Quick set-back feature makes the change from one item to another simple. Rounded corners prevent irritation to the hands. Can be operated with either hand. Counts up to 10,000.

| Cat. No. | Type | Wt., Oz. |
|----------|------|----------|
| S-3880 | AB-2 | 2 |

Telephone Counter



Designed for use on telephone switchboards, this counter sets into a permanent socket that sets flush into the keyshelf. Five figures on the dial give a record up to 100,000 and then repeat. Furnished complete with socket plate. Extra sockets can be supplied.

| Cat. No. | Type | Wt., Oz. |
|----------|------|----------|
| S-3882 | 8 | 3 |

Calculagraphs



Calculagraphs are widely used in the telephone field for timing telephone messages. The Calculagraph computes the exact elapsed time of the call and prints the elapsed time in minutes and seconds. A Calculagraph is a protection to both subscriber and company furnishing the service. They are equipped with two levers. By operating one lever when the conversation begins and the other when it ends the operator secures a printed card record that determines the correct toll fee—thus avoiding disputes and preventing losses in collections.

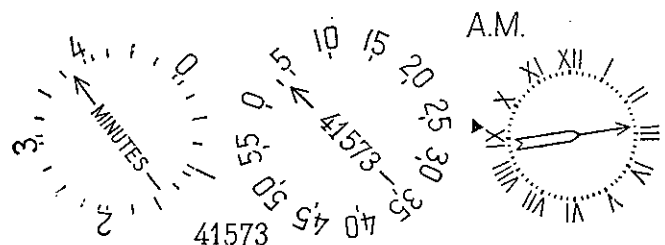
For telephone use, Calculagraph offers several types or models. The round models 6 and 30 are 8¾ inches in diameter, model 33 is rectangular and smaller. These models are furnished in two type cases; Style C case with flange at top sinks into keyshelf till flush with top;

Style A case has no flange—it can be furnished with a pedestal that may be adjusted to any height from 26 to 40 inches.

Model 6



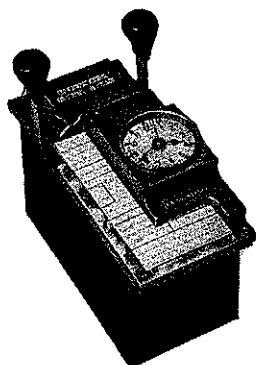
The standard Model 6 is driven by a rugged 8 day jeweled movement which records elapsed time in minutes and quarter minutes for a maximum period of 60 minutes and also records the time of day.



The 6X is the same as the 6 except it prints the date.

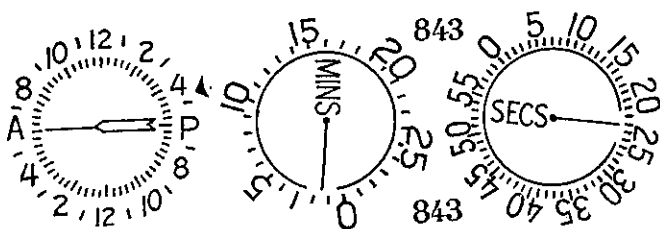
The 6 or 6X can be ordered special with the time of day pointing on a 24 hour dial—see time of day imprint of Model 33 record (below).

Model 33



Model 33 is a small compact model $7\frac{1}{2}$ " in length, $3\frac{3}{8}$ " in width, and depth of case is $3\frac{3}{4}$ " below the switchboard. It occupies the space of 4 type A keys in a switchboard.

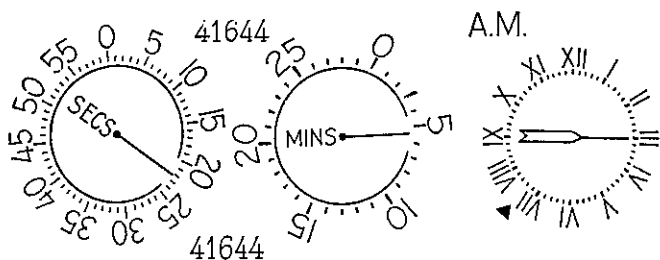
The movement is operated by a synchronous electric motor taking about two watts. It records elapsed time exactly like the model 30 but is made to print the time of day on a 24 hour dial as shown herewith. The visible clock face has a sweep second hand; this is especially convenient in determining the initial period of the call.



Model 33 can be ordered with the same current characteristics as Model 30, also with 20 volt 25 cycle.

Model 30

Model 30 is equipped with self-starting synchronous motor. Records time of day and also records elapsed time in minutes and seconds for a maximum period of 30 minutes.



Model 30X is the same as 30 except it prints the date.

Either Models 30 or 30X can be ordered with a 24 hour time of day imprint. See time of day imprint on the Model 33 record.

Model 30 or 30X can be ordered with the following current characteristics—

| | |
|----------|----------|
| 20 volt | 60 cycle |
| 115 volt | 60 cycle |
| 20 volt | 50 cycle |
| 115 volt | 50 cycle |

Please specify volts and cycles when ordering.

Calculagraph Accessories

As telephone engineers prefer to keep 115 volts out of the switchboard most electric Calculagraphs operate on 20 volts.

If 20 volt regulated current is not available, transformers can be supplied in two types. One measures about $2\frac{1}{2}$ "x $2\frac{1}{2}$ "x $3\frac{1}{2}$ " and reduces from 115 volts to 20 volts. It is rated at 15 watts. This can be wired to the Calculagraphs on the job as desired and will safely operate seven Calculagraphs. It is No. WH15W.

The other is a very small, light transformer which can be plugged directly into any 115 volt receptacle. This small transformer has an 8 foot cord attached and the Calculagraph is connected to the other end of the cord. This is shipped all connected as a unit. This small transformer is rated at $2\frac{1}{2}$ watts and will operate the one Calculagraph to which it is connected. It is No. UT $2\frac{1}{2}$ with cord.

If a transformer is needed, the type desired should be specified.

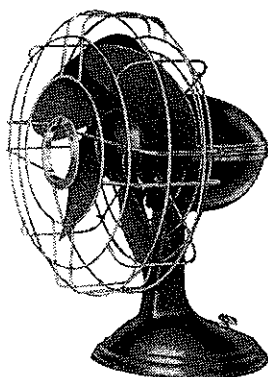
Hand setting keys are ordered separately.

Ribbon winding cranks, useful when putting on a new ribbon, are also ordered separately. Usually two of each of the keys is desired for an exchange.

Two mounting brackets, No. 33-226-227, are used when mounting the Model 33 on the key mounting irons in a keyshelf.

When mounting the Calculagraph on a wooden shelf, two brackets, No. 33-194, are used.

R & M "Quiet" Electric Fan

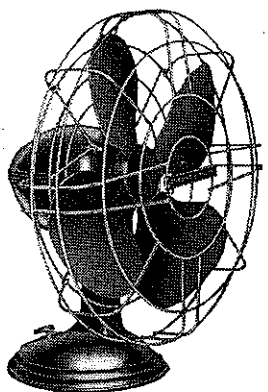


10, 12 and 16 Inch Oscillating

Beautiful streamlined body and base of modern die-cast construction. New bronze finish. Completely enclosed oscillating mechanism. Powerful motor delivers large volumes of air with low current consumption. Two-speed switch on 12" and 16" models.

| Cat.No. | Type | Size | Speeds | Air Del.* c.f.m. | Wt., Lbs. |
|---------|-------|------|--------|------------------|-----------|
| S-4180 | 20004 | 10" | 1 | 660 | 9½ |
| S-4182 | 21004 | 12" | 2 | 880 | 12 |
| S-4184 | 22004 | 16" | 2 | 1500 | 25 |

R & M "Quiet Deluxe" Electric Fan

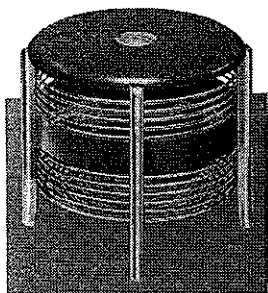


12 and 16 Inch Oscillating

New gunmetal finish with silver striping bright guard. Die-cast zinc base and motor body. Patented blades for unusually quiet air delivery. Enclosed oscillating mechanism. A three-speed switch on 12" and 16" models. Easily adjusted for sidewall mounting.

| Cat.No. | Type | Size | Speeds | Air Del.* c.f.m. | Wt., Lbs. |
|---------|-------|------|--------|------------------|-----------|
| S-4181 | 23004 | 12" | 3 | 1000 | 26 |
| S-4186 | 24004 | 16" | 3 | 1740 | 30 |

R & M "Breeze-All" Floor Fan

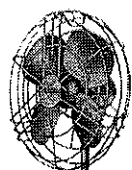


Beautifully styled in mottled mahogany plastic with chrome-plated guards and grilles. Special R & M capacitor-type motor turns the blade smoothly and quietly. Efficient three-speed operation. Lifts cooler air from the floor; cools room quickly and comfortably. Safety engineered to prevent injury.

| Cat.No. | Type | Size | Speeds | Air Del.* c.f.m. | Wt., Lbs. |
|---------|-------|------|--------|------------------|-----------|
| S-4177 | 34004 | 12" | 3 | 2600 | 26½ |

Above fans are for 115 volts, 60 cycles, A.C.

R & M Air Circulator



Floor Model

Ceiling - Floor - Bench Wall Styles

The R & M 24" and 30" Air Circulator is an economical method for refreshing large interiors with cool fresh air. Their smooth, smart lines make them an asset to any setting. Polished aluminum blades, brightly finished guard and upper column contrasts pleasingly with black lacquer finish on the base, lower column and motor. Enclosed two-speed capacitor-type motor mounted on rubber. 2 speed motors.

| Cat.No. | Type | Model | Size | Air Delivery* c.f.m. | Wt., Lbs. |
|---------|--------|---------|------|----------------------|-----------|
| S-4171 | 30004C | Ceiling | 24" | 5250 c.f.m. | 61 |
| S-4172 | 30004F | Floor | 24" | 5250 c.f.m. | 61 |
| S-4173 | 30004B | Bench | 24" | 5250 c.f.m. | 61 |
| S-4174 | 30004W | Wall | 24" | 5250 c.f.m. | 61 |
| S-4187 | 31004C | Ceiling | 30" | 6500 c.f.m. | 65 |
| S-4188 | 31004F | Floor | 30" | 6500 c.f.m. | 65 |
| S-4189 | 31004B | Bench | 30" | 6500 c.f.m. | 65 |
| S-4190 | 31004W | Wall | 30" | 6500 c.f.m. | 65 |

R & M Ventilating Fans



The R & M 12" and 16" Ventilator is built for maximum performance and long life. Easy to install. Wide blades improve air delivery. Operates in any position. Bronze finish.

| Cat.No. | Type | Size | Air Delivery* c.f.m. | Wt., Lbs. |
|---------|-------|------|----------------------|-----------|
| S-4168 | 26004 | 12" | 880 c.f.m. | 20 |
| S-4169 | 27004 | 16" | 1600 c.f.m. | 30 |

The Deluxe Ventilator fits any window 23" to 34" wide. Mounts inside outer sash without restricting closing and locking of window. Wide, overlapping blades. Enclosed motor. Grey enamel finish.

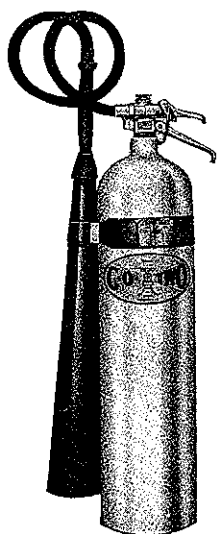
| Cat.No. | Type | Circuit | Size | Air Delivery* c.f.m. | Wt., Lbs. |
|---------|-------|-------------------|------|----------------------|-----------|
| S-4170 | 25004 | 115V. 60 Cycle AC | 10" | 620 c.f.m. | 16 |

8" Ventilating Fans for telephone booths. Enclosed motor provides protection against dust. Black finish.

| Cat.No. | Type | Size | Air Delivery* c.f.m. | Wt., Lbs. |
|---------|---------|------|----------------------|-----------|
| S-4175 | 5033-SP | 8" | 580 c.f.m. | 8 |

*Note: All ratings determined in accordance with National Electrical Manufacturers Association standards.

C-O-Two Extinguishers



These extinguishers are effective in fighting all types of fires and are favored by many telephone companies because they leave no mess. C-O-Two is a dry inert gas stored in the cylinder under pressure. When released, it expands to about 450 times its volume, dilutes the oxygen content of the air and puts out the fire. It disappears without leaving any odor, stain or damage. It is non-damaging and non-freezing.

Each cylinder is equipped with a squeeze grip, automatic shut-off valve, 3 ft. discharge hose and discharge horn. A wall hook is furnished for mounting.

| Cat. No. | Size | Wt., Lbs. |
|----------|---------|-----------|
| S-4153 | 5 Lbs. | 20½ |
| S-4154 | 10 Lbs. | 42½ |
| S-4155 | 15 Lbs. | 52 |

Standard Pyrene Fire Extinguishers



Effective fire extinguishers for telephone offices. The liquid is non-conductive and will not injure equipment. Easy to operate — women can handle them easily. Double-acting pump with patented rotating pick-up, discharges a steady continuous stream 20 to 30 feet. Smothers all classes of fire in incipient stages. Approved by Underwriters' Laboratories. For fighting fires in oils, paints, gasoline, shellac or any other highly inflammable substance.

Furnished complete with wall bracket. Ordinarily supplied in polished brass finish.

| Cat. No. | Capacity | Wt., Lbs. |
|----------|----------|-----------|
| S-4148 | 1 Pint | 5 |
| S-4156 | 1 Quart | 7 |
| S-4158 | 1½ Quart | 10½ |

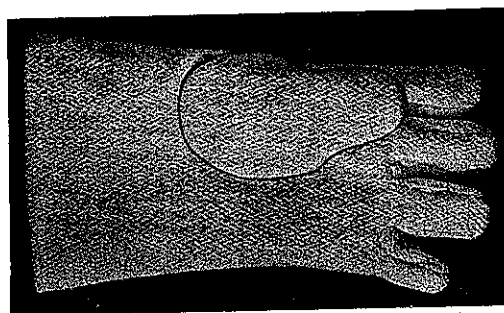
Pyrene Fire Extinguisher Liquid



The refill or charge for "Pyrene" extinguishers. Anti-freezing and non-corroding. Safe on electrical fires and will not injure telephone equipment. Furnished as follows:

| Cat. No. | Quantity | Wt., Lbs. |
|----------|----------|-----------|
| S-5270 | 1 Quart | 3¼ |
| S-5274 | 1 Gallon | 14½ |

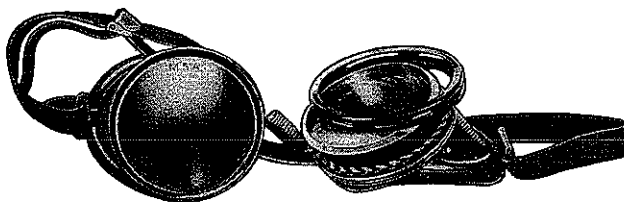
Asbestos Gloves



For use with fire fighting equipment. A valuable addition to any telephone exchange. Made of heavy fabric impregnated with asbestos, they are durable and long lasting. Heavy enough to exclude danger or burns on hands and wrists, yet flexible enough so they do not interfere with use of hands.

| Cat. No. | Wt., Lbs. |
|----------|-----------|
| S-4454 | ¼ |

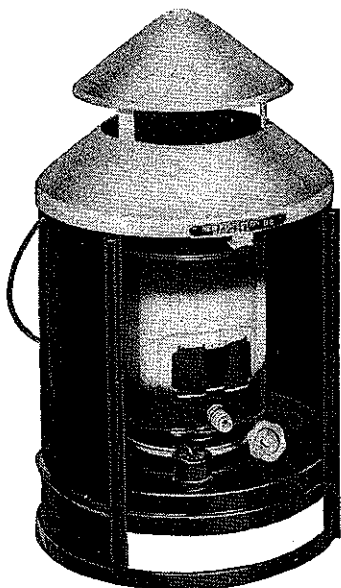
M. S. A. Chipper's Goggles



These goggles have been designed with particular attention to detail. Eye cups are shallow to allow full angle of vision in all directions. Fit is snug and comfortable. Ventilation gives maximum safety and comfort. They are equipped with adjustable ballchain bridge to assure comfort over the bridge of the nose. For utmost safety against flying particles they are equipped with M.S.A. protective lenses.

| Cat. No. | Wt., Lbs. |
|----------|-----------|
| S-4451 | 1 |

Cable Splicer's Tent Heater



The Perfection 11-B Aerial Tent Heater uses kerosene for fuel. It is a convenient, safe, economical and dependable method of tent heating. Operates from 5 to 24 hours on one filling of kerosene—tank capacity is $\frac{1}{2}$ gallon.

| Cat. No. | Description | Wt., Lbs. |
|----------|-----------------|---------------|
| S-4774 | Heater Complete | 6 |
| S-7754 | Extra Wicks | $\frac{1}{8}$ |
| S-7755 | Wick Cleaner | $\frac{1}{4}$ |

First Aid Kits

First Aid kits are especially designed for telephone, public utility companies and industrial use. They are unusually complete, convenient to use and the sizes and items are all standardized and easily replaceable. Only highest quality materials are used.

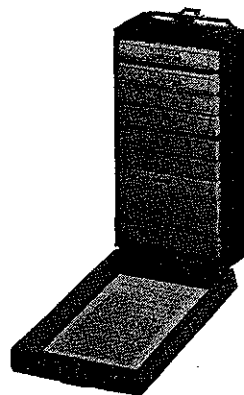
Pocket Kit



Handy lineman's kit for individual use. Contents: 6 Handi-Tape dressings; 3 Iodine Swabs; 3 Vivo Tubes; Tube of Burn-A-Lay; two 2-inch Bandage Compresses. Size $\frac{7}{8}$ x $2\frac{1}{2}$ x 4 inches.

| Cat. No. | Wt., Lbs. |
|----------|---------------|
| S-5038 | $\frac{1}{2}$ |

Ten Unit Kit (Heavy Duty)

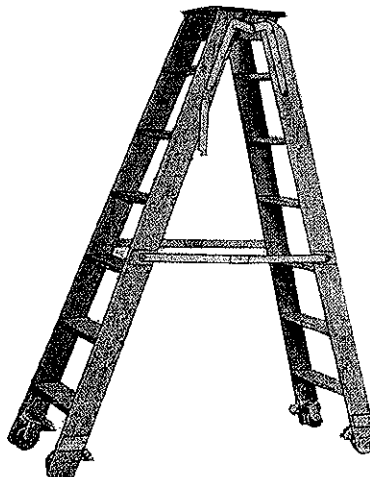


Complete kit for crews. Packages in heavy steel case, with snap lock and carrying handle. Contents listed on inside of cover for checking and refilling. Size $2\frac{1}{2}$ x $4\frac{5}{8}$ x $7\frac{3}{4}$ inches. Standard Contents: 2 packages Handi-Tape (16 each); four 2-inch Bandage Compresses; Package 4-inch Bandage Compresses; 10 Iodine Swabs; 10 Vivo Tubes; 6 Tubes Burn-A-Lay; One 40" Triangular Bandage; one U. S. A. Tourniquet and Forceps.

| Cat. No. | Wt., Lbs. |
|----------|-----------------|
| S-5046 | 2 $\frac{3}{4}$ |

NOTE: 16, 24 and 36 unit kits are available on special order. Refills for any unit (item) are immediately available.

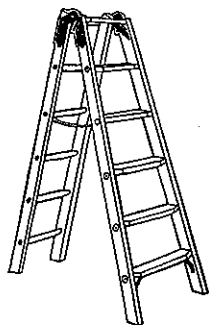
Putnam Automatic Ladders



Used in terminal rooms of telephone exchanges. Rolls smoothly and easily in either open or closed position. Wheels lock automatically when weight is applied. Made of hardwood with pressed-steel galvanized metal parts. Standard size furnished is 6 feet. Other size ladders furnished on special order.

| Cat. No. | Wt., Lbs. |
|----------|-----------|
| S-5165 | 35 |

Handy Andy



A combined step and single ladder. Handy Andy is hinged in the middle so that it will extend to approximately twice its length. Made of close-grained spruce with galvanized metal parts.

| Cat. No. | Length, Ft. | Wt., Lbs. |
|----------|-------------|-----------|
| S-5157 | 6 | 26 |
| S-5159 | 8 | 34 |

Extension Ladders

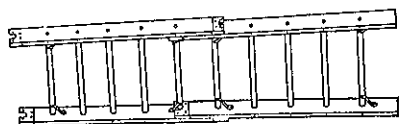


Specially constructed for utility companies, of selected clear white spruce. They have hand forged guide arms on the bottom of the top section and on the bottom of the sliding sections. Furnished complete with spring lock and with rope and pulley.

Ordinarily furnished with plain ends. If spur hooks or strand hooks are wanted, please specify.

| Cat. No. | Lineal Ft. | Wt., Lbs. |
|----------|------------|-----------|
| S-5152 | 20 | 41 |
| S-5153 | 24 | 48 |
| S-5164 | 28 | 56 |
| S-5154 | 32 | 64 |
| S-5155 | 36 | 72 |

Lock-Nut Sectional Ladders

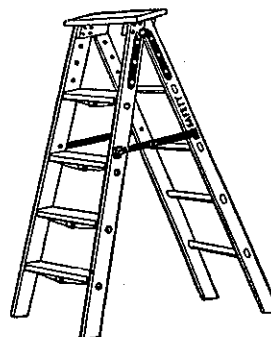


Made of spruce with ash or oak bars. Each section is 6 feet in length and is protected with iron plates and equipped with large bolts and thumb nuts.

Furnished with one, two or three sections. Each section is six feet long.

| Cat. No. | Length, Ft. | Wt., Lbs. |
|----------|-------------|-----------|
| S-5156 | 6 | 14 |

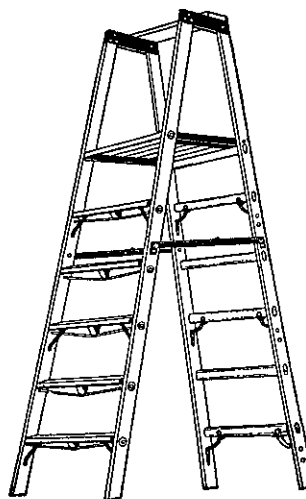
Step Ladders Heavy Duty Type



A special ladder for heavy work. Will withstand much abuse. Made from clear spruce 1 1/4-inch stock; well braced. Every step reinforced with truss rods. All parts are heavily riveted. The back and legs are 1 by 2 inch flat bars. The hinges and spreaders are 1 1/4-inch iron.

| Cat. No. | Length, Ft. | Wt., Lbs. |
|----------|-------------|-----------|
| S-5162 | 6 | 29 |
| S-5149 | 8 | 38 |
| S-5150 | 10 | 47 |

Platform Ladders



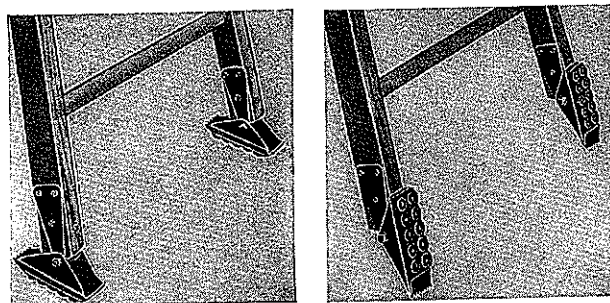
Particularly suited for telephone exchanges having 11'9" Strowger Automatic equipment to supplement the rolling ladders regularly installed with the equipment. Useful wherever a substantial footing is required when working at a height. Guarded on three sides.

Made of clear spruce and rigidly braced front and back. Fronts: 1 1/8 by 3 1/4 inches. Backs: 1 1/8 by 2 1/2 inches. Platform: 15 x 21 3/4 inches. Steps: 1 by 3 3/4 inches. Bars: 7/8 by 1 3/4 inches.

Sizes are measured from floor to platform.

| Cat. No. | Length, Ft. | Wt., Lbs. |
|----------|-------------|-----------|
| S-5161 | 4 | 25 |
| S-5166 | 6 | 34 |
| S-5167 | 8 | 43 |

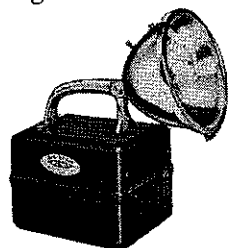
Duo-Safety Ladder Shoes



Duo-Safety shoes remove all danger of ladders slipping thereby eliminating one of the most common causes of accidents. They can be used on any surface—dirt, cement, tile, ice, snow, metal. The hard rubber sole clings with a vacuum-like action or, at a flip of the finger, the shoe can be changed over to rest on the hardened steel spike toe. A necessity for all construction and maintenance work.

| Cat. No. | Wt. per Pair, Lbs. |
|----------|-----------------------|
| S-6818 | 3 |

Big Beam Lamps Big Beam No. 700



Projects a powerful ray over 2,000 feet. Scientifically constructed with a 6 inch lens silvered reflector and prefocused bulb. Operates on four No. 6 dry cells. Furnished less batteries.

| Cat. No. | Description | Wt., Lbs. |
|----------|-------------------|-----------|
| S-5249 | Lamp | 7 |
| S-5251 | Clear Lens | 1/4 |
| S-4537 | Lens Wire Guard | 1/4 |
| S-3092 | Hold Down Bracket | 1/2 |

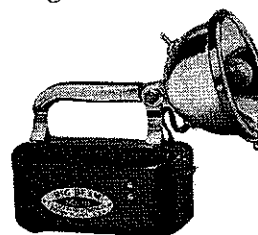
Big Beam No. 211



Projects a powerful beam 1,500 feet. Operates on two 6-volt lantern Batteries. Furnished less batteries.

| Cat. No. | Description | Wt., Lbs. |
|----------|-------------------|-----------|
| S-5245 | Big Beam No. 211 | 3 1/4 |
| S-2382 | Battery-Type 409 | 1 1/2 |
| S-5253 | Clear Lens | 1/4 |
| S-4535 | Lens Wire Guard | 1/4 |
| S-3091 | Hold Down Bracket | 1/2 |

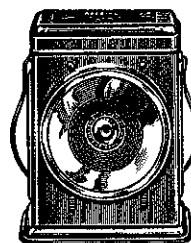
Big Beam No. 111



Has a 4 inch parabolic reflector. Bulb can be focused for wide or narrow beam. Operates on one 6-volt lantern battery. Furnished less battery.

| Cat. No. | Description | Wt., Lbs. |
|----------|------------------|-----------|
| S-5255 | Big Beam No. 111 | 3 |
| S-2382 | Battery Type 409 | 1 1/2 |
| S-5257 | Clear Lens | 1/4 |

Redbird Electric Lantern



A high quality, substantial hand lantern that operates on two No. 6 dry cells. Has dual reflection feature that permits spot beam to be changed to flood-light with a flip control lever. Gives two light results: either an 800 ft. penetrating beam or a wide shadowless spread.

Furnished complete with bulb and two handles—folding and bail. Finished in bright red with chromium trim.

| Cat. No. | Height, In. | Weight Lbs. (Less Batteries) |
|----------|-------------|---------------------------------|
| S-5244 | 7 1/2 | 2 1/2 |

Bulbs for Flashlights and Lanterns

| Cat. No. | Voltage | For Use With |
|----------|---------|-----------------------------------|
| S-3187 | 2.5 | Flashlight S-4228 |
| S-3188 | 3.8 | Flashlight S-4230 |
| S-3190 | 2.5 | Flashlight S-4229 |
| S-3194 | 3.8 | Flashlight S-4232 |
| S-3196 | 5.0 | Lantern S-5248 |
| S-3198 | 2.4 | Lantern S-5244 |
| S-3191 | 6.0 | Main bulb for Lantern No. S-5245 |
| S-3193 | 6.0 | Small bulb for Lantern No. S-5245 |
| S-3197 | 4.5 | Main bulb for Lantern No. S-5249 |
| S-3201 | 4.5 | Small bulb for Lantern No. S-5249 |
| S-3203 | 6.0 | Bulb for Lantern No. S-5255 |
| S-3195 | 2.2 | Bulb for Weller Soldering Guns |

Heavy Duty Flashlights

Prefocused flashlights especially designed for industrial use. Encased in semi-hard rubber with protected flat lens. Equipped with belt ring. These are built to stand plenty of hard use. Two styles—2 cell and 3 cell, both take No. S-2389 batteries.

| <i>Cat. No.</i> | <i>Type</i> | <i>No. Cells</i> | <i>Wt., Lbs.</i> |
|-----------------|-------------|------------------|------------------|
| S-4228 | 1251 | 2 | 1/2 |
| S-4230 | 1351 | 3 | 3/4 |

Focusing Flashlights

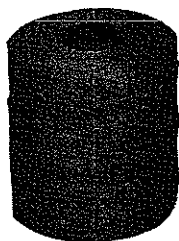
Ideal for general use. Has an adjustable beam. Smartly designed and finished in chromium and black. Range of beam is somewhat over 400 feet. Uses No. S-2389 batteries.

| <i>Cat. No.</i> | <i>Type</i> | <i>No. Cells</i> | <i>Wt., Lbs.</i> |
|-----------------|-------------|------------------|------------------|
| S-4229 | 2671 | 2 | 1/4 |

Marline Twine

Made of highest quality three-ply hemp, saturated with tar. Will withstand long exposure to the weather. Used with Marline Cable Hangers.

| <i>Cat. No.</i> | <i>Wt., Lbs.</i> |
|-----------------|------------------|
| S-7630 | 1 |

Lacing Twine or Lockstitch

A waxed linen thread used in sewing insulated cable forms, etc. Made in a number of plies for use with various sizes of cables. Furnished in 1 lb. balls. 6 lbs. to the standard package.

| <i>Cat. No.</i> | <i>No. Plies</i> |
|-----------------|------------------|
| S-7632 | 6 |
| S-7634 | 8 |
| S-7636 | 9 |
| S-7638 | 11 |
| S-7640 | 12 |

Harter Operators' Chairs

Improved features of this chair insure you of a comfortable, convenient chair for any operator. Seat height is easily changed by the operator with the simple screw-spindle adjustment. Narrow U-shaped back won't interfere with neighboring chairs. Reinforced adjusting mechanism holds the back permanently in place. "Tolex" upholstered back insures greater comfort. Finished in black with chrome-plated foot ring. Choice of saddle can seat or upholstered seat.

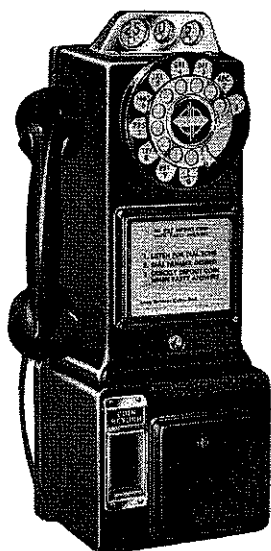
Saddle Cane Seat

| <i>Cat. No.</i> | <i>Range, In.</i> | <i>Keyshelf Height, In.</i> | <i>Wt., Lbs.</i> |
|-----------------|-------------------|-----------------------------|------------------|
| S-3301 | 18 to 22 | 31 or less | 27 |
| S-3302 | 21 to 25 | 31 to 34 | 28 |
| S-3303 | 24 to 28 | 34 to 38 | 28 |
| S-3304 | 28 to 32 | 38 or more | 29 |

"Tolex" Upholstered Seat

| <i>Cat. No.</i> | <i>Range, In.</i> | <i>Keyshelf Height, In.</i> | <i>Wt., Lbs.</i> |
|-----------------|-------------------|-----------------------------|------------------|
| S-3308 | 18 to 22 | 31 or less | 27 |
| S-3309 | 21 to 25 | 31 to 34 | 28 |
| S-3310 | 24 to 28 | 34 to 38 | 29 |
| S-3311 | 28 to 32 | 38 or more | 30 |

Autelco-Gray Paystations Increase Your Revenue



Many telephone companies find it profitable to make extensive use of Autelco-Gray paystations. Installed in convenient public or semi-public locations, these paystations soon pay for themselves—then go right on bringing in extra revenue.

Three styles—self-contained, for use with ringer box, and “attachment” and “compact” types—meet all requirements. Choose the style and type paystation that meets your specific requirements.

The “60” Series

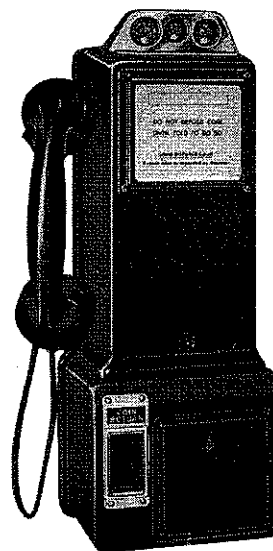
These modern paystations are self-contained and regularly fitted with complete telephone transmission equipment, but no ringer. If it is desired to permit incoming calls, these paystations can be used with ringer boxes. Circuit and components are the same as used in the latest Monophones, assuring you the high quality transmission that's so important in toll calls.

Paystations of the “90” series are the same as above except they are equipped with W.E. Co. induction coils and condenser.

The “34A” Series

All paystations in this series require a separate ringer box containing a 3-winding induction coil. Except for slight circuit differences, these paystations are similar to the “60” series. They can be used with automatic or manual central-office equipment, and meet the same general operational requirements.

Paystations of the “150” series are the same as those above but designed for a dial with a “make-break” shunt spring combination. Unless otherwise specified, these paystations are equipped with W.E. Co. dials.



Standard Autelco-Gray Paystations

Prepay, Manual or Automatic

These paystations provide prepay service with automatic or manual central offices which have 110-volt facilities to operate coin-control. Coins are deposited before connection is made and can be refunded if call is not completed. Shipping weight is 32 pounds.

Description

| | |
|-------------------|---|
| Type 34A9 | Automatic, requires complete ringer box |
| Type 62 | Automatic, self-contained |
| Type 62 | Manual, self-contained |
| Type 92 | Automatic, self-contained |
| Type 92 | Manual, self-contained |
| Type 150GJ | Automatic, requires complete ringer box |
| Type 150GJ | Manual, requires complete ringer box |

Postpay (Convertible to Prepay), Manual

No control equipment required at central office. Used in manual exchanges where operator supervises coin deposits. Can be used in automatic exchanges only if free local service is provided. By adding a coin-control relay and hopper assembly, these paystations can be converted to prepay manual and then to prepay dial service if desired.

Description

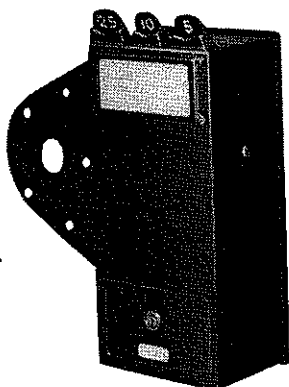
| | |
|--------------------|------------------------------|
| Type 34A9P2 | Requires complete ringer box |
| Type 64 | Self-contained |
| Type 94 | Self-contained |
| Type 150KJ | Requires complete ringer box |

"Attachment" and "Compact" Paystations

Here is equipment for the telephone companies which must provide paystation service with a minimum investment in special facilities. No extra equipment is required at the central office; all paystations are of the operator-controlled, postpay type for manual, common-battery or magneto systems.

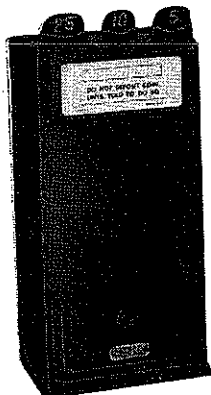
"Attachment" paystations are used with either magneto or central-battery telephone instruments and convert them to simple paystations. "Compact" paystations are supplied ready to be equipped with standard transmitter and receiver or handset from your own stockroom. If specified, these paystations can be supplied from the factory completely equipped.

Side Mounting Wall Paystation



For use with wall sets having a hand-receiver. Mounting plate extends behind telephone and conducts coin signals to transmitter. Cash compartment holds ap-signals to transmitter. Cash compartment of Type II holds approximately \$10.00; Type 11A holds about \$13.50.

| Description | | Weight |
|-------------|-------------------|--------|
| Type 11 | "Attachment" type | 13 |
| Type 11A | "Attachment" type | 13 |



Paystation for Handset Telephone

Paystation equipped with "universal" mounting plate for use with either desk- or wall-type handset telephone. Only connection required is between telephone transmitter circuit and paystation coin-signal transmitter which is mounted in paystation.

| Description | | Wt., Lbs. |
|-------------|-------------------|-----------|
| Type 11J | "Attachment" type | 16 |

Handset Paystation



Has cradle hook and wiring for connecting handset (not included unless specified). Can be used with any standard ringer box containing induction coil, condensers, etc. Paystation has coin-signal transmitter and "universal" mounting plate for mounting on wall or shelf. Cash compartment has capacity of approximately \$20.00. When ordering, please specify type of handset and ringer box which will be used.

| Description | | Wt., Lbs. |
|-------------|----------------|-----------|
| Type 23J | "Compact" type | 18 |

How To Order

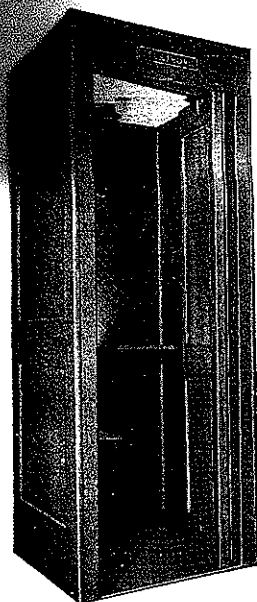
It's easy to order paystations to meet your specific requirements:

1. Specify type or make of telephone components (handset, dial, etc.) with which paystation is to be equipped.
2. Specify "self-locking coin receptacle", if open type is not desired.
3. Please specify type of extended number plate desired — the "Letter-Number" type having red numbers, black letters, and "Operator" in the "0" space, or the "1" to "0" type having numbers only (with "Operator" in the "0" space).

| Service | Operation | The "60" Series | The "90" Series | The "34A" Series | The "150" Series |
|--------------|-----------------------------|-----------------|-----------------|------------------|------------------|
| Prepay | Automatic | 62 | 92 | 34A9 | 150GJ |
| | Manual | 62 | 92 | | 150GJ |
| Postpay | Manual | 64 | 94 | 34A9P2 | 150KJ |
| | Convertible to Prepay | | | | |
| Semi-Postpay | Automatic | 66 | 96 | 34A11 | |
| | (Reverse-Battery) | | | | |
| Postpay | Manual | 68 | 98 | 34A11P2 | |
| | Convertible to Semi-Postpay | | | | |
| | (Reverse-Battery) | | | | |

For Complete Information on All Paystations, See Catalog 4078-A.

No. 100—Churchill Booth



This booth has been designed to meet the need of a booth without a floor. It has the same quality of workmanship and materials as other Churchill booths and in addition to the new construction the following features are standard equipment: Automatic Door Switch for Lights and Electric Ventilator; New Silent Electric Ventilator; Complete Automatic Lighting Equipment; Complete Metal Lining; and Acoustically Designed.

The overall dimensions are 33¼ inches wide; 30½ inches deep and 84½ inches high. It is equipped with a folding door, with glass in the door only. Shipping

weight, 400 lbs. Seat furnished on order.

| Code No. | Material | Finish |
|----------|----------------|-------------------|
| 100-A | White Oak | Medium Golden Oak |
| 100-B | Selected Birch | Medium Mahogany |

Sherron Model 18-S Type 1



The Sherron Acoustic steel telephone booth is a square booth equipped with acoustic linings and is adaptable where outside noise is objectionable or where privacy in conversation is desired. It is rigidly constructed of cold rolled steel with linoleum covered steel floor. Equal-leaf door is equipped with aluminum alloy handle and stainless steel track. Booth is provided with ceiling light and automatic door switch, adjustable shelf and backboard. Finish in high grade baked enamels. Four standard colors on the outside are mahogany, red, walnut or light brown, with standard gray finish inside booth. Specify desired colors when ordering.

115 V. 60 cycle ventilating unit and seat assembly furnished on order.

| Cat. No. | Wt., Lbs. |
|-------------|-----------|
| 18-S Type 1 | 500 |

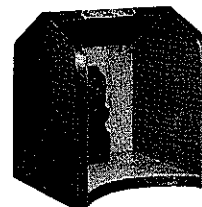
Burgess-Manning Acousti-Booths

Burgess-Manning Acousti-Booths have thick, sound-absorbent walls and ceilings that soak up noise. Airy . . . easily moved . . . compact . . . of sturdy construction . . . they provide quiet spots for telephoning. Conversations are clear . . . "private."

Because of their patented acoustic construction, no doors are needed. Problems of maintenance are avoided, and cleaning this open booth becomes a simple chore.

Burgess-Manning Acousti-Booths are ideal for noisy, congested locations in factories, ships, stores, hotels, offices, airport and railroad terminals.

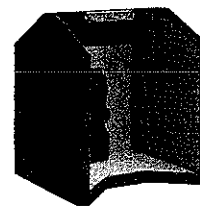
The Scout (Model 601)



The Burgess-Manning Scout Model No. 601 Acousti-Booth is an economical and popular wall or shelf-type acoustic telephone booth. It is the ideal telephone booth where available space is limited. Telephone users can enjoy a comparative "zone of quiet" regardless of the noise and confusion nearby. Thick walls of sound-absorbing material soak up both direct and reflected noises. The handsome appearance of the Scout Acousti-Booth adds distinction wherever it is installed. Specifications: Reinforced plywood construction. Rich walnut finish. Outside dimensions: 28" wide, 32" high, 26" deep. Instrument shelf 23½" x 17".

| Cat. No. | Wt., Lbs. |
|----------|-----------|
| 601 | 80 |

The Scout (Model No. 602)



Model No. 602 is identical to Model 601 except for all steel construction and slightly different dimensions. Dimensions are 28" wide, 32" high, 26" deep. Shelf is 24" x 17".

| Cat. No. | Wt., Lbs. |
|----------|-----------|
| 602 | 120 |

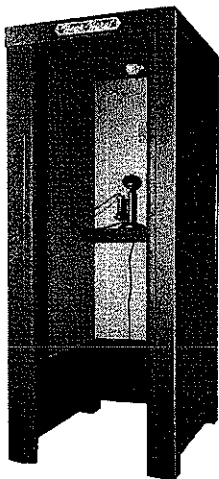
Burgess-Manning Model 210

The unique feature of the Acousti-Booth is the doorless construction. Acoustic walls absorb disturbing noises so that the voice is heard without reverberation or echo. There's plenty of natural ventilation and fresh air. Constructed of a thick layer of acoustic material sandwiched between plywood panels. Interior panels are perforated to allow the sound to soak into the acoustic filler. Installation can be made anywhere. Maintenance problems are cut sharply because there are no glass, hinges, locks or other moving parts to get out of order. The

handsome, wood-panel construction harmonizes with interior appointments.

Specifications: Rigid plywood construction. Rich brown walnut stain finish. Outside dimensions: 30" wide, 79½" high, 38" deep. Inside dimensions: 24" wide, 76½" high, 35" deep. Wood instrument shelf, 24" x 8½", provides a convenient support for taking notes. An electric fixture in the ceiling provides excellent illumination.

| | |
|-----------|-----------|
| Cat. No. | Wt., Lbs. |
| 210 | 225 |

Burgess-Manning Model 211

Normal conversations can be carried on with clarity and there is no discomfort or stuffiness due to inadequate ventilation. The sound-absorbing material in the booth walls blots up the direct and reflected noise inside the booth, and greatly improves the transmission and reception of voice.

Specifications: The industrial Model No. 211 Burgess-Manning Acousti-Booth is constructed of heavy-gauge steel throughout. The inside is finished in steel gray; the outside is finished in black. A steel instrument shelf 24" x 8" provides

a convenient place for taking notes. An electric fixture in the ceiling, complete with switch, provides good illumination. Outside dimensions: 31" wide, 79½" high, 38½" deep. Inside dimensions: 24" wide, 76¼" high, 35" deep.

| | |
|-----------|-----------|
| Cat. No. | Wt., Lbs. |
| 211 | 410 |

General Purpose Decal Sign

Large handsome water-transfer for general window use, on booths, trucks, stores, etc. Supplied mounted on paper back and is applied by soaking in water and then sliding transfer off paper onto surface.

| | |
|--------------|----------|
| Cat. No. | Diameter |
| S-6848 | 8 inches |

Metal Paystation Sign

Double faced sign for use wherever paystations are installed. Made of porcelain enamel on 18-gauge steel plate, 10 inches square with 1¼ inch mounting flange at right angle to face. Will not fade or tarnish from exposure. Colors are blue and white.

| | |
|--------------|-----------|
| Cat. No. | Wt., Lbs. |
| S-6853 | 2¼ |

Telephone Office Sign

A standout sign that can't be missed. Enameled on sheet metal, large 16 by 20 inch size with large easily visible lettering. Reads from either side. Complete with bracket and S-hooks as illustrated.

| | |
|--------------|-----------|
| Cat. No. | Wt., Lbs. |
| S-6855 | 10 |

Dicke Road Sign



A well built road sign designed for convenience and hard service. Double faced 18 x 18 inch sign with black, 5 inch letters on a yellow background. Frame is constructed of angle iron, electrically welded and hot dip galvanized. Folding legs are securely locked in open position. Flag Socket fits S-4220 and S-4227 flags.

| Cat. No. | Wt., Lbs. |
|----------|-----------|
| S-6883 | 23 |

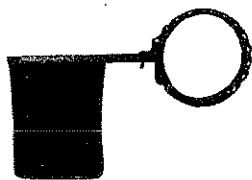
Dicke Sign Standard



An all-metal standard designed to fold into a compact bundle for easy storage in trucks, etc. Has double faced 18 x 18 inch sign with black, 5 inch letters on a yellow background. Four leg design permits good resistance to wind without excessive leg spread. Equipped with flag sockets and lantern lock.

| Cat. No. | Description | Wt., Lbs. |
|----------|---------------------------------|-----------|
| S-6884 | Complete with sign and standard | 15 |
| S-6886 | Standard only | 14 |

Pole Danger Flag



Made of 6 oz. duck, 12 x 16 inches in size. Hardwood staff 1 x 18 inches, with tapered end. Holder fitted with adjustable lock to fit all poles.

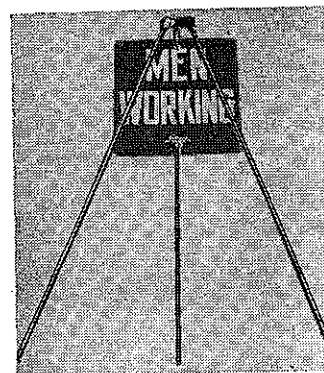
| Cat. No. | Description | Wt., Lbs. |
|----------|-----------------|-----------|
| S-4220 | Flag only | 1/2 |
| S-4222 | Flag and Holder | 2 1/2 |

Danger Flag

Inexpensive flag made of 3 oz. muslin, 12 x 14 inches. 7/8 x 18 inches staff with tapered end.

| Cat. No. | Wt., Lbs. |
|----------|-----------|
| S-4227 | 1/4 |

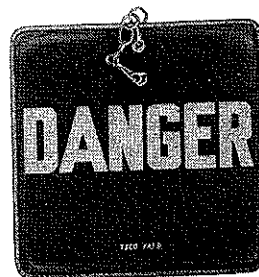
Manhole Signs



Collapsible steel tripod 39 inches high. Arranged for posting signs as shown in illustration. Signs are double-faced, bright red fabrikoid on steel with clear-cut letter. Signs are not furnished with tripod unless specifically ordered.

| Cat. No. | Description | Wt., Lbs. |
|----------|--|-----------|
| S-6845 | Tripod only | 12 |
| S-6847 | Sign 16" x 16", "Men Working" | 1 |
| S-6857 | Sign 16" x 24", "Danger, Men Working" | 1 1/2 |
| S-6846 | Sign 16" x 16", "Danger, Open Manhole" | 1 |

Pole End Sign



Bright red fabrikoid material with white lettering mounted on steel frame. Sign is attached to pole with 3-inch screw eye through opening in the steel.

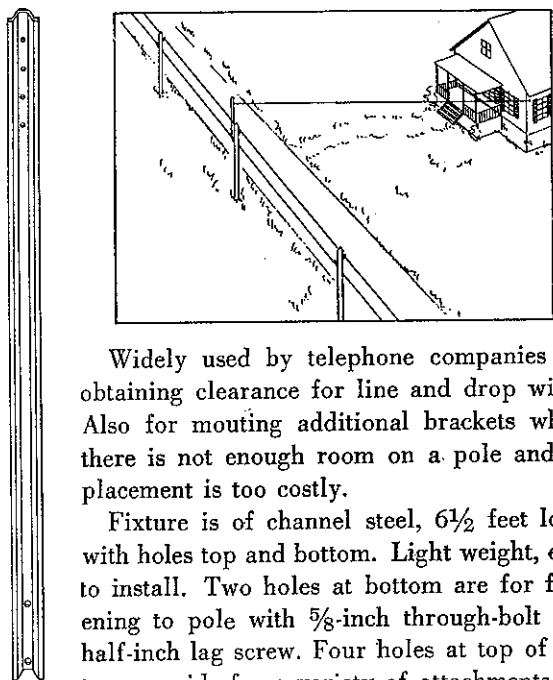
| Cat. No. | Size, In. | Wt., Lbs. |
|----------|-----------|-----------|
| S-6858 | 16 x 16 | 1 1/4 |

Highway Flare Torches



Made of steel, as illustrated, with weighted bottom. Has a capacity of 3 quarts of kerosene or other light fuel oil and will burn for more than 36 hours. Equipped with rain shield for stormy weather. Height 7 1/2 inches; diameter, 7 3/4 inches.

| Cat. No. | Description | Wt., Lbs. |
|----------|-------------------------|-----------|
| S-7560 | All Weather Flare Torch | 6 |
| S-7753 | Extra Wick | 1/8 |

Pole Extension Fixture

Widely used by telephone companies for obtaining clearance for line and drop wires. Also for mounting additional brackets where there is not enough room on a pole and replacement is too costly.

Fixture is of channel steel, 6½ feet long, with holes top and bottom. Light weight, easy to install. Two holes at bottom are for fastening to pole with 5/8-inch through-bolt and half-inch lag screw. Four holes at top of fixture provide for a variety of attachments.

| Cat. No. | Length, In. | No. per Bundle | Bundle, Wt., Lbs. |
|----------|-------------|----------------|----------------------|
| S-4208 | 78 | 5 | 43 |

Hook Bolt

For use with Pole Extension Fixture described above, and drop wire clips or clamps. Thoroughly galvanized. Furnished with three nuts.

| Cat. No. | Length, In. | Wt. per 100, Lbs. |
|----------|-------------|----------------------|
| S-4854 | 4 | 8 |

Telephone Fuse Wire

Copper alloy wire made especially for lining telephone fuses. It has high tensile strength and can be soldered without fear of burning wire. Rated at the exact blowing point. Will not corrode or crystalize. 300 foot spools.

| Cat. No. | Blowing Point, Amps. | Wt. per Spool, Oz. |
|----------|----------------------|-----------------------|
| S-7760 | 1 | 1/8 |
| S-7762 | 2 | 1/4 |
| S-7764 | 3 | 1/2 |
| S-7766 | 5 | 3/4 |
| S-7768 | 7 | 1 |

Duxseal Plastic Compound

A non-hardening adhesive plastic compound made with an asbestos base. Used like putty, Duxseal will stick to any clean surface—will not slump, flow or harden in service. It is insoluble in water, unaffected by ordinary gases and condensates, and will not injure user's hands. Used for sealing openings of ducts, sealing terminal boxes, filling cracks in brick work, etc.

| Cat. No. | Wt., per Pkg., Lbs. |
|----------|------------------------|
| S-4090 | 5 |

Serviceman's Inspection Light

A completely insulated portable hand lamp for small and inaccessible places. Consists of Neoprene handle and 10 ft. plastic cord set. Insulated fibre reflector guard is easily removable. 110 Volt.

| Cat. No. | Watt | Wt., Lbs. |
|----------|------|-----------|
| S-5186 | 7 | 1/2 |
| S-5187 | 15 | 3/4 |

Dialing Tool and Pencil

Used by telephone operators for faster easier dialing. Dialing tool fits over standard pencil. Dialing pencil is an automatic pencil.

| Cat. No. | Description | Wt. per Doz., Lbs. |
|----------|--------------|-----------------------|
| S-5677 | Pencil | 1/2 |
| S-7515 | Dialing tool | 1/4 |

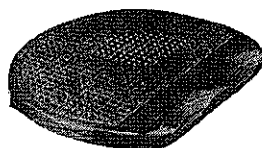
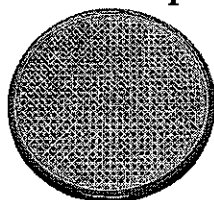


Purse Holder

Used for holding operators' purse thereby keeping it off plug shelf. Made of steel with black crackle finish. Mounts under operators' chair.

Cat. No. *Wt., Lbs.*
S-4802 1¼

Replacement Seats



Cane replacement seats for operators chairs. Made in round and saddle type. Finished in light oak.

| Cat. No. | Type | Wt., Lbs. |
|----------|------------------------------|-----------|
| S-6776 | Round; 16 inch diameter | 1½ |
| S-6778 | Saddle shape; 16 x 14 inches | 2¼ |

Seat Covers

Fibre seat covers for operators' chairs. Size 16½ x 13 x 2½ inches.

Cat. No. *Wt., Lbs.*
S-3884 ½

Monotape Friction Tape



Made of the highest grade of woven cotton fabric impregnated with rubber stock and evenly coated with an adhesive rubber compound. This compound contains no free sulphur, will not corrode copper wire and has maximum insulating qualities.

| Cat. No. | Width, In. | Ft. per Roll | Wt., per Roll, Lbs. |
|----------|------------|--------------|---------------------|
| S-7420 | ¾ | 67½ | ½ |
| S-7422 | 2 | 62 | 1 |

Monotape Rubber Tape

An excellent rubber tape made to the same high standards as Monotape Friction Tape. 30 feet per roll.

| Cat. No. | Width, In. | Wt. per Roll, Lbs. |
|----------|------------|--------------------|
| S-7438 | ¾ | ½ |
| S-7436 | 2 | 1 |

Scotch Electrical Tape With Plastic Backing



Has a stretchy, rubber-like Vinyl Plastic backing that enables it to do the work of the rubber and friction tape combination. ¾" wide by 66 feet.

Cat. No. *Type* *Wt., Lbs.*
S-7432 33 ¼

Scotch Electrical Tape

Used for repairing paper cable. Furnished in rolls ½ inch by 36 yards. Natural tan color.

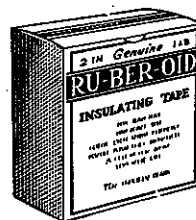
Cat. No. *Type* *Cat No.*
S-7415 3 ¼

Scotch Electrical Tape With Neoprene Backing

Has a vulcanized Neoprene backing coated on one side with a long aging electrical grade adhesive. ¾ inch by 15 ft.

Cat. No. *Type* *Wt., Lbs.*
S-7443 24 ¾

Ruberoid Insulating Tape



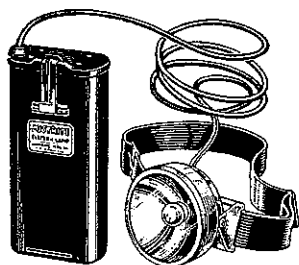
Used for wire connections, conduit joints, cable, etc. A tough, waterproof insulating tape with adhesive on both sides. Won't tear, ravel, pucker and is acid and alkali proof. Ruberoid Insulating tape resists abrasion and will not dry, crack or harden when used either above or below the ground.

| Cat. No. | Size, In. | Ft. per Roll | Wt., Lbs. |
|----------|-----------|--------------|-----------|
| S-7430 | 2 | 46 | 1 |

Abrasive Paper

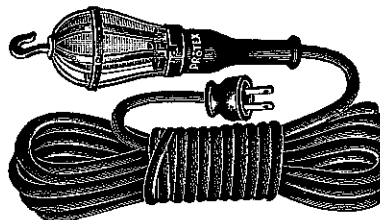
Before making a splice or dead end be sure to clean the wire. For good conductivity it is necessary to clean new wire as well as old. Abrasive paper will remove all grit, dirt or corrosion.

| Cat. No. | Size, In. | Wt., Lbs. |
|----------|-----------|-----------|
| S-3747 | 1½ x 4 | ¼ |

Justrite 4-Cell Headlight

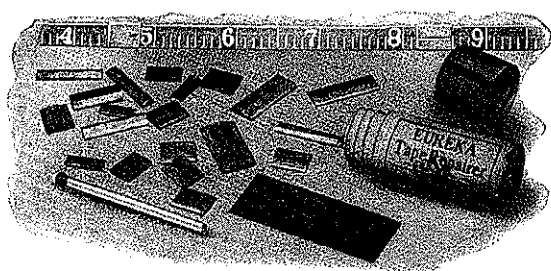
Throws 1000 foot piercing beam or gives a brilliant floodlight. Has waterproof switch, positive action. Streamlined battery case can be carried in pocket or clipped to belt.

| | |
|-----------------|------------------|
| <i>Cat. No.</i> | <i>Wt., Lbs.</i> |
| S-5247 | 1 |

Portable Trouble Lamp

A specially built trouble light for electricians' use. Designed so that it may be used on and around any sort of wiring with absolutely no danger of shorting. Guard is made of high-quality rubber with rubber covered hook. Guard mounts on assembly of heavy rubber socket and handle with 25-feet of heavy-duty, non-kinking rubber covered cord and all-rubber socket. Furnished less bulb.

| | |
|-----------------|------------------|
| <i>Cat. No.</i> | <i>Wt., Lbs.</i> |
| S-5188 | 2 1/2 |

Steel Tape Repair Kit

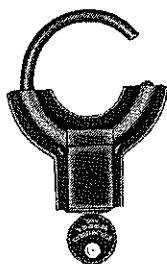
A fast, easy way to repair broken steel measuring tapes in the field. Metal sleeve coated with solder and flux is fitted over the broken ends and tightly hammered down. An ordinary match is then held under the sleeve welding the sleeve and the broken ends.

| | | |
|-----------------|------------------|-----------------|
| <i>Cat. No.</i> | <i>Size, In.</i> | <i>Wt., Oz.</i> |
| S-7457 | 3/16x1 | 1 |
| S-7458 | 1/4x1 | 1 |
| S-7462 | 5/16x1 | 1 |

Penfield Water Demineralizer

Used for removing the harmful minerals from ordinary tap water so that the water can be safely used in storage batteries. The unit consists of three parts: the removable cartridge, a cast aluminum wall bracket or holder, and an electronic conductivity meter which measures the quality of the treated water. The heart of the unit is the disposable cartridge which is packed with activated ion-exchange resins. Each cartridge has capacity for salt removal of 1100 grains. Order the unit and the cartridge.

| | | |
|-----------------|--------------------|------------------|
| <i>Cat. No.</i> | <i>Description</i> | <i>Wt., Lbs.</i> |
| S-3926 | Demineralizer | 9 |
| S-3928 | Cartridge | 4 |

Sterling Rotary Lock

Made of case-hardened steel. Can be furnished with either one key for a group of locks or a set of keys for each individual lock.

| | |
|-----------------|------------------|
| <i>Cat. No.</i> | <i>Wt., Lbs.</i> |
| S-5284 | 1/4 |

Flat Tarpaulins

Flat full-weight canvas-duck covers, of highest public utility grade. Thoroughly waterproofed with all seams double stitched, heavy brass grommets and patches placed on approximately 6-foot centers all around. Available in two grades—No. 1 telephone green and No. 2 double-filled green. Prices are calculated per square foot. Be sure to specify grade and dimension when ordering.

| | | |
|-----------------|--------------|------------------------|
| <i>Cat. No.</i> | <i>Grade</i> | <i>Wt. per Sq. Yd.</i> |
| S-7454 | 1 | 14.73 oz. |
| S-7455 | 2 | 12.41 oz. |

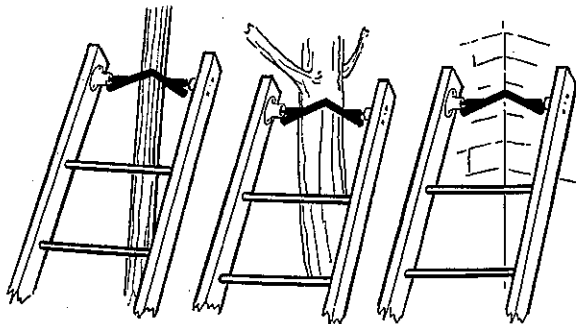
Lay-Cit Cable Grip



Designed for deadending multiple conductor service cable. A neat, compact grip that may be conveniently installed, even on continuous cable, and permits the lineman to either takeup or release slack on a line by merely spreading the plates and adjusting the lacing. Made of either Galvaneal steel or copper.

| For Round Cable | | | | |
|-----------------|-----------------|------------------|------------------|-------------------|
| Cat. No. | Material | Minimum Diameter | Maximum Diameter | Wt. per 100, Lbs. |
| S-4473 | Copper | 3/8" | 5/8" | 30 |
| S-4475 | Copper | 5/8" | 1 1/8" | 36 1/4 |
| S-4476 | Galvaneal Steel | 3/8" | 5/8" | 21 |
| S-4477 | Galvaneal Steel | 5/8" | 1 1/8" | 28 1/4 |

Self-Centering Safety Top Rung



A safety device designed to insure maximum safety and protection to ladder users. A ladder equipped with this safety rung will not sway or tilt when used against trees, poles, corners of buildings, etc. Rung is rubber covered and furnished complete with all necessary mounting hardware.

| Cat. No. | Wt., Lbs. |
|----------|-----------|
| S-6280 | 1/2 |

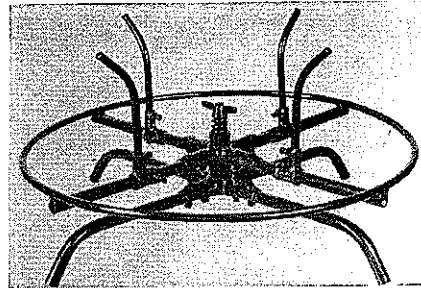
Pike Pole Test Point



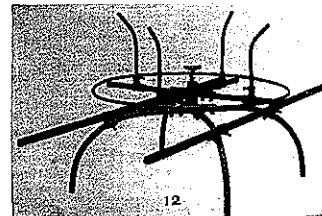
A hardened, forged tool-steel point with a brass fitting which goes into the ferrule joint of pruner extension poles. Creates a light, strong test point for poles, which can be carried easily and safely in a truck. Points are fitted with a rubber guard as an additional precaution.

| Fits Pole | | | |
|-----------|----------|-------------------|-----------|
| Cat. No. | Diameter | Extension Section | Wt., Lbs. |
| S-7483 | 1 1/4 | S-5916 | 1 1/4 |
| S-7478 | 1 3/4 | S-5920 | 2 |

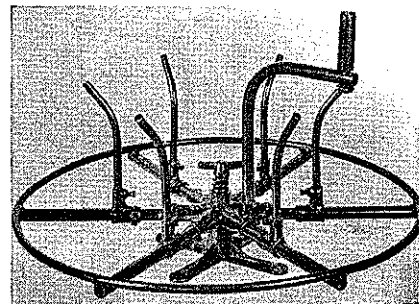
Ready Wire Reels



No. 4



No. 12



No. 4AT

Ready wire reels are made of strong malleable iron and steel tubing. They are all equipped with a center wingnut for adjustable tension, movable upright fingers for adjusting to coil sizes, and cone-bearing that automatically takes up slack as it wears down. Two styles of reels and four types of bases—all interchangeable—provide any kind of reel needed. Combined payout-takeup reels have six fingers rather than four. (Takeup models indicated by "T"). 4A models have wide four-hole base for truck mounting. No. 4 models have stand base for stationary use. No. 12 models have barrow handles with reel 16 inches from ground. No. 8 tandem has four small base plates (one for each leg) with two mounting holes in each.

| Cat. No. | Type | Height, In. | Wt. Ea., Lbs. |
|----------|------|-------------|---------------|
| S-6043 | 4AT | 20 | 36 |
| S-6044 | 4A | 14 | 26 |
| S-6045 | 4T | 24 | 41 |
| S-6047 | 4 | 18 | 31 |
| S-6051 | 12T | 32 | 62 |
| S-6052 | 12 | 26 | 52 |
| S-6053 | 8 | 31 | 78 |

Vincent Rare Gas Relay



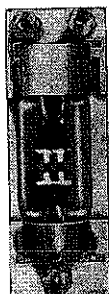
Effectively reduces noise and improves transmission on a telephone line when the noise is introduced through a grounded ringing circuit. Principle of operation is simple. The Rare Gas Relay is an electronic device connected in series with the grounded ringer. Normally non-conducting, it frees the metallic line circuit from the ground and grounded interference. At first alternation of ringing current the relay becomes conductive and remains so for the major portion of the ringing cycle. At the end of the interval it again becomes non-conductive, and again isolates the telephone from grounded interference.

A relatively simple test indicates whether the relay will reduce noise in the telephone line. If opening the grounded ringing circuit at the telephone station results in reduction of noise, use of relay is indicated.

The Vincent Rare Gas Relay is enclosed in a plastic tube with connections brought out to screw terminals at opposite ends. A mounting clip is also provided so it may be mounted with a single screw within telephone or anywhere along ground connection. Approximately 1 x 2½ inches; complete with mountings the relay projects about 1½ inches from mounting surface.

| Cat. No. | Weight, Ounces |
|--------------|----------------|
| S-6058 | 2 |

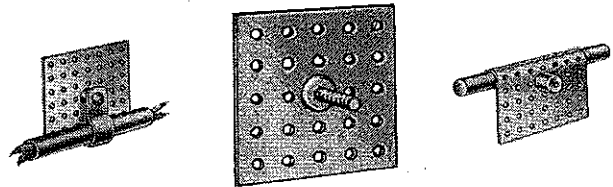
VAC-M Arrester



Cartridge or tube model designed for metallic circuit protection and mounted on a double pole terminal block. Has three, straight, uniform size electrodes. The center electrode is used for ground connections and the two outside electrodes are used for line connections. Electrodes are mounted on a straight porcelain ridged disc, arranged so that they fit into each other in an interlocking manner. The terminal block is made of porcelain with brass, hex-head binding posts. Nuts, washers and phosphor bronze clips are connected to the binding posts to hold the removable unit and to form electrical contacts with the ground and line terminals. The line clips are fitted with projections and separated by a porcelain ridge. The ground clip is equipped with a phosphor bronze finger to prevent any possible shifting of either line contacts or unit.

| Cat. No. | Type | Wt., Lbs. |
|----------|------|-----------|
| S-2217 | 3B | 2 |

Miracle Anchors



Miracle Anchors used with Miracle Adhesive offer an easy, inexpensive way of handling many installation problems. This adhesive will adhere to wood, concrete, metal, etc.

Anchor Bolts

(Bolts No. 10-24 with steel hex nuts)

| Cat. No. | Type No. | Length of Bolt, In. | Plate Size | Wt. per 1000, Lbs. |
|----------|----------|---------------------|------------|--------------------|
| S-5289 | AB 2 | ½ | 2x2 | 49 |
| S-5291 | AB 4 | 1¾ | 2x2 | 57 |
| S-5292 | AB 20 | 2¼ | 2¾x2¾ | 98 |

Hanger Supports

(Round Nut threaded for No. 10-24 bolt)

| Cat. No. | Type No. | Plate Size, In. | Wt. per 1000, Lbs. |
|----------|---------------------------------|-----------------|--------------------|
| S-5294 | HS 1 | 2¾x2¾ | 98 |
| S-5295 | HS 2 | 2x2 | 60 |
| S-5293 | Pronged Hanger 1-3/16" Prong | 2x2 | 60 |

Beam Hangers

(Round nut threaded for No. 10-24 bolt)

| Cat. No. | Type No. | Plate Size, In. | Wt. per 1000, Lbs. |
|----------|----------|-----------------|--------------------|
| S-5296 | BH 1 | 2¾x2¾ | 98 |
| S-5297 | BH 2 | 2x2 | 60 |

Pipe Straps

(For Hanger Supports and Beam Hangers. Round head steel bolts ¾ inches long)

| Cat. No. | Type No. | Strap Width, In. | Wt. per 1000, Lbs. |
|----------|--------------------------------|------------------|--------------------|
| S-5298 | PS 1 For ½ In. Pipe or Conduit | 5/8 | 22 |
| S-5299 | PS 2 For ¾ In. Pipe or Conduit | 5/8 | 30 |

Miracle Adhesive

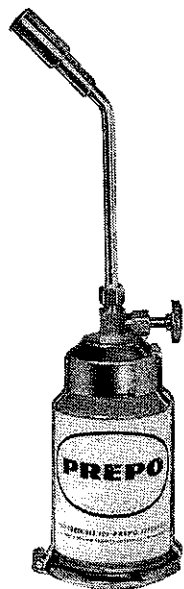
| Cat. No. | Description | Wt. per Tube, Oz. |
|----------|-------------|-------------------|
| S-5300 | 5 Oz. Tube | 6 |

Buried Cable Sign



Made of heavy gauge steel. Finished in vitreous enamel. Large size—13 x 17 inches. Mounting holes have copper inserts. Yellow background with black letters.

| Cat. No. | Wt., Lbs. |
|--------------|-----------|
| S-6843 | 3½ |

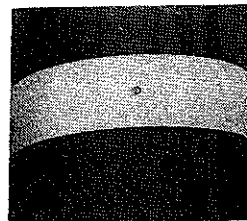


Prepo Torch

The Prepo torch permits instant application of a hot flame for soldering, loosening nuts, etc. Fuel container is slipped into place for use and when empty simply throw away. Prepo kit includes two torches, one yoke and one can of fuel.

| <i>Cat. No.</i> | <i>Description</i> | <i>Wt., Lbs.</i> |
|-----------------|--------------------|------------------|
| S-5985 | Prepo Kit | 1½ |
| S-5987 | 6 cans of fuel | 4 |

Scotchlite Delineators



Used to mark roadways, buildings, poles, etc. Made of aluminum covered with tiny glass particles. Easily mounted with nails or wood screws.

| <i>Cat. No.</i> | <i>Size, In.</i> | <i>Wt., Lbs.</i> |
|-----------------|------------------|------------------|
| S-6100 | 2 x 10 | ¼ |
| S-6102 | 2 x 16 | ¼ |



12

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Index for complete box



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