



Westinghouse Electric Corporation
Switchgear Division
East Pittsburgh, Pa. 15112

Descriptive Bulletin
34-350

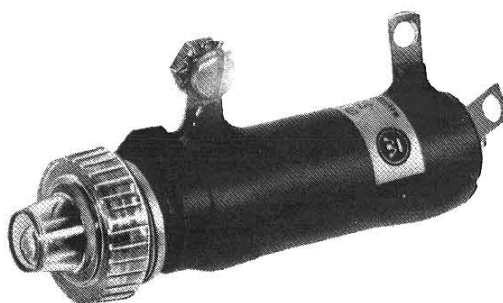
Page 1

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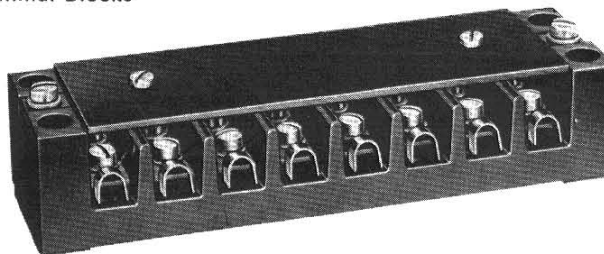
Indicating Lamps, Terminal Blocks,
Terminals, Insulators, Switchboard Details

Switchgear Details

Indicating Lamps



Terminal Blocks



Switchgear details are designed to give the best service for switchgear assembly requirements. Each of the individual items will provide the highest in efficiency and accuracy for the most effective operation. Maximum flexibility in operation and safety in maintenance are an integral part of all switchgear details. Manufacturing facilities assure complete quality control.

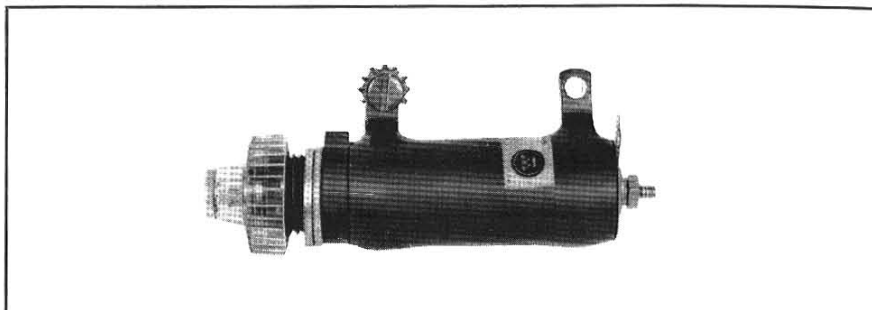
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Indicating Lamps EZC Minalite

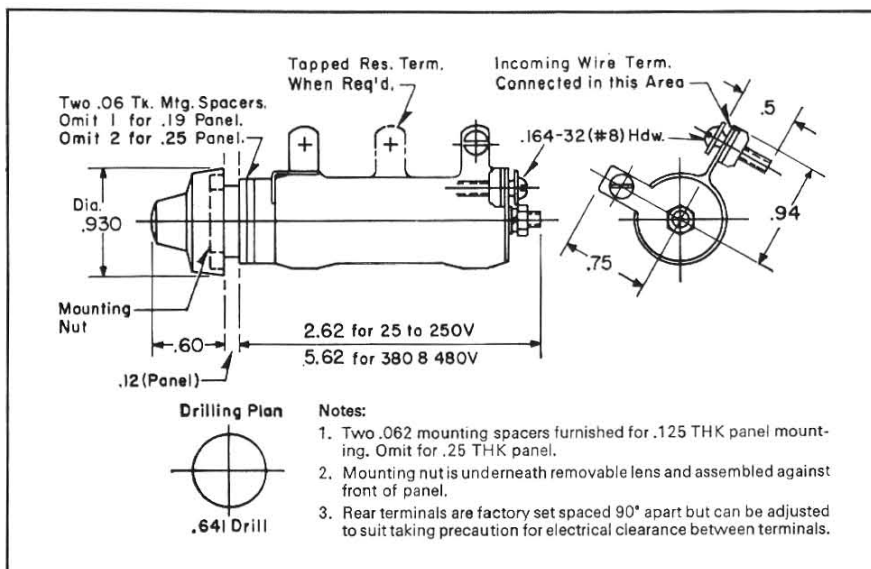
The Type EZC Minalite is a compact indicating lamp, designed for general indicating or signaling purposes on switchboards, control desks, etc. A complete lamp consists of a standard resistor, receptacle, a low drain telephone type slide base bulb, annular spacers, octagon mounting nut, lens and terminal hardware. The resistor, receptacle, bulb and lens are shipped assembled. The other parts are enclosed in an envelope. These two items are incorporated into a single package which is identified by a single style number for the required lamp.

The EZC indicating lamp is suitable for mounting on panels, up to and including $\frac{1}{4}$ inch thickness, and are of a design that permits quick and easy installation. They are inserted from the rear of the panel, after unscrewing lens from resistor-receptacle assembly, through annular spacers as required for panel thickness. Tightening the octagon nut from the front of the panel mounts the assembly. The one-piece molded lens is then screwed on enclosing the lamp receptacle and the front mounting nut. Wiring connections are easily made at the rear end of the assembly.

The round receptacle and lens affords accurate alignment on the panel. The rear terminal, located on the axial tie rod, can be rotated 360 degrees and bent up 90 degrees to positions best suited to wiring requirements.



Dimensions in Inches



Lamp Data

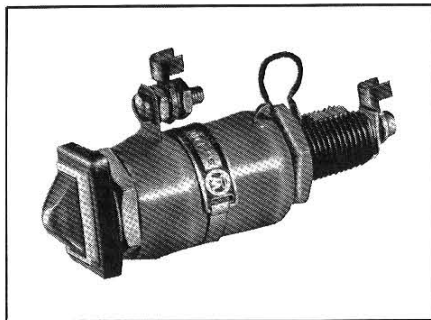
| Service Voltage Ac - Dc | Style Numbers and Lens Color | | | | | | Total Watts (Approx.) at Service Voltage |
|---|------------------------------|------------|------------|------------|------------|------------|--|
| | Red | Green | White | Blue | Amber | Clear | |
| 25 | 449D187G10 | 449D187G20 | 449D187G30 | 449D187G40 | 449D187G50 | 449D187G60 | 0.9 |
| 50 | 449D187G11 | 449D187G21 | 449D187G31 | 449D187G41 | 449D187G51 | 449D187G61 | 1.6 |
| 70 | 449D187G12 | 449D187G22 | 449D187G32 | 449D187G42 | 449D187G52 | 449D187G62 | 2.3 |
| 115 | 449D187G13 | 449D187G23 | 449D187G33 | 449D187G43 | 449D187G53 | 449D187G63 | 3.6 |
| 125 | 449D187G14 | 449D187G24 | 449D187G34 | 449D187G44 | 449D187G54 | 449D187G64 | 4.0 |
| 208 | 449D187G15 | 449D187G25 | 449D187G35 | 449D187G45 | 449D187G55 | 449D187G65 | 6.6 |
| 230 | 449D187G16 | 449D187G26 | 449D187G36 | 449D187G46 | 449D187G56 | 449D187G66 | 7.3 |
| 250 | 449D187G17 | 449D187G27 | 449D187G37 | 449D187G47 | 449D187G57 | 449D187G67 | 7.9 |
| 380 | 449D187G18 | 449D187G28 | 449D187G38 | 449D187G48 | 449D187G58 | 449D187G68 | 11.8 |
| 480 | 449D187G19 | 449D187G29 | 449D187G39 | 449D187G49 | 449D187G59 | 449D187G69 | 15.3 |
| Assembled with Tapped Resistor for Bright-Dim Operation | | | | | | | Dim Bright |
| 50 ♦ | 449D187G70 | 449D187G73 | 449D187G76 | 449D187G79 | 449D187G82 | 449D187G85 | 1.3 1.4 |
| 125 ♦ | 449D187G71 | 449D187G74 | 449D187G77 | 449D187G80 | 449D187G83 | 449D187G86 | 3.6 4.8 |
| 250 ♦ | 449D187G72 | 449D187G75 | 449D187G78 | 449D187G81 | 449D187G84 | 449D187G87 | 7.1 8.6 |

Above styles complete with lens, mounting hardware, resistors and 24 volt .032/.038 ampere bulb.

♦ With tapped resistor for "bright-dim" operation.



Indicating Lamps Rectangular Minalite



Rectangular Minalite is a medium sized low-drain indicating lamp designed for extreme angular visibility and to provide the utmost in sturdiness, compactness and appearance. It is intended for general indicating or signal purposes on switchboards, control desks, etc.

Rectangular Minalite includes a rugged one-piece receptacle, made of Moldarta, a high-strength molded material, and is suitable for mounting on panels $\frac{1}{2}$ to 2 inches thick. The molded receptacle is shaped to key into a square hole in the panel to provide accurate positioning. Where positioning is not mandatory, the same receptacle can be mounted by drilling a $\frac{25}{32}$ -inch round hole. Pressure-type leaf spring contacts establish connections with the slide base telephone lamp having a rating of .032-.038 amperes, at 24 or 48 volts.

The rectangular lens assembly is held in place by means of phosphor bronze spring clips engaging in retaining grooves of the receptacle. A chromium metal holder encases the lens and spring clips. Rigid terminals for standard 10-32 hardware are provided. Resistors are available for bright-dim operation.

The lens provides visibility in all directions. The assembly using the 0.75-watt, 24-volt bulb is standard. A similar assembly using a 1.5-watt, 48-volt bulb is available for use in locations having a high level of illumination.

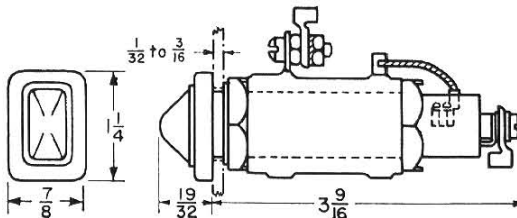
- Styles do not include lens or bulb. Select and specify as separate items from the following:

Red Lens S# 1615 688
Green Lens S# 1615 689
Clear Lens S# 1615 690
Blue Lens S# 1615 691
Amber Lens S# 1615 692
Opalescent Lens S# 1615 693
Bulb 24 Volt S# 1124 156
Bulb 48 Volt S# 1615 719

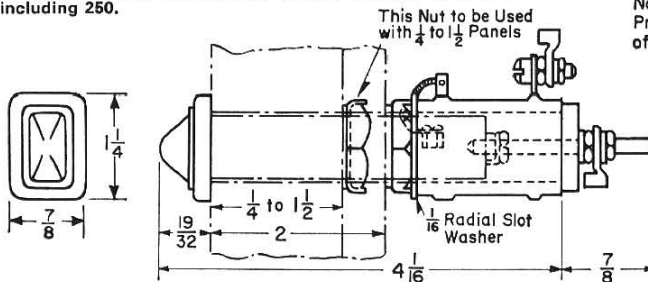
- ◆ Do not use for circuit breaker trip coil supervision. For this application a special bulb and series resistor are required. Refer to Westinghouse.
- ◆ With tapped resistor for "bright-dim" operation.

Dimensions in Inches

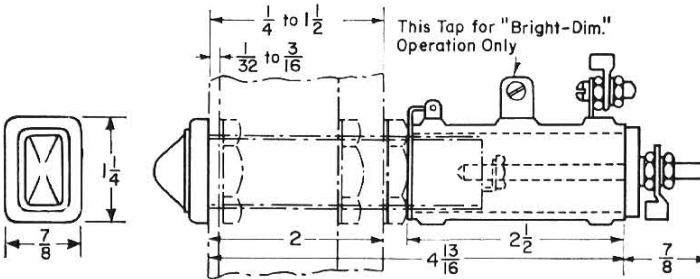
For panels $\frac{1}{2}$ to $\frac{3}{16}$ -inch thick, and for voltages up to and including 250.



For panels $\frac{1}{2}$ to 2-inches thick, and for voltages up to and including 250.



380 and 480-volt receptacles, and all receptacles for "bright-dim" operation. $\frac{1}{2}$ to 2-inch thick panel mounting.



Drilling Plans



No. 1—Provides Positioning of Receptacle



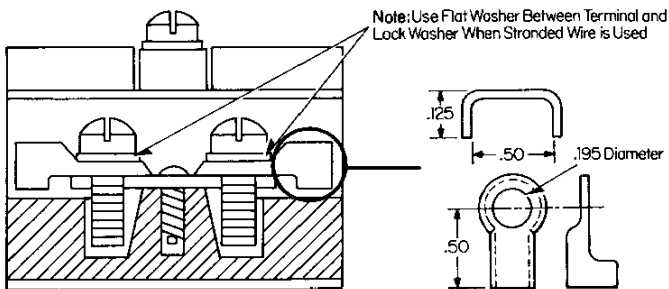
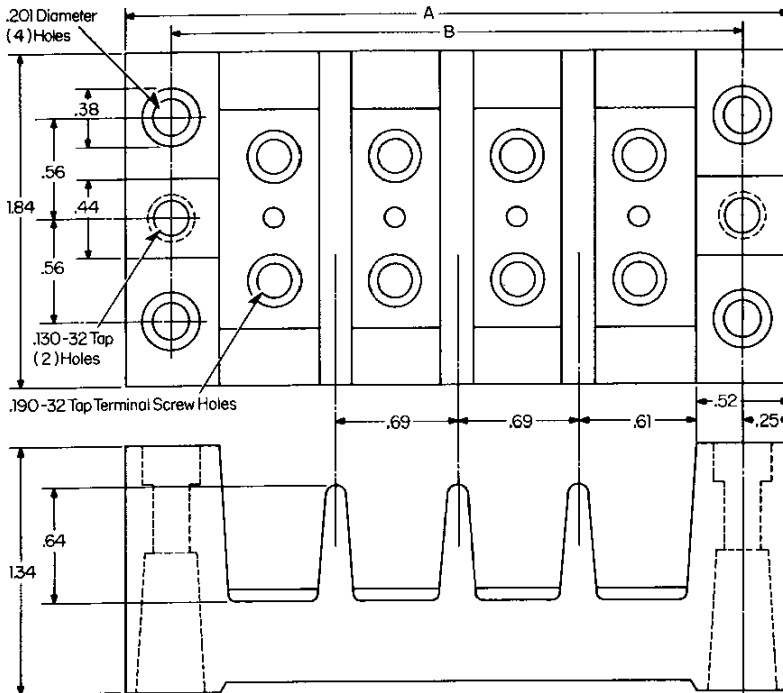
No. 2—Does not Provide Positioning of Receptacle

Lamp Data

| Service Voltage Ac – Dc | Style Numbers * | | | | Total Watts (Approx.) at Service Voltage |
|----------------------------|---------------------------------|-----------------------------------|---------------------------------|--------------------------------|--|
| | For 24 Volt S #1124156 Bulb | | For 48 Volt S #1615 719 Bulb | | |
| | For Panels Up To 3/16" Thick | For Panels 1/4" Up To 2" Thick | For Panels Up To 3/16" Thick | For Panels 1/4" To 2" Thick | |
| 25 ♦ | 1589 180 | 1589 180 | 1589 180 | 1589 180 | 0.9 |
| 50 | 1589 181 | 1589 193 | 1589 180 | 1589 180 | 1.6 |
| 70 | 1589 182 | 1589 194 | 1586 570 | 1615 757 | 2.3 |
| 115 | 1589 183 | 1589 195 | 1584 571 | 1615 758 | 3.6 |
| 125 | 1589 184 | 1589 196 | 1584 572 | 1615 759 | 4.0 |
| 208 | 1589 185 | 1589 197 | 1615 754 | 1615 760 | 6.7 |
| 230 | 1589 186 | 1589 198 | 1615 755 | 1615 761 | 7.4 |
| 250 | 1589 187 | 1589 199 | 1615 756 | 1615 762 | 8.0 |
| 380 | 1589 188 | 1589 188 | 1615 720 | 1615 720 | 12.0 |
| 480 | 1589 189 | 1589 189 | 1615 721 | 1615 721 | 15.5 |
| 50 ♦ | 1589 190 | 1589 190 | 1615 722 | 1615 722 | Dim 1.3 Bright 1.4 |
| 125 ♦ | 1589 191 | 1589 191 | 1615 722 | 1615 722 | 3.6 4.8 |
| 250 ♦ | 1589 192 | 1589 192 | 1615 723 | 1615 723 | 7.1 8.6 |

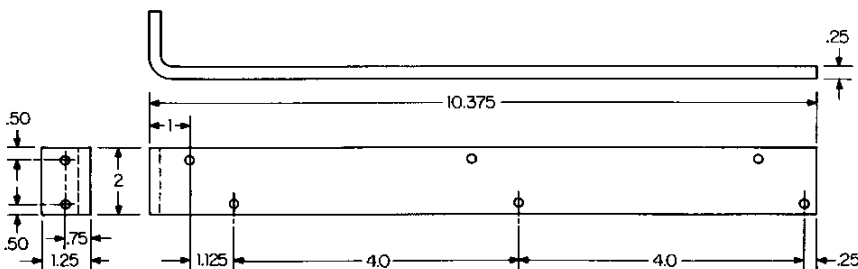
per Tony Tondo used 15 Volt bulb S# 822317
w/ 120 ohm Resistor 1767257A

Dimensions of Terminal Blocks

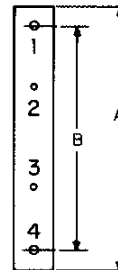


Section Through Terminal Block

Mounting Bracket



Marking Strip Dimensions (In Inches)



| Number of Circuits | Overall Length "A" | Center to Center Mounting Holes "B" |
|--------------------|--------------------|-------------------------------------|
| 4 | 3.62 | 3.12 |
| 5 | 4.31 | 3.78 |
| 8 | 6.38 | 5.88 |
| 12 | 9.12 | 8.62 |

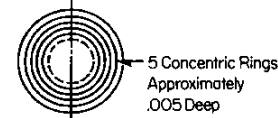
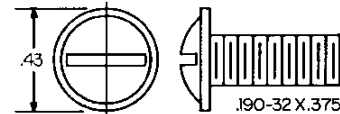
Note:

Surface White With Black Numerals Numbered One Side Only. (Opposite Side Plain White, Matte Finish).

Binding Head Screw



Washer Head Screw



S#1616016 Mounting Bracket will accommodate one 12 point terminal block horizontally or three 8 point or 12 point terminal blocks vertically.

**Terminal Blocks****Application**

Terminal blocks are designed to meet modern demands of space economy, safety in operation, and flexibility in arrangement of control wiring and conduits. Black Moldarta blocks are compact, sturdy, and serviceable; they can be mounted by bolts in any two of the four bolt holes provided. Maximum short-circuit protection is provided between wires and to ground by maintaining a minimum of $\frac{3}{8}$ " strike and a minimum of $\frac{3}{4}$ " creep between terminals and ground through barriers and offsets in the design of the molded blocks.

Terminal Blocks are rated 40 amperes, 600 volts A-C or D-C.

Standard terminals are suitable for wire sizes no. 18 to no. 10 maximum. High-pressure terminals are available for wire sizes no. 16 to no. 6 maximum.

Advantages

Standard Moldarta Blocks: Formed of a plastic material of fibrous cellulose filler and synthetic resin binder. They have exceptionally high resistance to heat, moisture and shock. This material is resistant to common solvents and has a smooth even finish which tends to retard the accumulation of dust.

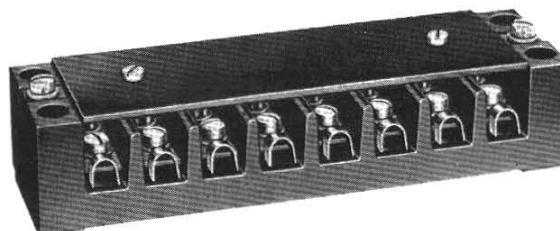
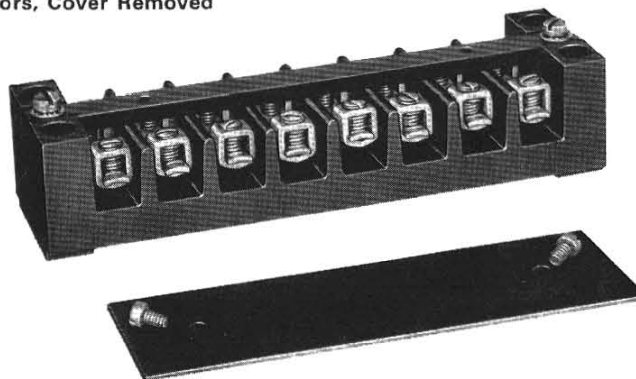
Removable Covers: When used, can be removed without disturbing mounting, connections, or marking strips.

Ease of Mounting: Blocks can be mounted flat on housing or panel, or on brackets, by any two of four bolt holes.

Reversible Marking Strips: Can be lettered with white or yellow paint.

Hardware: Where furnished as part of a complete terminal block, consists of brass machine screws, lockwashers, and terminal clamps. All are tin-plated to prevent corrosion. All hardware will withstand mechanical and electrical stresses encountered in ordinary duty.

Width and Height Dimensions of all terminal blocks are the same — namely: $1\frac{27}{32}$ wide, $1\frac{1}{2}$ high.

8-Circuit Standard Terminal Block With Cover**8-Circuit Terminal Block With High-Pressure Connectors, Cover Removed****Standard Block**

| No. of Circuits | Style Numbers | | |
|-----------------|--|---|---|
| | Without Hardware Black Marking Strip or Cover | With Hardware and Black Marking Strip (No Cover) | With Hardware, Black Marking Strip and Cover |
| 4 | 1170 848 | 1170 851 | 1170 852 |
| 5 | 805 430 | 542 245 | 1123 963 |
| 8 | 805 431 | 542 246 | 1123 964 |
| 12 | 805 432 | 542 247 | 1123 965 |

With High Pressure Connectors

| | | | |
|----|--------|----------|----------|
| 4 | | 1196 115 | 1491 642 |
| 5 | | 1196 116 | 1491 643 |
| 8 | | 1196 117 | 1491 644 |
| 12 | | 1196 118 | 1491 645 |

Terminal Blocks (With washer head terminal screws)

| No. of Circuits | Style No. Includes: Cover, White Marking Strip and Hardware | Style No. Includes: White Marking Strip and Hardware |
|-----------------|--|---|
| | Style Number | Style Number |
| 4 | 804A910G01 | 804A911G01 |
| 5 | 804A910G02 | 804A911G02 |
| 8 | 804A910G03 | 804A911G03 |
| 12 | 804A910G04 | 804A911G04 |

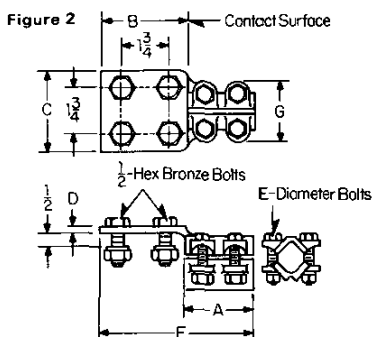
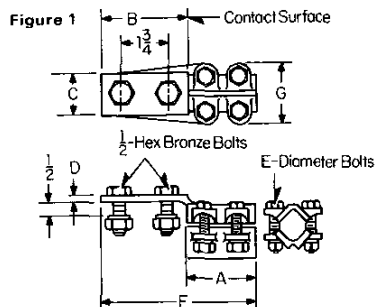
Terminal Blocks With Binding Head Screws

| No. of Circuits | White Marking Strip | White Marking Strip and Cover |
|-----------------|---------------------|-------------------------------|
| | Style Number | Style Number |
| 4 | 3710A95G01 | 3710A94G01 |
| 5 | 3710A95G02 | 3710A94G02 |
| 8 | 3710A95G03 | 3710A94G03 |
| 12 | 3710A95G04 | 3710A94G04 |

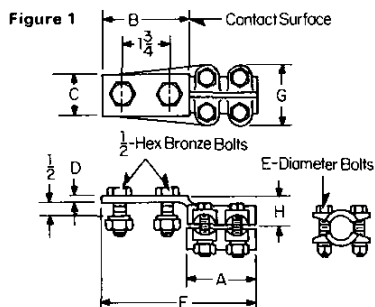
Clamp Type Terminals

Terminals are for use on any electrical apparatus having flat terminal pads. They are not suitable for connection to terminal studs. Terminals are designed in accordance with NEMA standards. All terminals are side formed.

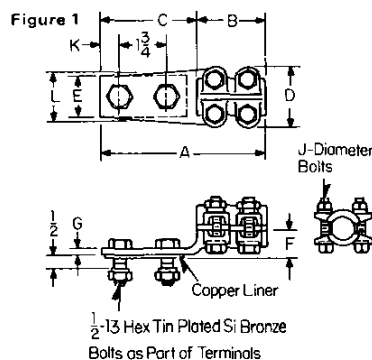
Copper Terminals, Cable to Flat



Copper Terminals, Tube to Flat



Aluminum Terminals, Cable to Flat



Copper Terminals, Cable to Flat

| Style Number | Cable Range Size | Cable Diameter | Fig. No. | Dimensions in Inches | | | | | | |
|--------------|-------------------|----------------|----------|----------------------|-------|-------|-----|-----|-------|---------|
| | | | | A | B | C | D | E | F | G |
| 1718 651-A§ | 6sol.-250M.C.M. | .204-.575 | 1 | 2 1/2 | 3 1/4 | 1 1/2 | 1/4 | 3/8 | 6 | 2 |
| 1718 652§ | 1/0sol.-500M.C.M. | .325-.814 | 1 | 3 1/4 | 3 1/4 | 1 1/2 | 1/4 | 3/8 | 6 1/4 | 2 1/8 |
| 1718 653§ | 4/0-1000M.C.M. | .522-1.152 | 1 | 4 1/4 | 3 1/4 | 1 1/2 | 1/4 | 3/8 | 8 1/4 | 2 15/16 |
| 1718 655§ | 4/0sol.-500M.C.M. | .325-.814 | 2 | 3 3/4 | 3 3/4 | 3 | 1/4 | 3/8 | 6 1/4 | 2 1/8 |

Copper Terminals, Tube to Flat

| Style Number | IPS Tube Size | Fig. No. | Dimensions in Inches | | | | | | | |
|--------------|---------------|----------|----------------------|-------|-------|-----|-----|-------|-------|---|
| | | | A | B | C | D | E | F | G | H |
| 1718 660§ | 3/4 | 1 | 2 1/2 | 3 1/4 | 1 1/2 | 1/4 | 3/8 | 5 1/4 | 2 1/8 | 1 |

Aluminum Terminals, Cable to Flat

| Style Number | ACSR Cable Range | Fig. No. | Dimensions in Inches | | | | | | | | | |
|--------------|------------------|----------|----------------------|---|-------|-------|---|-------|-----|-----|-----|-------|
| | | | A | B | C | D | E | F | G | J | K | L |
| 1799 505A | 4/0 to 336M.C.M. | 1 | 6 1/4 | 3 | 3 1/4 | 2 1/8 | 2 | 1 1/8 | 3/8 | 1/2 | 3/8 | 2 1/8 |

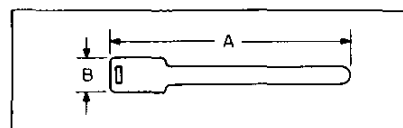
§ Stock Item.

Marking Tags

Marking tags are recommended for use in identifying cable leads, switchboard circuits, and apparatus terminals. They are also recommended for use without marking for punching switchboard wiring.

Style Number

| Thickness - Inches | Dimensions in Inches | | Style Number |
|-----------------------|-------------------------|-------|-----------------|
| | A | B | |
| .014 | 4 1/4 | 1 1/8 | 61 410 |





Glass Polyester Bus Insulators

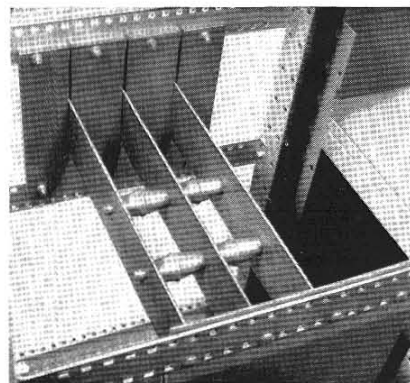
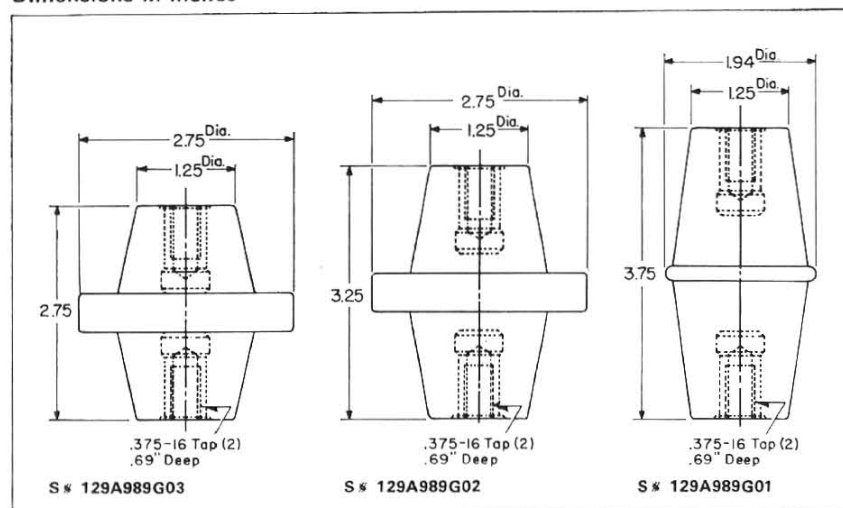
New Westinghouse insulation of improved glass polyester material is used for short circuit bracing of low voltage switchgear bus bars. In addition to being highly track resistant, this new insulation is also flame retardant. These bus braces are designed to be essentially self-cleaning and they are shaped to provide increased creepage distances.

The insulators have the following physical and electrical properties:

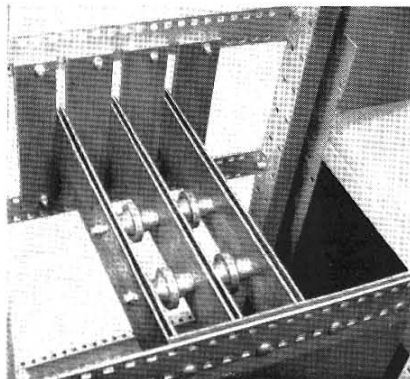
| | |
|------------------------------------|--------------------------|
| Impact strength (ft. - lbs.) | 6-8 |
| Flexural strength (psi) | 18,000 |
| Tensile strength (psi) | 4,100 |
| Compression strength (psi) | 14,500 |
| Water absorption (% in 24 hrs.) | .048% |
| Heat distortion | 230°C |
| Dielectric strength (short-time) | 230 volts per mil |
| Dielectric strength (step-by-step) | 259 volts per mil |
| Arc resistance (seconds) | 105 |
| Specific gravity | 2.07 |
| Flame retardance (ignition) | 123 seconds |
| Flame retardance (burning) | 52 seconds |
| Thread inserts (plated steel) | 5/16" x 16, 1 1/16" deep |

| | Height | Creep Distance |
|---|--------|----------------|
| Style 129A989G01 (one bar per phase) | 3.75" | 3.88" |
| Style 129A989G02 (two bars per phase) | 3.25" | 4.25" |
| Style 129A989G03 (three bars per phase) | 2.75" | 4.00" |

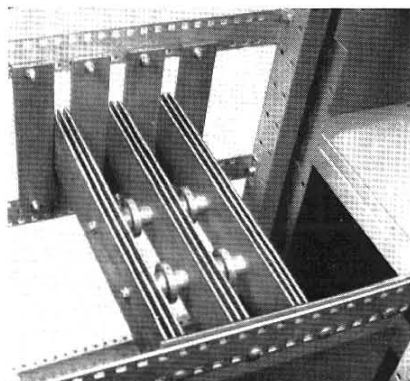
Dimensions in Inches



Glass polyester bus supports arranged for one bus bar per phase.



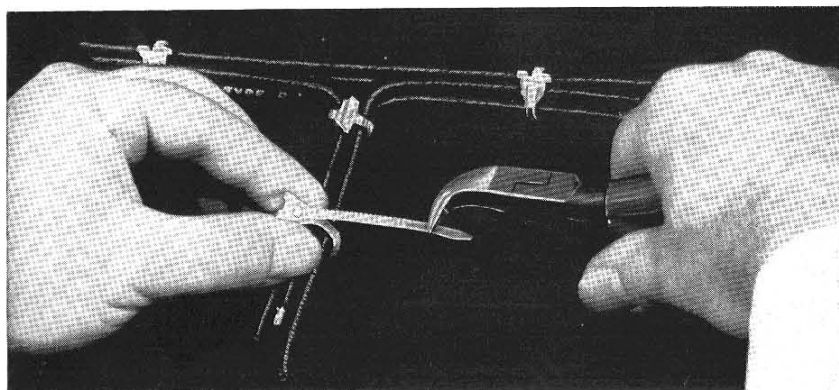
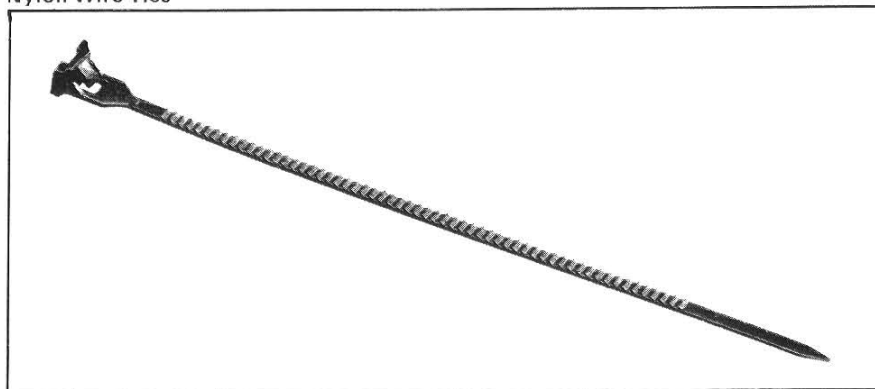
Glass polyester bus supports arranged for two bus bars per phase.



Glass polyester block arrangement for three bus bars per phase.



Switchboard Details Nylon Wire Ties



Westinghouse Nylon wire ties are self-adjusting molded straps used primarily in securing bundles of wires in harnesses for switchboards, panelboards, switchgear assemblies and motor control centers. Other applications are found wherever wires are connected to or used with other electrical apparatus.

A neater and faster job can be accomplished with wire ties as compared with conventional string-tying methods. Time studies indicate substantial savings in installation time. Pre-wired harnesses and assemblies can be easily moved and handled without concern for loosening or shifting bundles. In addition, the Nylon material offers strength and insulation to the wire bundle.

The flexible Nylon tie is $\frac{1}{8}$ " wide and $5\frac{1}{4}$ " long, having a patented ratchet-like buckle at one end and a tapered lead point at the other end. The outside surface of the strap is formed as a continuous series of ratchet teeth, while the inside smooth surface has a length-wise

raised rib that prevents side slippage when the tie is pulled up snug around a wire bundle. The unique ratchet design allows the tie to be immediately adjusted to diameters of $\frac{3}{16}$ " minimum to $1\frac{1}{4}$ " maximum.

The tie is produced from black Nylon material only. (For clarity of illustration, a special neutral color tie was used in this publication.)

Ordering Information

Ties are identified as S # 373-B-602-H03. Wire-Ties are packaged in one size container only — 1000 pieces to a box — and must be ordered in quantity of "sets". Each "set" is one box, or 1000 ties. An order of 10,000 pieces would be described as "10 sets", Nylon Wire-Ties, S # 373-B-602-H03. The installation tool is identified as "Wire-Tie installation pliers, # 373B" and can be ordered in any quantity. They are packaged in individual boxes.