

SWITCHBOARD DETAILS ADJUSTABLE INSERT

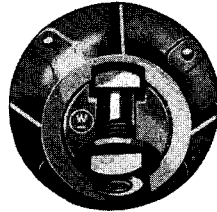


FIG. 1

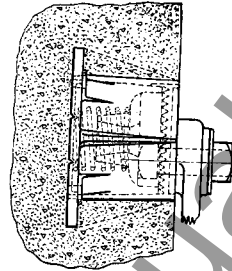


FIG. 2

Application

Westinghouse adjustable inserts were designed for use in concrete work where it is desired to mount machinery or other equipment to floors, walls or ceilings.

There are no restrictions to the application of these inserts for electrical or general construction work, the only limitations being the ultimate strength of the bolts used. The inserts are avail-

able for use with $\frac{3}{8}$, $\frac{1}{2}$ and $\frac{5}{8}$ -inch machine bolts as listed in column to right, and include a machine bolt two inches long to be used when securing the insert to the form.

It is recommended that the insert be bolted to the forms, although for some applications it may be desirable or

even necessary to nail the inserts in place before the cement is poured.

	Fig. No.	Approx. Ship. Wt. Lbs.	Style No.
$\frac{3}{8}$ -inch bolt supplied	1	1	411 332
$\frac{1}{2}$ -inch bolt supplied	1	1	411 333
$\frac{5}{8}$ -inch bolt supplied	1	1.5	562 677

STEEL CLEATS

Steel cleats are used to secure insulated small wiring to the back of switchboard panels and L wiring brackets. They are so designed that all the wires are held firmly in place when assembled, by means of only one clamping screw.

A special feature of this design is the separation of the wires into groups of

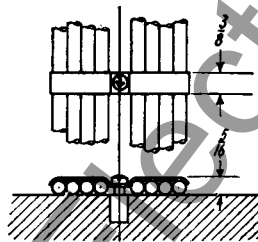


FIG. 3

not more than four, permitting of ready inspection and tracing of circuits.

The cleats are of a neat appearance and have a cadmium plated rust-proof finish.

Style number includes steel cleat only without anchors. Use anchor S# 385886 with # 8 or 10—32 x $\frac{1}{2}$ " machine screw.

Dimensions are for reference only. For official dimensions apply to the nearest Westinghouse Sales Office.

E4-7. AJ3-33. C3-26.

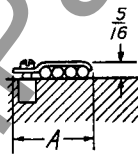


FIG. 4

Cleat	Fig. No.	Dim. A in in.	Approx. Ship. Wt. Lbs.†	Style No.
16-wire	3	4	4	790 096
8-wire	3	2½	2	790 097
6-wire	3	2	2	790 098
4-wire	3	1½	1	790 099
2-wire	3	1	1	790 100
1-wire	4	½	0.5	790 106
2-wire	4	¾	0.5	790 105
3-wire	4	1	1	790 107
4-wire	4	1½	1	790 108
9-wire	2 Holes	1¾	1	498 244

† Weight per 100.

SELF-TAPPING SCREW

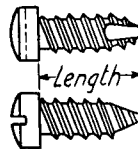


FIG. 5

Size Screw Length	Fig. No.	Approx. Ship. Wt. Lbs.†	Style No.	Bracket Complete	Fig. No.	Approx. Ship. Wt. Lbs.†	Style No.
.112-4— $\frac{3}{8}$ "	5	.25	452 557	16-wire			413 234
.190-10— $\frac{1}{2}$ "	5	.25	869 213	12-wire			413 235
.190-10— $\frac{3}{8}$ "	5	.25	430 011	8-wire	6		413 236
.190-10—1"	5	.50	430 012	4-wire	6		413 237
				Anchors	..		385 886

† Weight per 100.

L BRACKETS—WITH STEEL CLEATS

L brackets for supporting steel cleats away from the panel are extremely useful in confined places, insuring the greatest freedom from interference with the parts of apparatus extending through the panel.

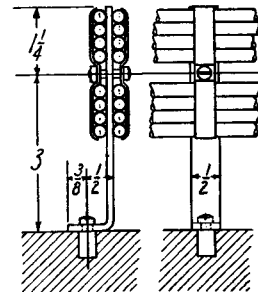


FIG. 6

Style number includes the steel L bracket, two steel cleats and a clamping screw. Anchors Style 385886 for securing the complete bracket to the panel are not included. The brackets have a cadmium plated rust-proof finish.

Order by Style Number

WIRE TERMINAL CLAMPS

Westinghouse Terminal Clamps for control wiring are made of .020-inch thick sheet brass and have a heavy white finish. These clamps, combining the desirable features of a crimp washer and guard, are very simple and effective.

Although designed primarily for .081-inch solid copper wire of 1/4-inch diameter over the insulation, they may also be used for stranded or solid wire of slightly larger or smaller diameter. For example, 19 of 0.0226-inch-stranded wire,

0.33 inch diameter over the insulation. They guard against break at the point where the wire is bared and cover the frayed ends of the insulation, thereby making a neat and permanent connection and assuring continuity of service.

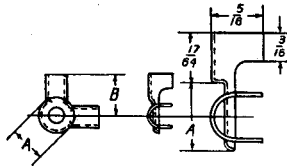


FIG. 7

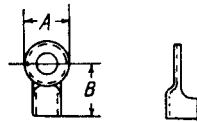


FIG. 8

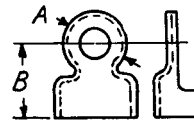


FIG. 9

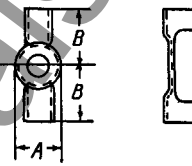


FIG. 10

Fig. No.	Stud. Dia. Inches	DIMENSIONS IN INCHES		Approx. Ship. Wt. Lbs.†	Style No.
		A	B		
7	.190	11/32	1/2	5	676 315
8	.190	11/32	1/2	4	676 318
8	.25	11/32	1/2	4	676 317
8	.3125	11/32	5/8	4	676 318
8	.375	11/32	5/8	4	676 319
9	.190	11/32	1/2	5	676 320
10	.190	11/32	1/2	5	676 320

† Weight per 1000.

MARKING TAG

Marking tags are recommended for use in identifying cable leads, switchboard circuits and apparatus terminals.

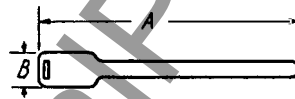


FIG. 11

Thickness Inches	DIMENSIONS IN INCHES		Style No.
	A	B	
.014	4 1/2	3/8	61 410
.014	3 1/2	3/8	116 413

CROSS PANEL BUS BRACKET

These brackets are for cross-panel buses of 1/8-inch outside diameter brass tubing, which is insulated at points of support with a Micarta* tube slipped over the bus. It is recommended that a bracket be placed at each joint of panels if the panel width is 20 inches or over.

Standard switchboard wire should be supplied and used for connections between the bus and meter studs. Electrical contact is made by inserting the wire into a drilled hole in the bus or by wrapping the wire to the bus and soldering securely in place.

Type of Panel Mounting	Max. No. of Buses	Ship. Wt., Lb.	Style No.
Steel panel or Channel frame	8	2	553 021
	16	4	553 022
Angle-iron	8	2	503 446
Angle-iron	16	4	503 447
Pipe frame	8	2	503 448
Pipe frame	16	4	503 449

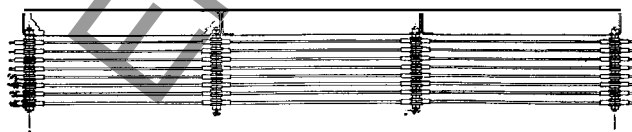


FIG. 12—BUS BRACKET FOR TUBE BUS

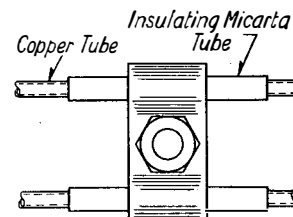


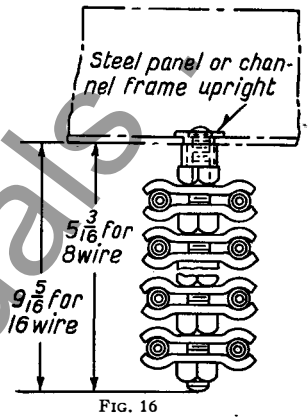
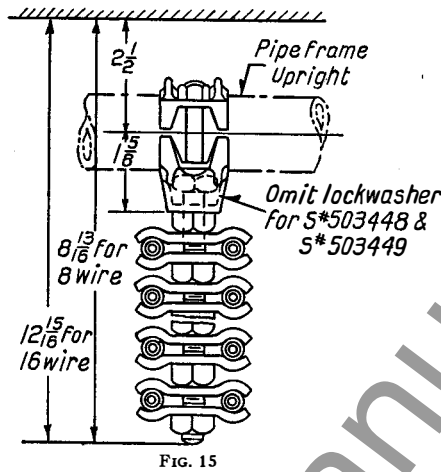
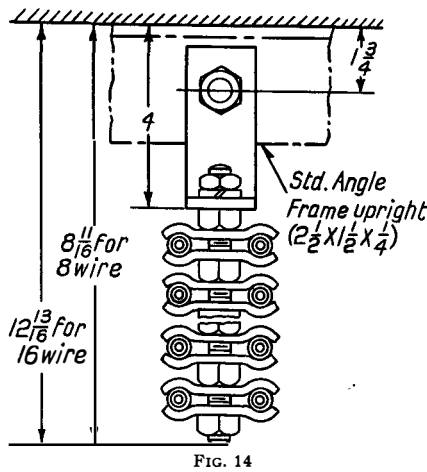
FIG. 13

Trademark registered.

Dimensions are for reference only. For official dimensions apply to the nearest Westinghouse Sales Office.

Order by Style Number

CROSS PANEL BUS BRACKET (Continued)



UNIVERSAL MOUNTING BRACKETS

These brackets are cast with slots in side, are provided with an end lug and are designed to project at right angles to the frame upright. The brackets are suitable for mounting on either 1 1/4-inch pipe frame or angle-iron frame; suitable

adjusting eccentric washers are provided for holding the brackets rigidly, to prevent sagging, ordinarily due to bolt-hole clearances.

Style number includes bracket complete with straight mounting bolts for angle-iron frames or with yoke and carriage bolts for pipe-frame mounting.

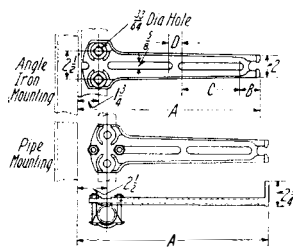


Fig. 17

Description of Frame	No. of Slots	DIMENSIONS IN INCHES				Approx. Shipping Wt., Lb.	Mounting Bracket Style No.
		A	B	C	D		
Angle iron	0	4	..	..	..	4	218 750
Angle iron	1	6	1 3/4	1 3/8	..	4	218 751
Angle iron	1	8	1 3/4	3 3/8	..	4	218 752
Angle iron	1	10	1 3/4	5 3/8	..	4	218 753
Angle iron	2	12	1 3/4	3 3/8	1 1/8	5	218 754
Angle iron	2	14	1 3/4	4 3/8	1 1/8	5	218 755
Angle iron	2	16	1 3/4	5 3/8	1 1/8	5	218 756
Angle iron	3	18	1 3/4	3 3/8	1 1/8	5	218 757
Angle iron	3	20	1 3/4	4 3/8	1 1/8	6	218 758
Angle iron	3	22	1 3/4	5 3/8	1 1/8	6	218 759
Angle iron	4	24	1 3/4	4 3/8	1 1/8	6	218 760
Angle iron	4	26	1 3/4	4 3/8	1 1/8	6	218 761
1 1/4-inch pipe	0	4 3/4	..	..	..	4	218 762
1 1/4-inch pipe	1	6 3/4	1 3/4	1 3/8	..	4	218 763
1 1/4-inch pipe	1	8 3/4	1 3/4	3 3/8	..	4	218 764
1 1/4-inch pipe	1	10 3/4	1 3/4	5 3/8	..	4	218 765
1 1/4-inch pipe	2	12 3/4	1 3/4	3 3/8	1 1/8	5	218 766
1 1/4-inch pipe	2	14 3/4	1 3/4	4 3/8	1 1/8	5	218 767
1 1/4-inch pipe	2	16 3/4	1 3/4	5 3/8	1 1/8	5	218 768
1 1/4-inch pipe	3	18 3/4	1 3/4	3 3/8	1 1/8	5	218 769
1 1/4-inch pipe	3	20 3/4	1 3/4	4 3/8	1 1/8	6	218 770
1 1/4-inch pipe	3	22 3/4	1 3/4	5 3/8	1 1/8	6	218 771
1 1/4-inch pipe	4	24 3/4	1 3/4	4 3/8	1 1/8	6	218 772
1 1/4-inch pipe	4	26 3/4	1 3/4	4 3/8	1 1/8	6	218 773

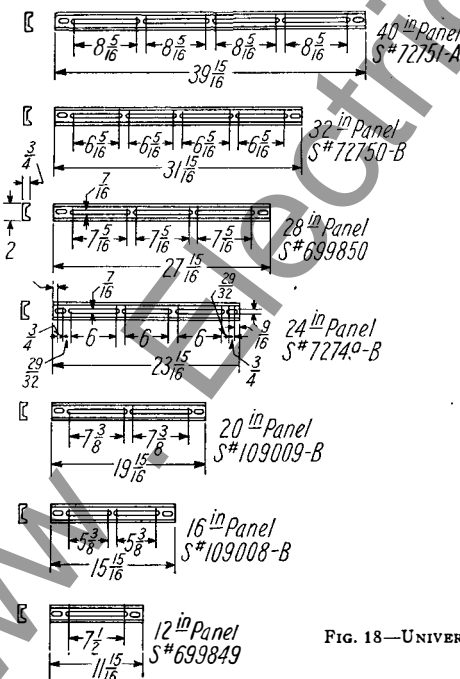


Fig. 18—UNIVERSAL MOUNTING STRAPS

UNIVERSAL MOUNTING STRAPS

These straps (Fig. 18) are made of cast iron with 7/16-inch slots in the side, are designed particularly to be bolted on the end lugs of the universal mounting brackets, thus forming a mounting or supporting medium across the switchboard panels.

Style number includes bracket with mounting bolts.

Width of Panel in Inches	No. of Slots	Approx. Ship. Wt., Lb.	Style No.
12	1	3	699 849
16	2	4	109 008
20	2	4	109 009
24	3	6	72 749
28	3	6	699 850
32	4	6	72 750
40	4	6	72 751

Order by Style Number

FORMED STEEL UNIVERSAL MOUNTING STRAPS

This line of cold-rolled steel mounting straps is intended particularly for bolting to the flanges of steel panels or channel frames. They may be mounted perpendicular or parallel to the panel or in combinations of several straps to form a framework. The top and sides have slots at regular intervals for $\frac{3}{8}$ and $\frac{1}{2}$ -inch bolts respectively and the bottom has regularly spaced holes for $\frac{3}{8}$ -inch bolts. Style number includes single bracket.

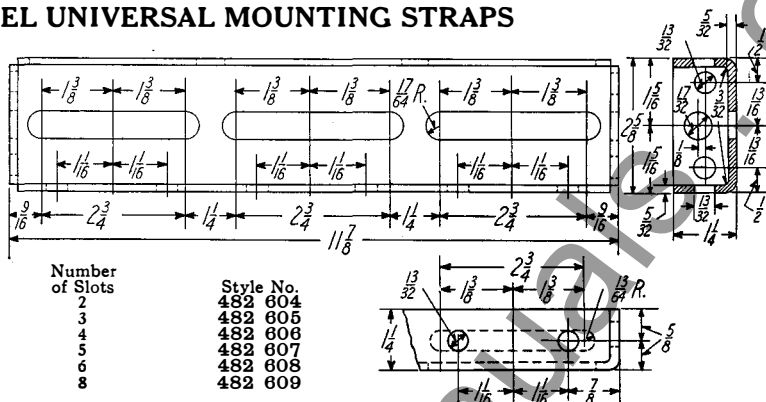
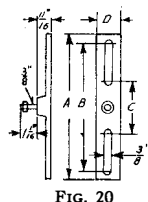


FIG. 19

UNIVERSAL AUXILIARY BRACKETS



DIM. IN		IN.		Approx. Ship. Wt., Lb.	Style No.
A	B	C	D		
7	6	3 1/4	1 1/2	1	72 752
9	8	3 1/4	1 1/2	1	177 512

FIG. 20

This cast-iron bracket (Fig. 20) is designed particularly to be bolted to the universal mounting brackets or straps, thus providing a suitable mounting for

current and voltage transformers, etc., in various locations. bracket Style No. 59570, Fig. 21.

Style number and list price include bracket and $\frac{3}{8}$ -inch diameter stove bolt.

For type A current transformers use

MOUNTING BRACKETS FOR FUSE AND DISCONNECTING SWITCH BASE MOUNTING

This cast-iron bracket (Fig. 21) is designed particularly to be bolted to the end lug of the universal bracket and to provide a support for fuse and disconnecting switch bases. For individually mounted bases, two universal brackets and two end brackets are required per base, but where the bases are mounted adjacent to each other, in the same line and plane, an intermediate support for

the two may be formed by using one universal bracket and one intermediate bracket. Style number includes bracket with mounting bolt.

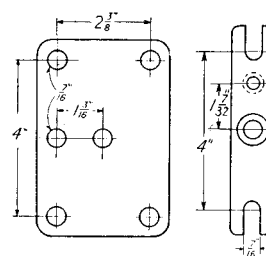


FIG. 21

Description	Approximate Shipping Wt., Lb.	Style No.
End bracket	1 1/2	59 570
Intermediate bracket	1 1/2	59 571

PIPE MOUNTING BRACKETS

These brackets are made of cast iron for clamping on $\frac{1}{4}$ -inch pipe frame by means of yoke and carriage bolts; for supporting instrument transformers, fuse blocks, disconnecting switches, etc.

Fig. No.	DIMENSIONS IN INCHES						Bracket Style No.
	A	B	C	D	E	F	
22	5 3/8	4 7/8	2	1 3/4	2	1 1/8	127 788
22	9 3/4	8	5	1 3/4	2 1/8	1 1/8	239 023
23	9	3 3/8	1 3/8	1 3/4	1 1/2	..	127 776

Approximate shipping weight, 2 pounds.

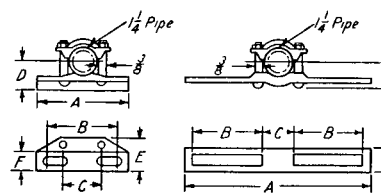


FIG. 22

FIG. 23

Dimensions are for reference only. For official dimensions apply to the nearest Westinghouse Sales Office.

Order by Style Number

CALIBRATING TERMINALS FOR SECONDARY CIRCUITS

For conveniently making connections for the calibrating instruments. The thumb nuts are made of insulating material.

Description	For Mounting On Slate Panels Style No.
One current coil terminal*	765 896
One removable link	275 984
One voltage coil terminal	790 118

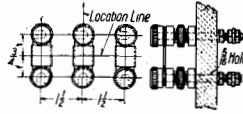


FIG. 24—CURRENT COIL TERMINALS FOR SLATE PANEL MOUNTING



FIG. 25—VOLTAGE COIL TERMINAL FOR SLATE PANEL MOUNTING

Description	For Mounting On Steel Panels Style No.
*One current coil terminal	790 123
†Panel insulation	472 764
△Washer	779 368
One link	275 984
*One voltage coil terminal	790 125
†Panel insulation	472 764
△Washer	779 368

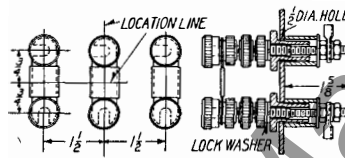


FIG. 26—CURRENT COIL TERMINALS FOR STEEL PANEL MOUNTING

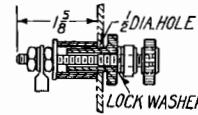


FIG. 27—VOLTAGE COIL TERMINAL FOR STEEL PANEL MOUNTING Assembly S#1227184

*Includes one stud only with necessary nuts and one wire terminal clamp.
 †Includes one bushing and one collar, see page 2 Catalog Sec. 37-240.
 △1/4 inch steel washer required to assemble panel insulation Catalog Sec. 37-240.

SWITCHBOARD WRENCHES

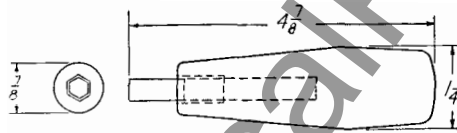


FIG. 28

Description	Style No.
.164 Hex. Nut	466 806
.164 Mach. Sc. Nut	664 983
.190 Hex. Nut	466 807
.242 Mach. Sc. Nut	466 807
3/4" Mach. Sc. Nut	664 984
5/8" Hex. Nut	466 808

PLUGS FOR SWITCHBOARD PANELS

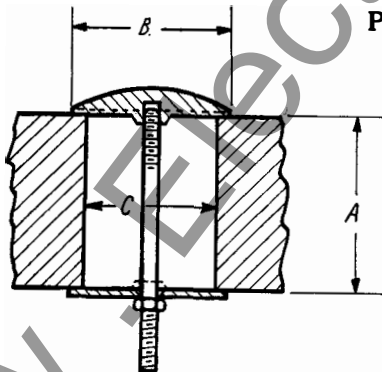


FIG. 29

These plugs are used for covering holes in panels drilled for future installation of apparatus.

The plugs consist of a dull black finish hard-rubber button tapped for a .190-32 screw for the front of the panel and a metal clamping disc for the rear.

Style number includes the complete plug assembly as shown in Fig. 29.

DIMENSIONS IN INCHES			Approx. Ship. Wt. Lbs. †	Complete Plug Style No.
A	B	C		
1 1/2	3 1/2	3	3	436 786*
1 1/2	2 1/2	2 3/8	2	436 787*
1 1/2	1 3/4	1 3/8	1	436 788*
1 1/2	1 1/8	1	1	436 789*
1 1/2	3/8	3/2	0.5	436 790*
2	3 1/8	3	3	436 791
2	2 1/2	2 3/8	2	436 792
2	1 1/2	1 3/8	1	436 793
2	1 1/8	1	1	436 794
2	3/8	1/2	0.5	436 795

* These styles also for use on 1/8" steel panel.
 † Weight per 100.

Dimensions are for reference only. For official dimensions apply to the nearest Westinghouse Sales Office.

Order by Style Number

PANEL MOUNTING BOLTS

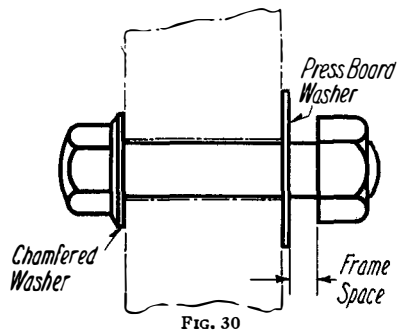


FIG. 30

Standard panel mounting bolts for types E, G, L and J switchboard frames consist of a cap screw, a chamfered washer for the front of panel, a press-board washer to be placed between the panel and frame and a standard hexagonal iron nut. The head of the cap screw and the chamfered washer are finished dull black.

†Weight per 100.

Style number includes complete bolt assembly as shown (see Fig. 30).

Size of Cap Screw Inches	Thickness of Panel Inches	Approx. Ship. Wt. Lbs.†	Style No.
1/2-13 x 2 1/2	1 1/2	10	441 563
1/2-13 x 3	2	10	441 564
1/2-13 x 3 1/2	2 1/2	10	441 565
1/2-13 x 4	3	10	441 566
3/8-16 x 2	1	10	441 602
3/8-16 x 2 1/2	1 1/2	10	441 603

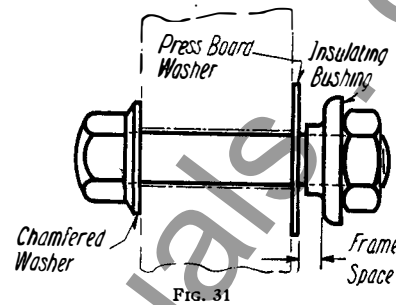


FIG. 31

and the chamfered washer are finished dull black.

Style number includes complete bolt assembly as shown (see Fig. 31).

Size of Cap Screw Inches	Thickness of Panel Inches	Approx. Ship. Wt. Lbs.†	Style No.
1/2-13 x 2 1/2	1 1/2	10	441 567
1/2-13 x 3	2	10	441 568
1/2-13 x 3 1/2	2 1/2	10	441 569
1/2-13 x 4	3	10	441 570

INSULATING CAPS, INCLUDING WASHERS FOR MOUNTING BOLTS

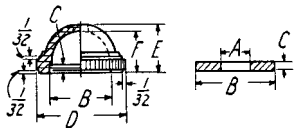


FIG. 32

	Style No.	DIMENSIONS IN INCHES						Approx. Ship. Wt.† Lbs.
		A	B	C	D	E	F	
Cap	1 240 472	..	1 1/2	3/4	1 1/2	3/4	3/4	2.0
Washer	1 070 231	1/4	1 1/2	3/4	...	..	..	0.5

CARD HOLDERS

These card holders are designed for mounting on the front of panels to hold cards, giving name of machines or circuits controlled.

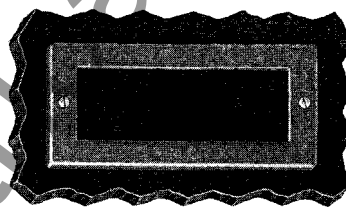


FIG. 33

The design presents a neat and rugged appearance, affords a maximum effective card space. The finish is black marine.

Over-all Dimensions Inches	Size of Opening Inches	Size of Card Inches	Approx. Ship. Wt. Lbs.†	Style No. *
3 1/2 x 1 3/8	2 7/8 x 1	3 1/8 x 1 1/8	1	694 478
2 3/8 x 1 1/4	1 7/8 x 3/4	2 1/8 x 1 1/8	1	694 479

* Mounting Screws not included. Required 2-112-40 x 3/8.

†Weight per 100.

BLANK NAME PLATES
(Black Surface, White Core Micarta)

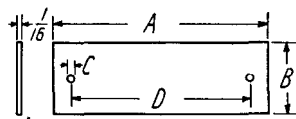


FIG. 34

Style No.	DIM. IN INCHES				Approx. Ship. Wt.† Lbs.
	A	B	C	D	
1 241 726	1 1/4	3/8	3/8	1 1/8	0.5
1 241 727	1 3/4	3/8	1/8	1 1/2	0.5
1 241 728	2 1/2	1	1/8	2 1/4	1.0
1 241 729	3	1	1/8	2 3/4	1.0

†Weight per 100.

Dimensions are for reference only. For official dimensions apply to the nearest Westinghouse Sales Office.

Order by Style Number

CLIP-TYPE SAFETY CONNECTORS

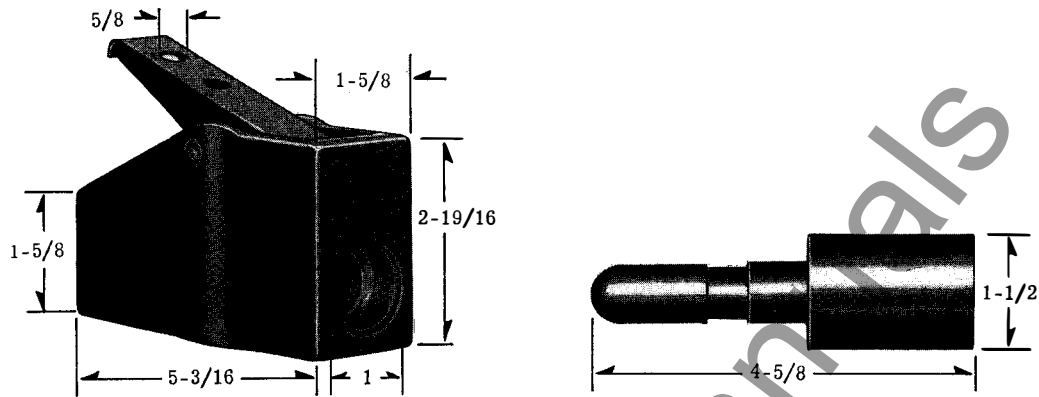


FIG. 35—300-AMPERE CONNECTOR WITH CONNECTOR PLUG

Application

These safety connectors are applicable where it is desired to make a separate connection on test floors, college laboratories and other places where a well-insulated safety connector is desired or especially where frequent connections are to be made. They are furnished in two sizes for 600-volt service, one size taking a conductor up to 3/8-inch diameter and the other taking one up to 3/4-inch diameter.

Construction

The safety connector consists of a casing of moulded insulation which contains a brass tube into each end of which the conductors are fastened. The conductor to which the safety connector is permanently fastened, is clamped in the sleeve by two set-screws which are provided with raised portions around

them to be filled with sealing wax after the lead is fastened in place.

To make a temporary connection, it is only necessary to press down the lever, which action, by means of a spiral spring located around the plunger, raises the plunger at the other end of the connector. The conductor can then be inserted into the brass tube (see Fig. 35). When the lever is released, a spring in the lever arm exerts pressure on the plunger which forces the plunger against the conductor and makes a firm connection.

The connector for switchboard mounting is the same as shown in (Fig. 35) ex-

cept that it has added two studs which allow the connector to be mounted on the front of the panel with the permanent connection of the connector being made on the rear of the board.

Connector plugs can also be supplied. They are so made that they can be permanently soldered to the conductor. The end that is inserted into the connector has a groove which is engaged by the movable plunger. The part extending from the connector has a Mica covering for insulation purposes (see Fig. 35).

Description	Amperes	Style No.	Approx. Ship. Wt. Lbs.
Safety connector.....	120	382 995	1.0
Safety connector.....	300	478 098	1.5
Safety connector, switchboard mounting.....	120	491 441	1.0
Safety connector, switchboard mounting.....	300	491 442	1.5
Connector plug.....	120	491 443	0.25
Connector plug.....	300	491 444	0.25

600-VOLT PLUG-TYPE SWITCH AND RECEPTACLE



FIG. 36—600-VOLT PLUG-TYPE SWITCH AND RECEPTACLE

These plug-type switches and receptacles were originally developed for laboratory work and have proven very popular with educational institutions. The plugs are frequently used in pairs on opposite ends of flexible cable to act as jumpers for laboratory circuits, to transfer circuits and to connect portable

apparatus to fixed circuits by having a plug and cable on each lead of the portable equipment.

These plugs and receptacles are insulated for 600-volt service. One size is provided for circuits up to and including 60-ampere and a larger size for currents up to 100 amperes. The recep-

tacles are designed for mounting on any panel from 1/8" to 2" thick.

Ampere Ratings	Plug Style No.	Approx. Ship. Wt., Lbs.	Receptacle Style No.	Approx. Ship. Wt., Lbs.
60	591 496	0.5	591 497	0.5
100	562 137	1.0	562 138	1.0

Dimensions are for reference only. For official dimensions apply to the nearest Westinghouse Sales Office.

Order by Style Number

SWITCHBOARD MOUNTINGS AND CONTROL MECHANISMS FOR RHEOSTATS

Refer to D. S. 14-515

Westinghouse Electric Corporation
East Pittsburgh Works, Switchgear Div., East Pittsburgh, Pa.

Printed in U.S.A.